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Table of contents

1. Introduction	1
2. Genre theory	3
2.1. Approaches to genre analysis	5
2.1.1. The systemic functional approach	5
2.1.2. The New Rhetoric approach	7
2.1.3. The ESP approach	8
2.1.4. Similarities and differences	9
2.2. A model of analysing genres	11
2.3. Implications of genre analysis for language teaching and learning	16
2.4. Limitations of the genre approach	17
3. Corpus work and ESP	19
3.1. The concept of <i>corpus</i>	19
3.2. Corpora and language teaching	20
3.3. Corpora in ESP teaching	21
3.3.1. English for Specific Purposes	21
3.3.2. General and specialised corpora	23
3.3.3. Corpora and lexis	24
3.3.4. Corpora, ESP and genre	25
3.4. Exploitation of corpora	26
3.5. Limitations	27
4. The study	29
4.1. The genre of abstracts	29
4.1.1. Communicative purpose of abstracts	30
4.1.2. Moves of abstracts	31
4.1.3. Types of abstracts	32
4.1.4. Abstract as genre constituent of the research article	32
4.2. Previous research	33
4.2.1. Linguistic studies on agricultural texts	34
4.2.2. Previous research on abstracts	35
4.3. The field of agriculture	36
4.3.1. Organic farming	37
4.4. Educational setting	39

4.4.1.	Target teaching setting (Higher Secondary Schools)	40
4.4.2.	Teaching English in agricultural schools	41
4.4.3.	Teaching abstracts	43
4.5.	The methodology	44
4.5.1.	The corpus	44
4.5.2.	Specialist informants	46
4.5.3.	Tools for analysis	46
4.5.4.	Move analysis	47
4.5.5.	Procedure and methods	48
5.	Theoretical concepts for the analysis of the corpus	49
5.1.	High and low frequency words	49
5.2.	Academic vocabulary	50
5.3.	Technical vocabulary	51
5.4.	Units of analysis in AntConc	53
5.4.1.	Concordance lines	53
5.4.2.	Collocations	53
5.4.3.	Clusters	54
5.5.	Formulaic language	54
6.	Vocabulary in agricultural abstracts	55
6.1.	Vocabulary size	55
6.2.	Frequently occurring items	55
6.3.	Less frequently occurring items	57
6.4.	Vocabulary analysis according to the GSL and AWL	58
6.4.1.	General Service List (GSL)	59
6.4.2.	Academic Word List (AWL)	61
6.5.	Technical Vocabulary	62
6.6.	Concordances	68
6.6.1.	Concordances for <i>organic</i>	69
6.6.2.	Concordances for <i>farming</i>	71
6.6.3.	Concordances for <i>conventional</i>	73
6.6.4.	Concordances for <i>systems</i> and <i>system</i>	75
6.6.5.	Concordances for <i>production</i>	76
6.6.6.	Concordances of <i>soil</i>	78
6.6.7.	Concordances for <i>higher</i>	79

6.6.8.	Concordances for <i>crops</i>	81
6.6.9.	Concordances for <i>food</i>	81
6.7.	The passive in the CAA	83
6.7.1.	Auxiliary <i>be</i>	84
6.7.2.	Present Tense	84
6.7.3.	Past Tense	85
6.7.4.	Present Perfect Tense	86
6.8.	Personal pronouns in the CAA	87
6.9.	Summary of results	89
7.	Move analysis	91
7.1.	Category 1.....	91
7.1.1.	Move 1: Introduction.....	93
7.1.2.	Move 2: Purpose	96
7.1.3.	Move 3: Methods	99
7.1.4.	Move 4: Results	101
7.1.5.	Move 5: Conclusion	102
7.2.	Category 2.....	105
7.3.	Summary of results	106
8.	The genre analysis in the context of ESP teaching and learning	108
9.	Conclusion	112
	References	116
	Appendix	125
	Journals and abstracts used.....	125
	Wordlist of the CAA	136
	Abstract (English)	139
	Abstract (German)	141
	Curriculum Vitae	144

1. Introduction

Corpus-based genre analysis has received much attention in recent years. On the one hand, it is argued that the potential of genre analysis can contribute to the understanding of language use in a variety of different genres employed in different discourse communities (Bhatia 2004: xvii). In addition, it is claimed that corpus work and its tools have a significant impact on language learning and teaching (Breyer 2011: 41). Corpus-based approaches as well as genre analysis can therefore contribute massively to teaching languages, especially in ESP contexts (Henry & Roseberry 2001: xvii).

Thus, corpus-based genre analysis in the field of ESP has become a popular tool to influence language teaching and learning. Various different disciplines and genres have been investigated, including medicine, law and business (Dudley-Evans & St. John 1998: 49-50). However, the field of agriculture has received little attention so far. In this study, I will therefore conduct a corpus-based genre analysis and focus on the genre of abstracts within the field of agriculture and the more specific area of organic farming and organic agriculture. In addition, the implications for ESP teaching in higher secondary schools focusing on agriculture will be investigated. The genre of abstracts has been chosen as it is of enormous importance for the academic world. Furthermore, the more specific subject of organic farming has been selected because it is a very topical issue in Austria and it is also dealt with in agricultural schools. Thus, with my study I aim to contribute to this small overlapping field of linguistic research into agricultural language and texts as there clearly is a research gap in this area. The study aims to show that such an analysis for English courses in higher secondary schools can be valuable and may influence material production or teacher's decisions on what to teach in class.

A corpus of 120 texts has been compiled and analysed according to vocabulary and generic structure. Two software programmes are employed for studying vocabulary in the corpus, namely AntConc (Anthony 2011) and AntWordProfiler (Anthony 2012). Different types of vocabulary including high-frequency words, academic and technical vocabulary and low-frequency words are analysed as well as concordances, collocations and clusters are investigated. As reference corpus the BNC, British National Corpus, is selected in order to establish keywords. The investigation of moves is conducted manually.

The paper is divided into two broad parts. The first one includes chapters 2 to 5 and deals with theoretical concepts and the background necessary for conducting the empirical study. Chapter 2 focuses on genre theory, the three approaches to genre analysis as well as limitations of this approach. In chapter 3, the theory behind corpus-based approaches to language in use is discussed. In addition, a brief overview of ESP, English for Specific Purposes, is given. Chapter 4 describes the study settings in more detail including information on the genre under investigation, previous research, the discipline of agriculture and the educational setting. In addition, methodological issues are outlined. In chapter 5, I provide theoretical concepts that are important for the analysis as definitions of the various types of vocabulary mentioned above as well as concordance lines, collocations and clusters. The second part is concerned with the empirical study. Chapters 6 and 7 show the results of the vocabulary analysis and the move structure of agricultural abstracts respectively. Finally, in chapter 8, I combine the analysis with language teaching and learning with respect to the results obtained. I will introduce applications and implications of such a genre analysis for language teaching and learning in general as well as with respect to my teaching situation. It is investigated how results from a corpus-based genre analysis can be effectively used in an ESP teaching context.

2. Genre theory

Since it was introduced to applied linguistics, genre analysis has become a popular and useful tool, especially in recent years (Swales 2004: 3). Its potential can contribute to the understanding of language use in a variety of different genres employed in different discourse communities, academic or professional. In addition, it can be of immense power in the production of academic or professional texts, especially for students. In the process of learning how to deal with a new genre, students acquire the competence necessary to fit in professional discourse communities (Bhatia 2004: XVII).

Generally, it can be argued that genre theory “has contributed immensely to our understanding of the way discourse is used in academic, professional and a variety of other institutional contexts” (Bhatia 2004: XIV). However, it is not only concerned with the mere description of language but goes into depth when trying to account for language use in a particular setting (Bhatia 2004: 22). It can focus on lexico-grammar, discourse structures or how genres represent different cultures and their aims (Bhatia 2004: IX).

There are various approaches to genre analysis including the ESP tradition, the systemic-functional approach and the New Rhetoric school. As will be explained below, the focus in this paper is on the ESP school. This is the reason why this first chapter relies heavily on ESP genre theory. However, the other two traditions will be mentioned as well. The systemic-functional approach, for instance, defines genre in terms of “regularities of staged, goal-oriented social processes” (Martin 1993) whereas the New Rhetoric school sees it as “typification of rhetorical action” as stated by Miller (1984) (Bhatia, Flowerdew & Rodney 2008a: 10). These perspectives will be explored in more detail in section 2.1. What all approaches share is their belief that genre analysis is the “study of situated linguistic behaviour in institutionalized academic or professional settings” (Bhatia, Flowerdew & Rodney 2008a: 10). This involves offering

more complex [...] descriptions of language use, incorporating, [...] the immediate context of situation, taking analyses beyond mere linguistic descriptions to offer explanation for specific uses of language in conventionalized and institutionalized settings.

As this explanation highlights, the emphasis on conventions is the most significant characteristic of all three traditions (Bhatia, Flowerdew & Rodney 2008a: 10).

The ESP approach offers an explanation of genre that is often referred to and which is given by Bhatia (1993: 13) who defines genre, partly following Swales (1990), as

a recognizable communicative event characterized by a set of communicative purpose(s) identified and mutually understood by the members of the professional or academic community in which it regularly occurs. Most often it is highly structured and conventionalised with constraints on allowable contribution in terms of their intent, positioning, form and functional value. These constraints, however, are often exploited by the expert members of the discourse community to achieve private intentions within the framework of socially recognized purpose(s).

Bhatia's definition highlights several important aspects. Firstly, the enormous importance of the communicative purpose of a genre is stressed which seems to be "the prototypical criterion for genre identity" (Swales 1990:10). In more detail Swales (1990: 58) continues

These purposes are recognized by the expert members of the parent discourse community and thereby constitute the rationale for the genre. This rationale shapes the schematic structure of the discourse and influences and constraints choice of content and style. Communicative purpose is both a privileged criterion and one that operates to keep the scope of a genre as here conceived narrowly focused on comparable rhetorical action.

Nevertheless, others have argued against this privileged status of communicative purpose. This matter will be addressed in more detail in section 5 which will focus on some limitations of genre analysis.

Secondly, context and conventions are major factors of genre analysis in Bhatia's definition. Particular types of genres are used in specific discourse communities which

give expression to a specific set of communicative goals of a disciplinary or social institution, which give rise to stable structural forms by imposing constraints on the use of lexico-grammatical as well as discoursal resources. (Bhatia 2004: 23)

In other words, the discourse community establishes conventions that shape the use of lexico-grammatical as well as discourse features in a text (Bhatia 2001: 66).

Furthermore, a genre can constitute a medium "through which members of professional or academic communities communicate with each other" (Bhatia 2001: 65). This implies the necessity for newcomers in a community to understand the genres that are

used in order to attain success (Berkenkotter & Huckin 1995: 1). However, although conventions and constraints exist, genres are not static but develop and change over time (Bhatia 2004: 25). In addition, they are subject to exploitation by expert members. (Bhatia 2004: 25). Nevertheless, they usually conform to specific conventions which indicate some kind of genre stability (Hyland 2009: 27).

This section aimed to provide a first insight into the topic of genre analysis, its goals and why it can be employed as a useful tool. A specific emphasis has been placed on how the ESP approach views and practices genre analysis. In the next section, a more detailed description of the three approaches to genre is provided.

2.1.Approaches to genre analysis

2.1.1. The systemic functional approach

This perspective on genre analysis is also known as the Australian school or simply Sydney school (Bhatia 2004: 10). Its underlying concept is based on M.A.K. Halliday's systemic functional theory of language which is concerned with the "relationship between form, function and context" (Coffin 2001: 109). Halliday (1978: 2) particularly stresses that language needs to be interpreted "within a sociocultural context." In order to explore this relationship, analysts need to examine the ways "texts are structured and shaped [...] to achieve the goals and purposes of a particular culture" (Coffin 2001: 109). Thus, systemic functionalists are very interested in how genres "achieve their social purpose" (Martin 1993: 121).

As already mentioned, Halliday stressed the importance of the relationship between language and context (Martin 2001: 151). The social and cultural context plays a decisive role in determining a text's form, use and function (Kress 1993: 27). Two different types of context can be distinguished. On the one hand, the context of culture refers to the immediate situation of linguistic behaviour and on the other hand the context of situation is more general and gives meaning to an utterance or text (Eggins 1994: 30). This implies that analysts should not only describe the language and the context of situation but also the context of culture in which a text is produced (Martin 2001: 152).

J.R. Martin, another very influential researcher in the field of systemic functional linguistics, has “developed theories of genre within a systemic functional framework” (Hyon 1996: 697). According to him, genre is “a staged, goal-oriented, purposeful activity in which speakers engage as members of our culture” (Martin 2001: 155). He highlights the fact that genres are specific to cultural circumstances and environments (Martin 2001: 161) as he clearly points out that a text cannot be understood unless the reader knows its social context (Martin 2001: 163). Martin’s definition has great impact on the systemic functional tradition to genre as it “has provided the basis” for this approach (Kay & Dudley-Evans 1998: 309). In summary, genres are social processes and the patterns of texts adhere to “patterns of social interaction in a particular culture” (Cope & Kalantzis 1993:7).

This tradition can be regarded as “an educational application of the systemic functional linguistics of Halliday and his followers” (Freedman & Medway 1994: 9). It was first applied to teaching in Australia in the 1980s (Johns 2002: 5) and “had a profound impact upon Australian literacy education” (Johns 2002: 6). Analysts in this tradition mostly focus on children and teenagers in primary and secondary school. However, they also started to pay attention to “adult migrant English education and workplace training programs” (Hyon 1996: 699). In addition and in contrast to the other schools that will be mentioned below, this tradition has developed several models for explicitly teaching genre in schools (Hyon 1996: 704).

The two focal points of this approach are the schematic structure and the lexico-grammatical aspects of texts (Bruce 2008: 13). Schematic structure, the way a text is composed and structured by its different parts, shapes a text and indicates which elements are obligatory and how these elements are ordered (Coffin 2001: 110; Eggins 1994: 36). In addition, analysts are also interested in the political sphere, which they relate to education (Freedman 1994: 191). They believe that students need to have “control over the kinds of texts that are relevant to their educational and wider social needs, particularly those texts that can be considered as institutionally powerful” (Coffin 2001:109). Therefore, the genre approach can be used for helping to achieve equality in education. Especially people who are somehow marginalised can benefit as they can discover “hidden cultural agendas and linguistic wiles of discourse unfamiliar to them” (Cope & Kalantzis 1993: 18).

2.1.2. The New Rhetoric approach

Another approach to genre is the New Rhetoric school, which was highly influenced by Carolyn Miller's (1984) essay *Genre as social action* (Paltridge 2001: 2). Miller (1984: 31) proposes that genres are "typified rhetorical actions based on recurrent situations".

Various scholars and researchers stress the importance of context in this tradition. It is for instance said that genre "acquires meaning from situation and from social context" (Miller 1984: 37). Cultural and institutional contexts are of greater importance than the formal features of a text (Paltridge 2001: 2). The focus lies on the belief that genres are "social processes that correspond to (and also construct) recurring situations" (Coe 1994: 184). Thus, this perspective "has led to considerable theorising and research about contexts and ideologies" (Johns 2002: 10). Generally it can be argued that the context and purpose of a particular genre has been given a great deal of attention in this tradition (Hyon 1996: 696, Flowerdew, L. 2005: 323).

Compared to the other two approaches, this tradition pays attention to theory and research rather than to education (Coffin 2001: 111). Analysts tend to think that "learning a new genre is not a conscious process" (Coffin 2001: 113). Thus, it does not focus much on teaching learners the exact form of a text but on how "university students and novice professionals" can be enabled to "understand the social functions [...] of genres and the contexts in which these genres are used" (Hyon 1996: 698). While the systemic functional approach above is concerned with primary and secondary school settings, the New Rhetoric is more interested in L1 teaching (Hyon 1996: 704) and "postsecondary students and workplace writers" (Coe 2002: 199). Although analysts do not provide any explicit frameworks for teaching in classrooms, some researchers have focused on this matter in recent years (Hyon 1996: 703), emphasising that students need to learn about and understand the situation and the context of a text (Coe 2002: 198).

2.1.3. The ESP approach

As already mentioned in the introduction, genre analysis has also emerged in the field of English for specific purposes (ESP) (Dudley-Evans 1994: 219). Prominent researchers in this field include Swales (1990), Bhatia (1993) and Dudley-Evans (1994) (Coffin 2001: 112). As could be seen above, this tradition defines genre as including “a class of communicative events, the members of which share some set of communicative purpose” (Swales 1990: 58). Hyon (1996: 695) describes genres as “text types defined by their formal properties as well as by their communicative purpose within social contexts.” John Swales’ (1981, 1990) work on scientific articles and his theory of move structure is of particular importance in this approach as it forms its basis (Johns 2002: 7, Paltridge 2001: 2).

According to the ESP perspective, genres are used for “achieving a communicative goal that has evolved in response to particular rhetorical needs”, which indicates the importance of “the means by which a text realizes its communicative purpose” (Dudley-Evans 1994: 219). As a result, communicative purpose is seen as an important criterion that can distinguish one genre from another one (Coffin 2001: 112, Dudley-Evans 1994: 219). Texts are analysed in terms of their moves, which capture the structure or organisation of a text, and each move “is identified by reference to its perceived communicative functionality” (Coffin 2001: 113). In other words, moves can “classify segments of text according to their prototypical communicative purpose for a particular genre (Flowerdew, L. 2005: 323). In addition, moves are connected to “linguistic features which are commonly employed for their realization” (Bruce 2008: 34). One of the first examples of a move analysis is Swales’ (1990) CARS, i.e. Create a Research Space, model for structuring article introductions. He established three main moves, namely “establishing a territory”, “establishing a niche” and “occupying the niche” (Swales 1990: 141).

Another essential notion that needs to be dealt with here is the discourse community which is especially relevant in an ESP genre context (Dudley-Evans 1994: 220). According to Swales (1990: 9), discourse communities are “sociorhetorical networks that form in order to work towards sets of common goals” and members of a specific discourse community are familiar with a specific genre used to achieve these goals. Furthermore, people of the same discourse community share certain beliefs and values

(Hyland 2009: 47). Writers also have to follow certain conventions that are constructed in a community. These conventions “restrict how something can be said and authorize the writer as someone competent to say it” (Hyland 2009: 48). The members of such communities agree on these conventions and on “certain ways of doing things and using language” (Hyland 2009: 49). As Berkenkotter and Huckin (1995: 4) point out, “what content is appropriate to a particular purpose in a particular situation at a particular point in time” is agreed upon by community members. This indicates that “academics attempt to embed their [...] writing in a particular social world which they reflect and conjure up through discourses which others expect and anticipate” (Hyland 2009: 47).

Studies in this field have a great impact on teaching ESP (Paltridge 2001: 2) because genre analysis in this tradition is largely concerned with educational perspectives (Coffin 2001: 112). In addition, it focuses primarily on language learners who are not native speakers of English (Coffin 2001: 112) in order to help them acquire the functions and conventions of a text “that they need to read and write in their disciplines and professions” (Hyon 1996: 698). In other words, the results of genre analyses can be helpful for “teaching the spoken and written language required of nonnative speakers in academic and professional settings (Hyon 1996: 695). Although there is still a general lack of materials for implementation in classroom, some researchers, such as Swales (1990) and Bhatia (1993) (Hyon 1996: 702) as well as Swales and Feak (2009), have provided some ideas.

2.1.4. Similarities and differences

The three approaches to genre analysis mentioned in the previous sections differ in some regards but they also share some similarities.

One of the greatest differences relates to how the concept of genre is defined (Paltridge 2001: 12). The systemic functional approach sees genre as “a kind of text, such as a description, procedure, or exposition” whereas in the New Rhetoric tradition, genres are “events or social actions that help people interpret and create particular texts” (Paltridge 2001: 2). In ESP, genre is seen as “a class of communicative events, such as [...] a seminar presentation, a university lecture, or an academic essay” (Paltridge 2001: 2).

The different schools can also be grouped according to the subject of analysis. On the one hand, the ESP and the systemic functional approach examine structural elements in a text and “make statements about the patterning of these elements” (Paltridge 2001: 12). On the other hand, the New Rhetoric tradition examines “social, cultural, and institutional contexts of particular genres” rather than formal features (Paltridge 2001: 2). In particular, it aims to reveal the relationships between a text and its context (Freedman & Medway 1994: 9). However, context is seen as an important aspect in all three approaches. (Paltridge 2001: 13). In summary, the ESP as well as the systemic functional school offer useful “insights into the linguistic features of written texts” whereas New Rhetoric concentrates more on “institutional contexts around academic and professional genres and the functions genres serve within these settings” (Hyon 1996: 693).

All three approaches “have developed genre-based pedagogy in different directions and with different goals and educational sites in mind” (Hyon 1996: 698). There are major differences between on the one hand the systemic functional and the ESP school and on the other hand the New Rhetoric. The first two perspectives approach genre analysis linguistically and are more closely related to teaching (Hyland 2009: 26). The ESP approach focuses primarily “on the tertiary level and beyond” as it aims to “enable students to produce the genres required in their academic professional study” (Kay & Dudley-Evans 1998: 310). In contrast, the Australian School focuses on pupils in school and aim to “provide equal access to the genres needed to function fully in society” (Kay & Dudley-Evans 1998: 310). In New Rhetoric, analysts focus on “composition studies and professional writing in an L1 context” rather than addressing non-native speakers who are the focus in the ESP approach (Flowerdew, L. 2005: 323).

Flowerdew (J. 2002: 91) puts it in a nutshell when explaining that

ESP and the Australian school take a linguistic approach, applying theories of functional grammar and discourse and concentrating on the lexico-grammatical and rhetorical realization of the communicative purpose embodied in a genre, whereas the New Rhetoric group is less interested in lexico-grammar and rhetorical structure and more focused on situational context – the purpose and functions of genres and the attitudes, beliefs, values, and behaviors of the members of the discourse communities within which genres are situated.

This section described the three different approaches to genre analysis as well as the major differences and similarities between them. Especially the ESP approach to genre will be of importance for the present paper because as the name of this approach suggests, it is interested in how genre analysis can be applied especially to teaching situations in the field of English for specific purposes (Hüttner 2007: 25). Although this paper will be concerned with secondary schools in Austria and not university education, the field of ESP teaching is still of relevance here as in my case, students of these schools are taught English for specific purposes too. In relation to this, Bhatia's (1993) and Hüttner's (2007) models of the analysis of genres will therefore be explained in the next section.

2.2.A model of analysing genres

Bhatia (1993) established seven steps that are worth considering when conducting a genre analysis of a given academic text type. Although Bhatia's (1993) approach is rather comprehensive and widely used, one further and more recent approach that extends this model will be mentioned. Hüttner's (2007: 107-108) extended genre analysis basically adopts Bhatia's (1993) model but adds some innovations to it.

This more recent model views "formulaic sequences as co-constitutive of genres" (Hüttner 2007: 97). It is based on the belief that "some formulaic sequences are typical of specific speech events or genres in that they occur predominantly in these" (Hüttner 2007: 97). Therefore, the examination of these sequences should constitute an "integral part of genre analysis" (Hüttner 2007: 97). A more detailed account of formulaic language will be given in chapter 5, which deals with theoretical concepts employed in the analysis. As I will follow this model in the analysis, an outline is given below; Bhatia's original steps are given in ordinary font while italics are used for the innovations proposed by Hüttner.

1. Place genre or *genre constituent* in a situational context

A genre analysis starts with situating a particular genre in its context. This can be accomplished by the writer's experiences and knowledge about a specific field and its conventions, by indications in the text and by one's knowledge of the world. It is clear that members of a certain academic or scientific community have greater background knowledge and experience of the field they are working in. Nevertheless, also someone

outside a specific community can gain knowledge by surveying literature. Therefore, analysts need to consider how much they already know about the discipline or field they investigate and which information they are still missing (Bhatia 1993: 22). The term *genre-constituent* is used to “define clearly distinguishable parts of genres, for instance, introductions in academic papers [...], where a clear communicative purpose can be identified” (Hüttner 2007: 102). Thus, it is necessary to find out if the genre investigated is a genre on its own or a genre constituent of a wider genre.

2. Survey existing literature

According to Bhatia (1993: 22-23), four relevant fields of literature should be surveyed. Firstly, knowledge of the linguistic analysis of the genre in questions as well as similar genres is needed. Secondly, it is important to be informed about the methods and theories of genre analysis in general. Thirdly, writers should familiarise themselves with the relevant speech community by reading manuals or guide books. Lastly, they should be acquainted with the discussions of beliefs and goals in the particular community.

3. Select a corpus of genre texts *identified as belonging to one genre (or genre-constituent) by the relevant discourse community*

In order to be able to conduct a genre analysis, it is essential to think about the size and type of the corpus. These aspects depend to a great extent on the researcher’s aims and objectives. A corpus can either include only a few texts that are analysed in detail or many texts in order to investigate a few features only. Furthermore, the genre has to be defined in order to be distinguishable from similar genres. This definition reflects the communicative purpose, the situational context or the textual features. Therefore, criteria should be established on which basis it can be decided whether a text belongs to a specific genre or not (Bhatia 1993: 23-24). Hüttner (2007: 108) adds that researchers should collect “only exemplars that are classified as belonging to the genre” by the discourse community, whether they are good or bad examples does not play a role at this stage.

4. *Establish position of genre (constituent) within discourse community, addressing also questions of hierarchical position of producers*

Step 4 involves two points to bear in mind. Firstly, it is necessary to find out how important or relevant a given genre is for its users and secondly “it is also vital to establish the hierarchical position of the producers of the genre in question” (Hüttner 2007: 109). These two factors give “insights in how far it is relevant to teach the genre in question to students (Hüttner 2007: 109-110).

5. Levels of linguistic analysis

There are three levels of linguistic analysis and the researcher needs to decide on which of them the most significant features of language can be found. The analysis can address lexico-grammatical features, text-patterning or structural features of the genre.

Afterwards the analysis can be conducted with a focus on one or more of these three levels (Bhatia 1993: 24).

- a. *If genre-constituent, define larger genre it is a constituent of*

Before conducting the analysis, Hüttner (2007: 110) proposes that if a genre-constituent has been chosen for analysis, then the whole genre and its communicative purpose need to be considered as well.

- b. Define genre structure

- i. *Phase one: distinguish between core and optional moves based on quantitative analysis*

This level of analysis examines the structure of a genre. This is of importance because expert writers tend to be “fairly consistent in the way they organize their overall message” (Bhatia 1993: 29). Thus, by analysing the structure of a genre, one can find out the “preferred ways of communicating intention” (Bhatia 1993: 29). In other words, the structure of the genre, i.e. the moves, needs to be analysed by “identifying specific communicative intentions as realised through text in the exemplars under investigation” and the researcher needs to distinguish between core and optional moves (Hüttner 2007: 110). Core moves are “constitutive of the genre in question” and optional moves are “those that occur in a genre text, but whose absence might not matter” (Hüttner 2007: 110). The issue of move analysis will be considered in chapter 4 in more detail.

ii. *Phase two: refine quantitative model through incorporation of information from members of discourse community*

After the move analysis has been conducted, additional information on the moves from the discourse community in question should be obtained “in order to refine and confirm their status” (Hüttner 2007: 110).

c. *Analyse lexico-grammatical features including use of genre-specific formulaic sequences*

This level concentrates on specific features, i.e. syntactic properties, which occur with a high frequency in the given genre. This analysis is best carried out by applying a quantitative statistical methodology (Bhatia 1993: 24). It is explicitly concerned with surface features of a text. In addition, genre-specific formulaic language is being identified which refers to “recurring sequences within the genre” that “help to characterise the genre” (Hüttner 2007: 110).

d. *Analyse text-patterning or textualisation*

This level of analysis tries to investigate how “members of a particular speech community assign restricted values to various aspects of language use [...] when operating in a particular genre” (Bhatia 1993: 26). This level is particularly interesting because it moves from mere descriptions to explanations. A linguistic feature that is analysed is more interesting in terms of which “aspect of the genre it textualizes” (Bhatia 1993: 27).

e. *Analyse genre-functional formulaic sequences*

Genre-functional formulaic language is investigated in this step. These are “sequences within a particular move, which further a particular communicative intention on the part of the speaker or writer” (Hüttner 2007: 111).

f. *Establish and refine communicative purpose in bottom-up way*

Finally, the communicative purpose of the genre in question is defined, again in accordance with the discourse community (Hüttner 2007: 111).

6. *Elicit information on effects, acceptability and appropriacy of linguistic realisations as perceived by members of the discourse community*

After the linguistic analysis, in step 6, more information from the discourse community is collected which can help the researcher to “decide whether atypical examples are still acceptable to the discourse community” (Hüttner 2007: 111).

7. *Establish sets of relationship of genre to other genres*

a. *Establish ‘genre-set’*

Following Devitt (1991), researchers need to explore which position the genre takes in “the professional lives of the members of the relevant discourse community” (Hüttner 2007: 103-104).

b. *Establish ‘genre- (constituent)- colony’*

The term genre-colony is used here as a “grouping of genres relevant to the same or closely related discourse community, and is defined as containing overlaps in some of the core communicative intentions realised” (Hüttner 2007: 102). Hüttner (2007: 102) gives the example of business reports

where the overriding communicative purpose is to report on an aspect of business, but there are differences in that either an external or internal audience can be addressed, resulting in an additional promotional purpose for an external audience. Also various aspects can be reported upon, such as sales, products, performance and so on.

8. *Obtain feedback and further information on analysis by members of discourse community*

In this step, the genre analyst is advised to speak with an expert of the discipline or field in question in order to obtain his or her opinion. This can be very helpful for the analyst and beneficial for the whole analysis (Bhatia 1993: 34).

After having explained Hüttner’s (2007) model based on Bhatia (1993), the next section explores another important matter. As one part of this paper investigates how such a genre analysis can influence teaching English for specific purposes, it is necessary to outline some important points regarding the relationship between genre and teaching and learning. Thus, the next section focuses on how genre analysis can be related to ESP teaching.

2.3. Implications of genre analysis for language teaching and learning

The main aim of genre analysis is to influence language teaching positively, especially in the field of English for specific purposes (Paltridge 2001: 2, Kay & Dudley-Evans 1998: 308).

Language teachers still need to take into account various factors. It is argued that it is not beneficial for students to concentrate only on rhetorical structure, grammar or lexis. Students also should not be given “the impression that texts will always follow a prototypical pattern” (Flowerdew, J. 2002: 99). Instead, students need knowledge of the sociocultural context, the purpose and the audience of a text as well as the expectations of a discourse community. This is essential in order to be able to understand academic genres (Paltridge 2001: 45, Bhatia 1993: 39-40). In addition, it is also necessary for learners to be aware of and understand the conventions of the genre in question (Bhatia 2001: 75). This helps students to realise “what they can appropriately write or talk about in the particular genre” (Paltridge 2001: 57) and to understand why they “should write an essay or [...] professional text in a particular way” (Bhatia 1993: 156). Thus, genre can be seen as a powerful tool which “enables students to enter a particular discourse community” (Kay and Dudley- Evans 1998: 309).

Especially in the field of ESP, genre analysis can be employed as a helpful tool for both teachers and students (Bruce 2008: 26). There are often specific “work [...] related purposes” and the “English course can be oriented towards achieving control of the relevant [...] genres” (Painter 2001: 172). However, if teachers only present a small number of genres or not appropriate ones, student will not benefit from such an approach (Berkenkotter & Huckin 1995: 160-161). This is the reason why teachers should be “aware of the genres their students need to be able to understand and produce, and make use of the work available” (Kay & Dudley-Evans 1998: 312). Therefore, the contact between teachers in schools and researchers in the field of genre analysis seems to be of major importance (Kay & Dudley-Evans 1998: 313).

Summarising, it can be argued that a genre-based approach has the potential to provide students with knowledge of “the structure and purpose of the texts of different genres” and “the strategies necessary to replicate these features” (Kay & Dudley-Evans 1998: 309). It can therefore be considered helpful for learners as it “gives them confidence, and enables them to produce a text that serves its intended purpose” (Kay & Dudley-Evans 1998: 310).

This section has provided some implications of genre analysis for teaching and learning as well as some aspects that teachers need to be aware of. In the last section of this chapter, a brief discussion of some limitations and weaknesses of genre analysis is provided; some of them are of general nature, some of them specific to teaching.

2.4.Limitations of the genre approach

Researchers in the field of genre theory should be aware of the advantages it offers but more importantly also of the disadvantages in order to make the most of their analyses. As I am on the one hand concerned with an ESP setting and on the other hand aiming to investigate one specific genre in one particular discourse community, the genre analysis approach as described above offers an excellent opportunity for analysis. Having said that, here are some of the limitations or problems that people encountered and that researchers should bear in mind when conducting a genre analysis.

One difficulty concerning the teaching of a particular genre could be to find out about the social and cultural knowledge surrounding it. This constitutes a huge problem for teachers who are not familiar with a genre or discourse community themselves. In addition, it can be a problem to find authentic examples of a particular genre (Paltridge 2001: 23). This relates to the notion of simplification vs. authenticity, as outlined by Bhatia (1993: 145). Simplification often takes place in the context of language teaching. It refers to the strategy of altering an academic text in order to make it simpler and easier to understand for learners. The question if this still constitutes a genuine academic text remains (Bhatia 1993: 23). It is therefore suggested that teachers should try to obtain a thorough understanding of genre specific language as well as its setting (Paltridge 2001: 126).

A further problem relates to the exploitation of genre conventions. It has been claimed that “those who are really innovative [...] are those who break conventions, not those who reproduce them” (Cope & Kalantzis 1993: 15). This might suggest that the teaching of genre conventions does not make sense. However, it is also argued that innovations and the exploitation of genre conventions can only take place when these constraints have been learnt before (Cope & Kalantzis 1993: 16).

A more general issue concerns the concept of communicative purpose which is often regarded as “an important and often primary criterion for deciding whether a particular discourse falls within a particular genre category” (Askehave & Swales 2001: 195). However, this may be dangerous as it “has assumed a taken-for-granted status, a convenient but under-considered starting point for the analyst” (Askehave & Swales 2001: 195). It has been claimed that different experts in a discourse community may attribute distinct purposes to a genre. This indicates a lack of general agreement on the purpose (Askehave & Swales 2001: 198). In addition, “assigning communicative purpose to a text” is not always easy but can be a difficult task which takes a great deal of time on part of the researcher (Askehave & Swales 2001: 198).

Askehave and Swales (2001: 207) therefore propose that

it would be prudent to abandon communicative purpose as an immediate or even a quick method for sorting discourse into generic categories, even if the analyst can and should retain the concept as a valuable – and perhaps unavoidable – long-term outcome of the analysis.

In this chapter I have outlined the concept of genre as well as how genre analysis has developed as a result of discourse analysis. In addition, I have provided a survey of the three most important approaches towards genre analysis and examined the pedagogical potential of genre in classrooms. Finally, I have looked at some problems and issues the analyst might encounter. As a final point it can be suggested that genre analysis often works as a useful tool which is employed in order to get a description as well as an “explanation of language use in academic and professional contexts” (Bhatia, Flowerdew & Jones 2008b: 163). In the next chapter I will focus on two issues that are of further importance for the analysis in this paper, namely corpus-based approaches and ESP.

3. Corpus work and ESP

In addition to possessing knowledge about the theoretical framework of genre analysis, it is important to be familiar with corpus-based approaches to language in use as this forms the methodology and the basis for the analysis of my sample texts. This chapter focuses therefore on corpus linguistics in general as well as how it can be related to language teaching and learning, in particular in an ESP context. The notion of ESP and EAP will also be considered in this chapter. In addition, the combination of genre analysis and corpus linguistics will be explored as well as how corpora can be exploited and finally, some limitations will be considered.

3.1. The concept of *corpus*

Generally speaking, working with corpora can enable researchers in linguistics to explore and describe language features (Breyer 2011: 26) which recur in a particular language or language variety (Gavioli 2005: 5). With this method, “many new and surprising facts about language” can be encountered (Stubbs 2007: 127).

Various researchers have developed definitions of what a corpus is. One of them is proposed by O’Keeffe, McCarthy and Carter (2007: 1) who define a corpus as a “collection of texts, written or spoken, which is stored on a computer” and which can be analysed using special software programmes. Another important aspect of corpora is that the language assembled in them is usually naturally occurring (Hyland 2009: 28). However, corpora are not any randomly collected pools of texts as there are certain criteria for selecting texts for a corpus (Breyer 2011: 22-23).

A question that has often been addressed when dealing with corpora and corpus work concerns the ideal size of a corpus. Without going into detail here, it can be said that the purpose of the research determines the size of the corpus and “the more particular the research question and the more limited the context, the smaller a corpus can be” while still being seen as representative (Breyer 2011: 25).

In sum, a corpus can be seen as a collection of authentic texts which are machine-readable and “sampled to be [...] representative of a particular language or language variety” (McEnery, Xiao & Tono 2006: 5). It can be of different size, requires specific

software for analysis and its texts are selected according to certain criteria. After having clarified what a corpus is, the question of how corpora can be integrated into language teaching and learning will be raised. Thus, in the next two sections the connection between corpora and language teaching and more specifically ESP will be explored.

3.2. Corpora and language teaching

It has been argued that corpus work and its tools have “significant impact on language education” and its potential for language learning and teaching is considerable within language pedagogy (Breyer 2011: 41). Corpora can be useful for language teachers and learners in many different ways. However, there are two main distinctions how corpora can affect language teaching and learning. They can be employed either directly or indirectly in classrooms (Breyer 2011: 12).

Firstly, the results of a corpus-based analysis can be used indirectly in teaching and learning a foreign language. This can take the form of using these findings for the creation of dictionaries and grammars which in turn are beneficial for learners (Breyer 2011: 12). They can also be useful in designing a syllabus for a language course (Johansson 2009: 39), which means that they form the “basis for selecting [...] linguistic content” and for deciding which features are important to include in a foreign language learning classroom and which features to include into textbooks or the curriculum (Tsui 2004: 40).

Secondly, corpora may also be used directly in the classroom. Corpora can be a helpful tool for students when exploring and working with them in classroom, which can be called data-driven learning (DDL) (Hunston 2002: 170). The teacher can either prepare and adapt concordance lines in advance which can then be given to the students to work with in class or allow “them access to corpora and concordancing software to carry out their own searches” (Chambers 2010: 345). The latter takes the form of students being researchers themselves and working with collections of texts and concordance programmes in order to find patterns of language (Bernardini 2004: 21). In addition, the results of a corpus analysis can be used to design teaching materials which can be given to students for exercising vocabulary (Hunston 2002: 177). Using corpora for the preparation of material enables teachers to select specific lexical items that are either frequently used in a corpus or difficult for learners to understand (Hunston 2002: 179).

These uses of corpora for language learning show that students can benefit tremendously from corpus-based results. In fact, not only learners can profit from a corpus-based approach, also teachers can benefit when using corpora as their “language awareness” can be raised (Tsui 2004: 42) and their “sensitivity to linguistic features and patterns” strengthened (Tsui 2004:39). In particular, when teachers have problems explaining synonyms or certain lexical items or phrases that can be used in different ways, corpora can be useful reference tools (Tsui 2004: 39). However, one of the problems that teachers are facing is the “limited availability of ready-to-use corpus teaching materials” (Breyer 2011: 105). This is the reason why teachers often have to “create their own materials”, which indicates that they have to create a corpus on their own, learn how to use computer software and produce exercises and worksheets themselves (Breyer 2011: 106). This can obviously be a rather time-consuming task. Therefore, it would be an enormous improvement for teachers if more material was already available for classroom work (Breyer 2011: 106).

3.3. Corpora in ESP teaching

Especially teachers of ESP started to be interested in corpus analysis and its pedagogical potential (Bernardini 2004: 21). Before proceeding to explore the connection between ESP and corpus work, it is first of all necessary to give an explanation of the notion of ESP itself.

3.3.1. English for Specific Purposes

As the name already indicates, ESP is the “study of the English language in specialized contexts and fields of knowledge, such as medicine, engineering, business and the like” (Gavioli 2005: 5). According to Dudley-Evans and St. John (1998: 4-5), ESP courses should “meet specific needs of the learner”, it should integrate “activities of the discipline it serves” and it is centred on “the language (grammar, lexis, register), skills, discourse and genres appropriate to these activities.” These features already indicate that ESP courses are always closely tied to the context and the special needs of the learners. These courses are often created for adult learners and most of them address intermediate and advanced learners who already possess “basic knowledge of the language system.” However, it has been noted that ESP is not only being taught at the

tertiary level but “increasingly also at secondary level” (Hüttner, Smit & Mehlmauer-Larcher 2009: 99). Austria is an excellent example as

ESP is an obligatory subject for nearly 65% of all students, who attend vocational upper-secondary schools and colleges with specializations ranging from information technology to nursing. (Hüttner, Smit & Mehlmauer-Larcher 2009: 99-100)

According to Dudley-Evans & St. John (1998: 5) as well as McDonough (1998: 157), ESP can be classified into two main branches, EAP (English for Academic Purposes) and EOP (English for Occupational Purposes), which can then again be divided into several areas. On the one hand, EOP “refers to English that is not for academic purposes; it includes professional purposes [...] and vocational purposes (Dudley-Evans & St. John 1998: 7). On the other hand, EAP, which is a fuzzy and very broad concept, covers “all areas of academic concern” including the area of teaching with textbooks and lectures as well as the area of research with articles, reports or grant applications (Bhatia 2002: 28). Journal articles definitely fall under the category of EAP and as abstracts are part of them, EAP is the relevant branch for this study (Hyland 2006: 1).

According to Jordan (1997: 3), EAP can be subdivided into ESAP (English for specific academic purposes) and EGAP (English for general academic purposes). The former refers to language that is specific to one subject and includes “the language structure, vocabulary, the particular skills needed for the subject, and the appropriate academic conventions” whereas the latter refers to a more general academic style (Jordan 1997: 5).

Despite this classification system, it is necessary to point to the “fluid nature of the various types of ESP teaching and the degree of overlap between” them and General English classes. Therefore, Dudley-Evans and St. John (1998: 8-9) suggest a continuum “that runs from clearly definable General English courses through to very specific ESP courses.” In addition, Hutchinson and Waters (1987: 16) point to the fuzzy boundaries between EAP and EOP when stressing that it

is of course not a clear-cut distinction: people can work and study simultaneously; it is also likely that in many cases the language learnt for immediate use in a study environment will be used later when the student takes up, or returns to, a job.

3.3.2. General and specialised corpora

According to Hunston (2002: 14), a “corpus is always designed for a particular purpose, and the type of corpus will depend on its purpose.” Two types of corpora are of importance when conducting research into a particular genre of a specific field. These include general and specialised corpora, which are outlined below.

General corpora include many different genres and can either be composed of written or spoken language or both (Hunston 2002: 14). They contain “as wide a spread of texts as possible” (Hunston 2002: 15) in order to represent a whole language or language variety as appropriately as possible (McEnery, Xiao & Tono 2006: 15). General corpora are usually of much bigger size than specialised ones and small specialised corpora can be compared to them. In this case, general corpora can also be called reference corpora. In contrast to general corpora, specialised corpora are usually specific to one domain or one genre (McEnery, Xiao & Tono 2006: 15). In addition, they mostly contain texts with the same or similar topics (Gavioli 2005: 7). They also do not need to be as large as general corpora because they are “carefully targeted” and are “more likely to reliably represent a particular register or genre than general corpora” (Koester 2010: 69).

Specialised corpora are particularly relevant for ESP teaching “where such small, easy-to-collect specialized language samples were in many senses considered precisely what was needed” (Gavioli 2005: 55). In ESP courses, where a particular specific purpose forms the basis of the course, it is much more useful to exploit a small corpus that is taken from the specific field of study (Flowerdew, J. 2001: 72). One of the advantages of small corpora in this area is that they “can be easily compiled and analysed” (Bondi 2001: 158), also by teachers themselves and they can be used “for more effective materials and course design” (Bondi 2001: 158-159). In particular, they are helpful for “isolating and providing indications about key lexical, grammatical or textual issues to deal with in ESP classes” (Gavioli 2005: 5). Finally, corpus work can be of particular value in an ESP teaching situation because some very specialised fields often lack textbooks (Breyer 2011: 57).

In sum, specialised corpora can be valuable and more useful than large general corpora if a researcher is interested in one specific genre or discipline (McEnery, Xiao & Tono 2006: 61) as they “allow for a much thorough understanding of how language is used in particular contexts or in particular genres” (Upton & Connor 2001: 326).

3.3.3. Corpora and lexis

As corpus work gives lexis an important status in the description of language, the centrality of teaching lexical features and collocations has been reconsidered in teaching (Gavioli 2005: 58). As Gavioli (2005: 58) points out

A particular interesting potential of specialized corpora in ESP description and teaching is that concerning vocabulary. The use of technical lexis (and the concepts related to it) has in fact constituted a “burning issue” in ESP teaching and learning.

This quotation highlights the significance of lexical features in specialised collections of texts as technical vocabulary can be examined, which is an important issue for teaching ESP in various specialised fields (Gavioli 2005: 58). Corpora can give researchers or teachers an “idea of which recurrent lexical items are used in a given collection of texts” (Gavioli 2005: 59). In more detail, specialised corpora can generate lists of words that “characterize the specialized texts in question” and these “items may constitute a basis to select language features to be included in ESP syllabuses” (Gavioli 2005: 23).

A corpus-based analysis can also be very helpful regarding phraseology because it can be used to examining idioms (Gavioli 2005: 49) as well as formulaic language which is convenient for language learners (Kennedy 2007: 157). Especially the functional aspect of these formulaic sequences is essential in “research which attempts to inform teaching practice” (Hüttner 2007: 98). With English being used as a lingua franca,

learners are motivated by becoming functionally competent in the genres they need for their professional lives. This includes competence in the use of relevant language patterns, including genre-functional formulaic sequences [...]. (Hüttner 200: 98-99)

Therefore, corpora are “an invaluable research and teaching tool for vocabulary” as they enable researches as well as teachers to gather lexical items in a specific academic or professional field (Dudley-Evans & St. John 1998: 84-85). However, results should not be generalised for a wider field (Gavioli 2002: 294). They should not “be projected onto general language use” as they are only valuable for a specific domain (Breyer 2011: 29).

3.3.4. Corpora, ESP and genre

Corpus analysis can be very fruitful when linked to genre analysis as it enables the researcher to explore the use of “typical phraseologies used in certain academic genres” (Gavioli 2005: 56). Handford (2010: 256) even goes as far as to point out that a complementary combination of corpus and genre is a logical and desirable development in discourse analysis: corpora have much to say about language, but they can be lacking in contextual interpretability; genres are intrinsically contextual entities, but their linguistic features may be under-exposed.

The positive connection between corpus-based and genre-based analysis in ESP is also stressed by Flowerdew (L. 2005: 321), who speaks of genre-based corpus studies, and argues that in recent years, “several corpus studies have been carried out which [...] draw on aspects of genre theory for their analyses.”

Examples of such genre-based corpus studies have been conducted for instance by Henry and Roseberry (2001) or Upton and Connor (2001) whose work “can be considered as firmly based in the ESP genre camp” (Flowerdew L. 2005: 325). Henry and Roseberry (2001), for instance, examined linguistic features occurring in different moves by comparing the genres of letter of application and introductions to guest speakers. This shows a combination of analysing moves and studying lexico-grammatical features. Another study which combined corpus and genre analysis, by Flowerdew and Dudley-Evans (2002), analysed editorial letters and used corpus tools as frequency lists and concordance lines in order to find “interpersonal features within various moves structures” (Flowerdew L. 2005: 326). These studies focused on lexical and grammatical features “in discourse- based moves structures” (Flowerdew L. 2005: 327). This combination of analysing moves and lexico-grammatical features of a text can give a “very precise (and well-contextualised) linguistic specification of an exemplar of a genre” (Tribble 2002: 144).

Thus, genre analysis and corpus work can profit from each other (Flowerdew L. 2005: 329-330). Following Hunston (2002: 198), Gavioli (2005: 56) emphasises that in particular students can benefit from a corpus-based genre approach as they can “be made aware of [...] salient features which characterize such genres.”

This section explored how corpora can be applied in language teaching, especially ESP. In addition, the aspect of lexical features in connection with corpus work as well as the relationship between corpora and genre analysis has been described. The next section will focus on how corpora can be exploited and which information can be retrieved from them.

3.4. Exploitation of corpora

Software programmes are necessary tools when conducting a computer based corpus analysis (Hunston 2002: 20). One of the greatest advantages of these software tools is that they enable researchers to analyse language in terms of quantity by providing “statistics on the frequency and patterns of occurrence of linguistic items” (Breyer 2011: 1). Researchers can explore frequencies and in addition, corpus work sheds light on “the ways features associate with each other in collocational patterns” (Hyland 2009: 29). Corpora can be invaluable in this respect as the intuition of a native speaker alone is often not reliable enough, especially in a teaching situation. Therefore, corpora can be a great help in explaining certain lexical phenomena (Hunston 2002: 20).

When applying results from a corpus analysis, the information gained from a frequency list can be of use for designing syllabuses or teaching materials (Evison 2010: 125) and it can help to decide “which lexical items to teach and which to ignore” (Scott 2001: 54). However, information concerning frequency is “not automatically pedagogically useful” (Kaltenböck & Mehlmauer-Larcher 2005: 78). Therefore,

pedagogic decisions in language teaching should take into account not primarily frequency of occurrence but other factors such as learnability [...], cognitive salience and generative value. (Kaltenböck & Mehlmauer-Larcher 2005: 77)

Besides frequency lists, concordance lines are of interest as researchers often claim that the “meaning of a word is closely associated with its co-text” which implies that sometimes “the meanings of words are distinguished by the patterns or phraseologies in which they typically occur” (Hunston 2002: 46). These patterns can be observed in concordance lines (Hunston 2002: 46). Phraseology is of particular importance in corpus analyses because they can often provide a more reliable explanation of this phenomenon than a native speaker’s intuition (Hunston 2002: 20).

The issues of frequency and phraseology will be examined more closely in chapter 5, when describing the theoretical prerequisites for the empirical study in more detail. The final section of this chapter looks at some limitations of corpus-based approaches.

3.5.Limitations

As is the case with genre analysis, there are also limitations to corpus-based approaches. It is necessary to consider not only the strengths but also weaknesses of corpora and computer software in order to link them successfully to a language teaching setting (Kaltenböck & Mehlmaucher-Larcher 2005: 65). In this section, some of these limitations will be outlined.

Firstly, corpora “can give evidence but cannot give information” which indicates that a corpus has the ability to offer many examples. However, only human beings are able to give interpretations of these instances and their meaning because they possess the required knowledge (Hunston 2002: 23). Thus, the human mind with “ethnographic knowledge of events” is still required for “close textual reading” and a thorough analysis (Lee 2008: 94).

Secondly, corpora themselves cannot provide “information about whether something is possible or not, only whether it is frequent or not” (Hunston 2002: 22). In other words, corpora only show “what people have said [...], not what they can say” (Kaltenböck & Mehlmauer-Larcher 2005: 81-82). This means that if an item does not occur in a corpus, its nonexistence in a language or variety must not be presumed (Kaltenböck & Mehlmauer-Larcher 2005: 76). This also implies that a corpus “can show nothing more than its own content”; that in fact it is difficult to make any generalisations at all on the basis of a corpus analysis (Hunston 2002: 22-23). It is simply impossible that a corpus can contain “all instances of a language” (Breyer 2011: 23). In fact, a corpus can only consist of a very small sampling of a language or language variety (Schmitt 2002: 82). Therefore, researchers as well as teachers should always be aware that “whenever research is based on sampling, there is always a risk of leaving something out” (Breyer 2011: 25).

Thirdly, the size of small specialised corpora can be a point of criticism too. It might be argued that these corpora are not large enough and therefore not reliable or that it is doubtful whether the features present in these corpora “are in fact characterizing features of the specialised language” (Gavioli 2005: 62). Thus, it is necessary to compare them to other corpora, usually general ones (Gavioli 2005: 69). Such a comparison to a large general corpus as the BNC enables researchers or teachers to examine features of the specialised corpus more thoroughly (Gavioli 2005: 67).

Despite these issues, corpora can still offer manifold advantages and “can provide information not easily available from other sources” (Kaltenböck & Mehlmauer-Larcher 2005: 81), which “would otherwise be difficult to obtain by hand” (Lee 2008: 94).

As could be seen from the sections above, corpus-based analyses are useful in the respect that they can give ESP teachers or researchers a good overview of which “recurrent lexical items are used in a given collection of texts” (Gavioli 2005: 59). Teachers, for instance, can obtain a list of frequent words which can be addressed in language courses (Gavioli 2005: 59). In addition, students can make use of corpora and concordance lines in classroom themselves (Breyer 2011: 226). Corpus analysis can therefore contribute massively to teaching languages, especially in ESP courses (Henry & Roseberry 2001: XVII). However, although software programmes can be extremely helpful in the research process, they are only tools and it depends on the individual researchers and their “creativity in deciding what to do with them” (Scott 2001: 64). Thus, it can be concluded that corpus-based approaches have a great impact on language learning and teaching because they provide information for the creation of dictionaries, grammars, syllabuses as well as teaching material.

In the following chapter, the study to be undertaken will be described in more detail. Firstly, I will outline the genre of the sample texts, which are abstracts, and mention some previous research. Then I will provide some information on the field of agriculture and the educational setting relevant for this study. In addition, I will explain the methodology used. According to Bhatia’s and Hüttner’s model, steps 1 to 4 will be covered: placing given genre-text in a situational context (4.1., 4.3., 4.4), surveying existing literature (4.2.), selecting the corpus (4.5) and positioning the genre (4.4). In addition, the issue of the abstract as genre constituent will be addressed (4.1.4).

4. The study

In this chapter, the context and setting of the study will be considered. Firstly, the genre of abstracts will be focused on. Secondly, linguistic studies in the field of agriculture as well as previous research on abstracts in general will be discussed. Thirdly, the field of agriculture as well as the target teaching setting will be explored.

4.1. The genre of abstracts

The importance of abstracts has been emphasised by many different scholars, including Seidlhofer (1995: 2) who believes that abstracts constitute an important part of the academic life of many researchers as “it is established convention that people produce abstracts for conference presentations and articles.” Thus, Seidlhofer (1995: 2) considers abstracting “a major scholastic enterprise.” Salager-Meyer (1991: 528) goes so far as attributing a “pivotal role in scientific communication” to them. Abstracts can be valuable for researchers and experts because they can “serve as a time-saving device, introduction and arousal of interest in the topic, and consequently, indicate to the readers whether the whole text (or part of it) is worth reading” (Salager-Meyer 1991: 529). In addition, Huckin (2006: 93) suggests that

Journal article abstracts have become an increasingly important genre [...]. Faced with an ‘information explosion’, members of the worldwide scientific and technical research community have become more and more dependent on abstracts to keep them up to date in their respective fields.

This already stresses the high importance and relevance of the genre of abstracts in the academic research world. As a result and because of the abstract’s important functions, “writers have carefully, and increasingly, tended to foreground their main claims and present themselves as competent community members” not only in the articles themselves but also in the abstracts (Hyland 2004: 63). This indicates that writers aim to persuade the reader of their position as established expert members of a certain discourse community.

Various researches have given definitions of the genre of abstracts. Lancaster (1998: 94), for instance, describes an abstract as a “brief but accurate representation of the contents of a document.” A similar definition is given by Rowley (1988: 10) who argues that an “abstract is a concise and accurate representation of the contents of a document,

in a style similar to that of the original document.” A rather long definition is given by Graetz (1985: 125, cited in Hyland 2004: 65):

The abstract is characterized by the use of past tense, third person, passive and the non-use of negatives. It avoids subordinate clauses, uses phrases instead of clauses, words instead of phrases. It avoids abbreviations, jargon, symbols and other language shortcuts which might lead to confusion.

However, others, for instance Kaplan et al. (1994), have argued against this rigid definition because they have found different tenses, abbreviations and subordinate clauses in abstracts (Hyland 2004: 65). Acronyms, for example, “draw heavily on insider knowledge for their elaboration into full forms, and thus function to signal discipline-specific understandings” (Hyland 2004: 80).

4.1.1. Communicative purpose of abstracts

One and maybe the most relevant purpose of abstracts, at least for the writers of a study, is to “gain readers’ attention” and to persuade them to continue reading the whole article (Hyland 2004: 63). In other words, “abstracts facilitate selection” in that they “help the reader decide whether a particular item is likely to be of interest or not” (Lancaster 1998: 97). This persuasive function is also evident in that “writers are anxious to underline their most central claims as a means of gaining reader interest and acceptance” (Hyland 2004: 68). Besides its persuasive function, an abstract can be seen as a “description or factual summary of the much longer report, and is meant to give the reader an exact and concise knowledge of the full article” (Bhatia 1993: 78). Huckin (2006: 93) adds some aspects to this discussion as he proposes four functions of journal article abstracts. Firstly, they can be seen as independent texts on their own that offer brief summaries of certain studies. Secondly, they can be crucial in helping readers to decide whether to read the whole article or not. Thirdly, if people have decided to read the whole article, abstracts can act as “*previews*, creating an interpretative frame that can guide reading.” Finally, abstracts can help indexers working on “large database services.”

Thus, it can be concluded that the main communicative purposes of abstracts are to give information (informative) and to persuade readers to proceed reading the whole article in question (persuasive). If not persuasive, then the abstract at least helps in selecting articles worth reading. This is also argued by Davis (1997: 99) who outlines that the two

purposes of abstracts are “to disclose the basic information that the paper itself contains” and [...] to help the readers decide whether to read the entire paper.”

4.1.2. Moves of abstracts

Among others, Graetz (1985) has identified four moves in abstracts. These include purpose, methods, results and conclusion. These moves are often considered to be typical of this particular genre (Huckin 2006: 99). However, others have found different moves or different labels. In his study, Huckin (2006: 99) for instance found that only three of the moves mentioned above were employed frequently in his collection of abstracts as the purpose was less important than the other three.

Another way of structuring an abstract is to reflect the whole research article and employ the same moves that can also be found there (Samraj 2005: 145, Davis 1997: 23-24). This has been taken up by various researchers including Kaplan et al. (1994) who suggest the following four moves: introduction, methods, results and discussion (Hyland 2004: 65). Hyland (2004: 67) proposes a slightly different pattern including introduction, purpose, method, product and conclusion. He considers the purpose of the study as an individual move and not integrated in the introduction section. A more detailed account of these five moves is given in table 1 below.

<i>Move</i>	<i>Function</i>
Introduction	Establishes context of the paper and motivates the researcher or discussion.
Purpose	Indicates purpose, thesis or hypothesis, outlines the intention behind the paper.
Method	Provides information on design, procedure, assumptions, approach, data, etc.
Product	States main findings or results, the argument, or what was accomplished.
Conclusion	Interprets or extends results beyond scope of paper, draws inferences, points to applications or wider implications.

Table 1. Moves in article abstracts (Hyland 2004: 67).

Hyland's model can therefore be considered rather comprehensive. He offers a very detailed model and considers the introduction and the purpose section independently which is a useful approach. In addition, he provides helpful explanations of each individual move. Thus, it will serve as the basis for the move analysis of the texts in my corpus.

4.1.3. Types of abstracts

Abstracts can be classified into various different types. The two main types, indicative and informative will be discussed here because they both occur in my collection of texts. The former can also be called descriptive and the difference between these two types is that the indicative or descriptive abstract "simply describes (indicates) what the document is about whereas the informative abstract attempts to summarize the substance of the document including the results" (Lancaster 1998: 95).

The informative abstract needs to be "short, concise, but completely self-explanatory" and should include the objectives of the study, the methods, results and a conclusion (Davis 1997: 101). It provides a concise picture of the "essential arguments and findings of the original" (Rowley 1988: 14). An indicative abstract only "indicates the content of an article and contains general statements about the document" whereas it does not aim to provide the "actual content of the article" (Rowley 1988: 15). This type of abstract can therefore not function as substitution of the whole paper (Rowley 1988: 15).

4.1.4. Abstract as genre constituent of the research article

Abstracts can be seen as being part of another genre, namely the whole research article. They usually account for the first part of a paper. However, it has been noted that an abstract has the ability to replace the whole article or research paper (Osaran (2001: 433-434) and constitute an independent text on its own (Huckin 2006: 93). Thus, they can be seen as individual genres with a distinct communicative purpose as highlighted by Hyland (2004: 64): its "purpose, rhetorical construction and persuasive intent are all distinct from the article itself". On the one hand, as could be seen from the information provided above, abstracts try to "persuade readers that the article is worth reading" and on the other hand, the whole research article is "a codification of disciplinary knowledge, where writers seek to persuade their communities to accept their claims and

certify them as recognised and legitimate knowledge” (Hyland 2004: 64). Thus, while both genres perform a persuasive purpose, these purposes differ in their function.

In conclusion, it can be said that abstracts are an important genre especially for readers as they often decide on the basis of the abstract whether to read the whole article.

Readers also

make judgements about the credibility of the writer as an informed colleague, a bona fide member of the discourse community who is able to speak with authority on the subject (Hyland 2004: 78).

Thus, writers seek to “legitimate their work by identifying it as significant and worth reading further, and by defining themselves as competent professionals” (Hyland 2004: 84).

Before closing this section, it is necessary to point to the importance of abstracts in the field of agriculture. This genre seems to be of relevance in this discourse community considering the mass of journals and research published in this field in various different countries and languages. The high relevance of abstracts is also confirmed by one of my specialist informants who also stresses the importance of abstracts in the academic world of agriculture.

This section has dealt with the genre of abstracts, their communicative purpose and their moves. The following section discusses previous linguistic research in the discipline of agriculture as well as some studies focusing on abstracts in general.

4.2.Previous research

There has been a great amount of studies in the area of ESP using a corpus-based genre approach to investigate different disciplines and genres. Areas of investigation include among others medicine, economics and law (Dudley-Evans & St. John 1998: 49-50). However, the field of agriculture has received very little attention within applied linguistics so far.

4.2.1. Linguistic studies on agricultural texts

As mentioned above, in contrast to other academic and professional areas as medicine, law or business (Dudley-Evans & St. John 1998: 49-50), genre analysis as well as corpus-based work lack substantial research into the field of agriculture, environment, forestry and similar topics. In this section two linguistic studies, which have been conducted in the academic field of agriculture, will be described.

The first study by Thompson (2002) deals with modal verbs in academic writing in the field of agriculture. In more detail, he examined PhD theses which were written in the Agricultural Botany and the Agricultural and Food Economics departments at a British university and explored the use of modal verbs in these two departments (Thompson 2002: 305). A corpus was compiled and in a concordance search, modal verbs including *may, might, can, could* were investigated (Thomson 2002: 308). Thompson (2002: 323) found that there is a “degree of variation between the texts” he examined. Thus, he established some functions that modal verbs can fulfil in these texts and compared his results with existing EAP teaching material. He concluded that “the treatment of modal auxiliaries in general is imbalanced” (Thompson 2002: 323) as “insufficient attention is given to the range of functions that modal auxiliaries perform in academic writing at the doctoral level” (Thompson 2002: 305).

The second study is a more recent one and has been conducted by Martínez, Beck and Panza (2009). Their study is a genre-based corpus analysis following Flowerdew (2005) and the researchers start with the two assumptions. Firstly, “the lexical difference that exist across distinct disciplines may be greater than the similarities” and secondly, the Academic Word List (Coxhead 2000)

offers a general academic vocabulary, which, being too general, may result, on the one hand, in the learner’s exposure to more vocabulary than they may need, and on the other, in their lack of exposure to the specific vocabulary that they will need (Martínez, Beck & Panza 2009: 184).

Therefore, they suggest that “more accurate descriptions of the specific vocabulary that needs to be taught in specific contexts” is needed (Martínez, Beck & Panza 2009: 184). In their study, they aim to “uncover specific characteristics of academic vocabulary” in research articles in the field of agriculture (Martínez, Beck & Panza 2009: 186).

Surprisingly, they found that only a few of the words from the AWL were also used in

the articles examined (Martínez, Beck & Panza 2009: 187). In addition, words occurred with different or specific meaning and collocations (Martínez, Beck & Panza 2009: 192) with some academic words even carrying technical meaning in this corpus (Martínez, Beck & Panza 2009: 191). In addition, some general vocabulary also seems to be used as academic vocabulary (Martínez, Beck & Panza 2009: 193). These findings point to the importance of teaching vocabulary in relation to the “student’s specific target context” (Martínez, Beck & Panza 2009: 193). In sum, this research article highlights the need for academic vocabulary lists that are specific to one particular field of study.

Thus, with my study I aim to contribute to this small field of linguistic research into agricultural language and texts as there clearly is a research gap in this area. The two studies presented offer a good starting point for my research. In addition, they show that a genre analysis using a corpus-based approach is a justified undertaking.

4.2.2. Previous research on abstracts

After having examined some linguistic research in the field of agriculture, some points about previous studies on the genre of abstracts will be presented. Abstracts have received a great deal of attention in various studies, for example by Hyland (2004), Huckin (2006) or Samraj (2005). These will be surveyed below.

Hyland (2004) conducted a study in which he investigated the macrostructure and some lexical features in abstracts of research articles in order to “determine how writers use this genre to typically situate themselves and their work in their disciplines, how they display credibility and ‘membership’” (Hyland 2004: 63). Hyland (2004: 70) notes the “considerable disciplinary variations in move structuring” in his corpus. His analysis shows that expert writers often exploit established structures and patterns and “move sequences appear to be less predictable than previously supposed” (Hyland 2004: 70).

Another study by Huckin (2006) examined biomedical abstracts in order to find out how accurately they “indicate the actual content of articles” (Huckin 2006: 94). He found that the abstracts examined do indeed carry “the most important content” of the whole article. In addition, they also present it “in prominent and well-patterned ways” which has implications not only for indexing but also for teaching abstract writing (Huckin 2006: 95). In addition, he conducted a move analysis and found out that the abstracts he

examined consisted mainly of the moves methods, results and conclusions (Huckin 2006: 101).

Samraj (2005) approached the study of abstracts in a different way. She compared abstracts and introductions from two disciplines, Conservation Biology and Wildlife Behaviours. Thus, she was interested in the relationship between these two genres in two distinct fields (Samraj 2005: 143). Samraj (2005: 151) concluded that the two genres investigated “are interrelated in different ways in the two disciplines and that abstracts and introductions may not always be distinctive in communicative purpose and rhetorical structure.” The results of this study “can be used to familiarize students with the variation found in academic writing not just across genres but also across disciplinary boundaries” (Samraj 2005: 153).

From this survey of studies, it can be seen that the genre of abstracts has been explored by many different researchers in various disciplines. Thus, it will be interesting to see in how far the present study shares similarities or differences in the results with the ones mentioned here.

4.3. The field of agriculture

When exploring the discipline of agriculture, one needs to bear in mind that this is a huge field with many different specialising branches including crop and livestock farming, viticulture, horticulture as well as fruit and vegetable production. Agriculture is also not to be equated with practical farming. Besides practical farm work, people with an agricultural education or training can work in various kinds of agricultural companies, food production or marketing (http://hlfs.schule.at/de/ueber_die_hlfs.html 26.8.2012) Furthermore, it is important to consider the academic branch of agriculture which includes research, scientific journals and articles, universities and theoretical expert knowledge. This section provides an overview of agriculture and organic farming in Austria as well as important issues associated with it that are relevant for this paper.

The Federal Ministry of Agriculture, Forestry, Environment and Water Management, which is also called *Lebensministerium*, is responsible for agricultural issues in Austria. However, it does not only deal with agriculture itself but, as the name already suggests,

includes and regulates closely related issues as forestry, environmental issues, water management and food (www.lebensministerium.at, 26.8.2012).

Agriculture and farming are very relevant and topical issues in today's society in Austria. This is evident in the following facts and figures. Although a decrease was recorded, in the year of 2007, still 187,034 agricultural and forestry holdings were cultivated in Austria (Grüner Bericht 2011: 62). Furthermore, the imports in the area of agriculture "accounted for 7.6 % of Austria's total foreign trade" and the "agricultural exports accounted for 7.1 %" with countries from the EU being the most relevant trading partners (Grüner Bericht 2011: 7). Nowadays, around five per cent of all employees in Austria work in the sector of agriculture, including forestry and horticulture, usually in small or very small businesses and often farming occupations serve as secondary occupation. When not working on their own farms, people can find employment in areas such as food industry or trade (Nowak 2012: 13).

As this paper specifically deals with the topic of organic farming and organic agriculture, this farming practice will be discussed in more detail in the next section.

4.3.1. Organic farming

As with climate change and other environmental issues at hand, concepts such as organic agriculture, sustainability as well as green jobs started to gain more and more recognition in Austria in recent years. Austria is often said to be a pioneer in areas such as renewable energy and waste management and it is especially renowned for its efforts in organic farming. This is evident in the fact that about one fifth of the "agricultural land is managed according to organic farming criteria" and over 22,000 farmers cultivate their land in an organic way. Thus, Austria is the leading country in Europe with respect to the development of organic farming (Berlakovich 2012: 1). In other words it "ranks first both as regards the share of organic farms and with respect to the share of area under organic farming" (Tischler & Rech 2009: 27). This is illustrated in table 2.

Organic farms in Europe 2010			
Member State	Area – UAA ¹⁾ in ha	Share of the area under organic farming in the total utilised agricultural area (%)	Holdings
Austria	543,605	19.7	22,132
Sweden	438,693	14.1	5,208
Estonia	112,972	12.5	1,356
Czech Republic	448,202	10.6	3,517
Latvia	166,320	9.4	3,593
Slovakia	174,471	9.0	363
Italy	1,113,740	8.7	41,807
Finland	169,168	7.4	4,022
Slovenia	30,696	6.3	2,218
Denmark	162,903	6.1	2,677
Germany	990,702	5.9	21,942
Spain	1,456,670	5.9	27,877
Portugal	201,054	5.8	2,434
EU – 27	8,057,251	5.6	192,503
Lithuania	143,644	5.4	2,652
United Kingdom	699,638	4.3	4,949
Greece	309,823	3.7	21,274
Belgium	49,005	3.6	1,108
Poland	521,970	3.4	20,578
France	845,442	3.1	20,604
Hungary	127,605	3.0	1,617
Luxembourg	3,720	2.8	96
Cyprus	3,575	2.5	732
The Netherlands	46,233	2.4	1,462
Romania	182,706	1.3	2,986
Ireland	47,864	1.2	1,366
Bulgaria	25,648	0.8	709
Malta	24	0.2	11

¹⁾ UAA = utilised agricultural area
Source: FLE 2012

Table 2. Organic farms in Europe (Grohsebner et al. 2012: 34)

At this point, it is useful to give a brief description of what organic farming represents.

First of all, this farming method be said to be

the most environmentally compatible form of agriculture. Yet ‘organic’ means more than just farming without synthetic chemicals. A holistic philosophy and a farming cycle as complete as possible, with a diverse structure, are the principles and prerequisites of successful organic farming. The natural resources of soil and water are used in an environmentally compatible manner and are preserved for future generations. (Tischler & Rech 2009: 3)

This quotation indicates that organic farming is a rather complex idea which pays attention to many principles including low energy use, self-regulating mechanisms, recycling of farm waste, animal-friendly keeping of livestock and enhancement of biodiversity by protecting environmental resources. These principles are also the

reasons why consumers often prefer organic products over conventionally produced ones. They can be “certain that animals are kept in a way compatible with their species and that they themselves make an important contribution to an intact, diverse countryside” (Tischler & Rech 2009: 24). Generally, the importance of raising “people’s awareness for sustainable, environmentally friendly ways of living and business management” (Berlakovich 2012: 1) should be emphasised, which can start at school education already.

4.4.Educational setting

Before proceeding to a description of the educational setting important for this paper, a brief account of the agricultural education system in Austria will be given. The political sphere ascribes great importance to agricultural education as it is essential for the whole agricultural sector. It corresponds to the diversity and richness of Austrian agricultural business and branches in this sector. This is evident in the many different branches of education that will be outlined in more detail below. There are possibilities for obtaining this type of education from the ninth grade onwards and the agricultural education system has the same structure as other Austrian education systems. (<http://www.lebensministerium.at/land/land-bbf.html>, 26.8.2012). The different types of how an agricultural education can be obtained are outlined below.

- Apprenticeship (Lehre)

People interested in agricultural work or farming can gain an education by apprenticeship. This form of training involves two levels as apprentices receive both education in school and practical training directly in companies (Nowak 2012: 34).

- Professional schools (Fachschulen)

This type of agricultural schools in Austria are many in number and last from one to four years (<http://www.abc.berufsbildendesschulen.at/de/page.asp?id=14>, 25.8.2012). In Austria’s school system, these schools belong to the category of BMS (berufsbildende mittlere Schulen) and various schools offer different educational specialisations as general agriculture, horticulture, viticulture or forestry. (<http://www.lebensministerium.at/land/land-bbf/bildung-agrar-schulen/agrarfachschulen.html>, 26.8.2012).

- Higher Secondary Schools (Höhere land-und forstwirtschaftliche Lehranstalten, HLFS)

These schools, BHS (berufsbildende höhere Schulen) with a specific focus on agricultural aspects, are the target teaching settings in this paper. These schools will be described in more detail below.

- Tertiary education

After graduating from a higher secondary school, pupils have the opportunity to study at any university. Specific agricultural subjects can be studied at certain universities or colleges. This enables graduates to work in high positions in various occupational fields, for instance in the management of agricultural companies, organisations or agencies, in research activities in various institutions, in regional management or tourism to name just a few (http://hlfs.schule.at/de/ueber_die_hlfs.html, 26.8.2012). Probably the most prominent university addressing agricultural interests in Austria is the University of Natural Resources and Life Science in Vienna (www.boku.ac.at). Among others, it offers studies as food and biotechnology, landscape design, forestry, agricultural science and viticulture (<http://www.boku.ac.at/18364.html>, 28.8.2012).

4.4.1. Target teaching setting (Higher Secondary Schools)

Students attend higher secondary schools for five years and graduate with a school leaving and diploma examination. These schools offer an education that is specifically directed to the discipline in question. Thus, besides general subjects such as German and Maths, they also provide important topic specific subjects including Livestock Keeping, Crop Science, Viticulture and Agricultural Engineering. Another unique aspect of these schools is that pupils receive practical training in school itself and in addition, they have to complete an internship in a company in Austria or abroad. This indicates the significance of practical training and experience in this type of education (<http://www.abc.berufsbildendeschulen.at/de/page.asp?id=14>, 25.8.2012).

In Austria, twelve higher secondary schools offer agricultural education. Eight branches of specialisation are differentiated including agriculture and food science, general agriculture, agricultural engineering, food and biotechnology, landscape design, horticulture, viticulture, pomiculture and forestry. However, they are not offered by all

schools but different schools specialise in different directions.

(<http://www.lebensministerium.at/land/land-bbf/bildung-agrar-schulen/hlfs.html>, 26.8.2012),

The curriculum for these schools lists under its general educational objectives (allgemeine Bildungsziele):

Die höheren land- und forstwirtschaftlichen Lehranstalten haben [...] der Vermittlung einer höheren allgemeinen und fachlichen Bildung zu dienen, die zur Ausübung einer gehobenen Berufstätigkeit auf land-und forstwirtschaftlichem Gebiet sowie zur Universitätsreife führt. (Austrian Federal Ministry for Education, Arts and Culture 2004)

This claim made by the curriculum is stressed by one of these agricultural schools who states something similar in the description of its school:

The Francisco Josephinum provides a well-founded higher vocational training with a broad general knowledge. The pupils acquire knowledge and practical skills which qualify them for pursuing a superior position in the fields of agriculture, agricultural engineering as well as food technology and biotechnology with a view to the supra-region of Europe. (<http://schule.josephinum.at/index.php?id=1&L=1>, 28.8.2012)

This shows that a comprehensive vocational training is given in these schools which enables students to work in a high position in their chosen fields. The subject of English seems to constitute a connection between the general knowledge referred to in the quote as well as specific knowledge. This is explored in the next section.

4.4.2. Teaching English in agricultural schools

In its general educational objectives, the curriculum for agricultural schools emphasises the importance of foreign languages. Students should be able to communicate in foreign languages, especially in their specific field (Austrian Federal Ministry for Education, Arts and Culture 2004). This is also highlighted by the following quotation:

Im Zuge der europäischen Integration und der fortschreitenden Internationalisierung auch des landwirtschaftlichen Bereichs sind fundierte Fremdsprachenkenntnisse eine wesentliche Säule einer guten Ausbildung. (<http://schule.josephinum.at/index.php?id=197>, 28.8.2012)

The first foreign language that is taught in these schools is English with two lessons per week per year. From the third form onwards, pupils can choose a second foreign

language or decide to intensify their English with a course in Technical English (<http://schule.josephinum.at/index.php?id=197&L=0>, 28.8.20102).

The syllabus (Lehrstoff) for the English lesson in these schools includes general topics such as

politische, wirtschaftliche, ökologische und kulturelle Themen mit vorwiegendem Bezug auf Österreich, auf die Länder des Sprachbereichs und die EU-Staaten, internationale sowie aktuelle Themen. (Austrian Federal Ministry for Education, Arts and Culture 2004)

In addition, field specific topics should be discussed including the following areas:

Naturwissenschaftliche Sachverhalte, Betriebsformen, Produkte, Prozesse und Dienstleistungen der Fachrichtung, betriebswirtschaftlich relevante Themen, Themen aus der beruflichen Praxis, Struktur der österreichischen und europäischen Land-und Forstwirtschaft, Agrarpolitik, Umweltpolitik. (Austrian Federal Ministry for Education, Arts and Culture 2004)

Vocabulary and grammar can be explained with the help of the topics mentioned above. The curriculum also advises to teach different text forms including presentations, articles, abstracts and letters (Austrian Federal Ministry for Education, Arts and Culture 2004).

In general, when familiarising myself with individual schools as well as communicating with my subject specialists, I received the impression that students are confronted with a wide range of different field specific topics in the English lessons. According to my specialist informants (see section 4.5. for more information about the expert informants), topics dealt with in English lessons include organic and conventional farming, the agricultural situations in different countries, agricultural products from different parts of Austria, the function of agriculture, renewable energy and environmental issues, various agricultural products, crops and farm animals. In addition, several genres are dealt with including abstracts, reports, articles, CVs, e-mails, letter of application, summaries and discussions. This relates to the next section, in which the relevance of teaching the genre of abstracts is highlighted.

4.4.3. Teaching abstracts

As already mentioned before, according to the curriculum as well as one of my specialist informants, many different text types are being taught in agricultural schools, including abstracts. The teaching of genres such as abstracts has various advantages for reading and writing a specific genre (Hyon 2002: 137). With respect to reading, students are able to “locate key information in texts” and their speed of reading will be improved when they are taught about a given genre before (Hyon 2002: 137). In addition, teaching a genre such as abstracts can “make learners aware of the relationship between the communicative purpose of a genre, the context, and language chosen to achieve the purpose” (Henry & Roseberry 2001: 94). This is an important factor as students often need to understand why texts are written in particular ways and what other texts they interrelate with, and they need to be able to use the linguistic resources which are associated with these genres” (Tribble 2002: 145).

Another reason for teaching and learning abstracts is that “both reading and writing an abstract are not a trivial task, and many students experience difficulties” and second language learners of English “have even greater problems with such tasks” (Orasan 2001: 433). In summary it can be said that

explicit teaching about genre features can be useful for building ESL students’ genre awareness and for facilitating their text processing and production. Specifically, such teaching may improve students’ genre sensitivity, their ability to identify important text information, their reading speed and confidence, and their organization of their writing (Hyon 2002: 139).

More specifically, abstracts are also important for the target teaching situation in question here. Firstly, they are already included in the syllabus as mentioned before. Secondly, pupils might need them in their professional or occupational career. Being familiar with abstracts can be helpful when pupils proceed to studying at university as abstracts are an important part of academic university life. They might even have to write abstracts at university or in a work situation. As one of my experts stresses, it is only beneficial if they are already familiar with this genre. Due to its high relevance in the academic research world in the field of agriculture, it is therefore be important for students to be familiar with this genre. Knowing about this genre can contribute to both, an understanding of how to read and how to write an abstract.

As can be seen from the sections above, the agricultural educational system in Austria is rather diverse and complex. The English language has shown to be an essential part of this type of education. In the following section, the methodology of the analysis will be outlined including a description of the corpus and the tools used for the quantitative analysis as well as an illustration of how to analyse moves.

4.5. The methodology

4.5.1. The corpus

The texts for the quantitative and qualitative analysis are taken from the genre of agricultural abstracts focusing on the more specific field of organic farming. All the data was collected from the US National Agricultural Library (agricola.nal.usda.gov) which is one of the four national libraries in the United States and “one of the world’s largest and most accessible agricultural information collections” which suits the aims of this study perfectly (<http://www.nal.usda.gov/about-nal>, 30.8.2012). It can be accessed online and includes a database that allows searching on the one hand for books and on the other hand for abstracts of journal articles, book chapters, short reports and reprints. For the purpose of this study, only abstracts from studies published in journals are included. Many different journals from all over the world are linked into this database.

My corpus of agricultural texts, more specifically dealing with the topic of organic farming, consists of 120 abstracts, searched for in the above mentioned database and drawn from 46 different journals. A list of the names of all the relevant journals as well as all the articles is given in the appendix. All the examples mentioned in the analysis include as reference the name of the journal as well as a number which indicates the respective abstract in the journal list.

Organic farming was chosen as subject of investigation for three reasons. Firstly, it is a very topical issue in Austria (see section 4.3.1.) and secondly, it is also dealt with in English lessons (see section 4.4.2). Thirdly, organic farming is also a topic that is not only relevant for general agriculture but for the different branches of agricultural schools such as viticulture, food science, food and biotechnology, horticulture and pomiculture. It can therefore be considered a cross-disciplinary subject area.

In the database, I searched for abstracts of journal articles using two different phrases, *organic farming* and *organic agriculture*, as I am interested in this specific field within the broad discipline of agriculture. The search for *organic farming* yielded 754 entries while for *organic agriculture* only 311 entries were found. The database shows a list with all the entries including information such as the date of publishing, the title of the study as well as the authors' names. More information and the abstract itself can be gained when clicking on individual examples.

4.5.1.1.Criteria for the selection of texts

The database agricola.nal.usda.gov was chosen as it seemed to be a reliable and official source containing many different journals and articles worldwide with a broad range of different topics. Restrictions were made with respect to the topic as only texts dealing with organic farming and organic agriculture were taken into account. Only the genre of abstracts from studies published in journals was taken into account. However, different journals from different countries were included. The studies were composed by native and non-native speakers of English who can be said to be experts in their field and constitute an important part of the discourse community. All the texts were, of course, written in the English language. Only recent publications were considered, covering the period from 2006-2012. The criteria for creating my corpus, which will henceforth be called CAA, Corpus of Agricultural Abstracts, are shown in table 3.

Database	agricola.nal.usda.gov
Topic	Organic farming, organic agriculture
Genre	Abstracts from research papers published in journals
Writers	Native and non-native speakers of English
Journals	45 different journals from all over the world
Language	English
Timeframe	Recent publications (2006-2012)
Number of texts	120

Table 3. Criteria for establishing the CAA

4.5.2. Specialist informants

Besides conducting a corpus-based analysis of the collected texts, some information was also obtained from specialist informants who are experts in the field of agriculture and/or in the teaching situation important for this paper. These informants included one teacher from a higher secondary schools focusing on agriculture, two former students of such schools as well as one university graduate from the University of Natural Resources and Life Science who is now working in the agricultural sector. In order to obtain information I entered into e-mail correspondence with all of the participants, asking individual questions as well as backup questions which were answered qualitatively in the participants own words. The correspondences were mostly kept rather informal and in German in order to make the participants feel more comfortable and create a more personal atmosphere. This investigation shed light on various aspects important for this study and allowed to gain insight into the teaching situation in question as well as the discipline of agriculture.

4.5.3. Tools for analysis

For the quantitative analysis of my corpus, two different software programmes are used, AntWordProfiler (Anthony 2012) and AntConc (Anthony 2011). These programmes allow the researcher to examine frequent words as well as collocations, technical words and academic vocabulary.

AntWordProfiler (Anthony 2012)

AntWordProfiler is a “freeware word profiling program [...] similar to Paul Nation’s Range program” (www.antlab.sci.waseda.ac.jp/software.html, 28.8.2012) which can be downloaded from Laurence Anthony’s website www.antlab.sci.waseda.ac.jp. It contains three lists, which are the first thousand words of the GSL, the second thousand words of the GSL and the AWL. The researcher can upload his or her own corpus to the software and compare it to the three level lists. In this way, general service words as well as academic vocabulary can be identified in the corpus. In addition, the programme also offers a function that enables reader to examine words that are in none of the three level lists, which in turn can be helpful in detecting technical and low-frequency vocabulary.

AntConc (Anthony 2011)

The second software tool that will be employed in the quantitative analysis is AntConc (Anthony 2011). This is a programme with which researchers can obtain “a list of all the words that occur in a particular corpus, as well as the frequency of their occurrence” (Breyer 2011: 32). In addition, the context of a particular word or phrase and collocations can be examined (Breyer 2011: 32). In order to do this, it features various tools with which texts can be analysed including a concordance tool, a concordance plot tool, a collocation and cluster tool and a keyword tool. The concordance tool can be used to examine the context of a given word and the concordance plot tool to see in which part a word or phrase occurs in a given text. It also offers a tool to explore collocates and the cluster tool shows multi-word units. The keyword list depicts words that are particularly frequent or infrequent in a corpus when compared to a reference corpus (Anthony 2011).

The reference corpus

In order to be able to compare my texts to another corpus and create a keyword list, a reference corpus is required. The reference corpus in the present study is the British National Corpus or BNC. In general, the BNC is a large corpus that aims to “characterize the state of contemporary British English” (Aston & Burnard 1998: 28). It consists of 100 million words and is “one of the most heavily used research corpora” (Lee 2010:110). It includes 90 per cent written text and 10 per cent spoken data (McEnery, Xiao & Tono 2006: 17). Among others, it contains texts from newspapers, periodicals, journals, academic books and fiction (McEnery, Xiao & Tono 2006: 59).

4.5.4. Move analysis

The moves of the texts in question will be identified manually. The typical generic structure of abstracts have been defined and explained in section 4.1.2. Generally, moves correspond to the communicative purpose of a text and each move “attempts to fulfil a partial purpose of the genre, and all the moves together answer the genre’s total purpose” (Henry & Roseberry 2001: 95). Following Swales (1990), Dudley-Evans and St. John (1998: 89) distinguish between moves and steps. A move is “a unit that relates both to the writer’s purpose and to the content that s/he wishes to communicate” while a step is “a lower level text unit than the move that provides a detailed perspective on the

options open to the writer in setting out the moves”. Thus, a move can be realised by various steps (Hyland 2006: 50)

In this analysis, Hyland’s (2006) model of moves in abstracts mentioned above will be applied. In addition, various steps that can realise a given move will be considered and the moves will be grouped according to their occurrence of frequency following Hüttner (2007). Hüttner (2007: 110) distinguishes between optional, core and obligatory moves. Core moves need to occur in 50 per cent or more of the texts and fully optional moves can occur in 30 per cent or less of the texts. Moves appearing between 31% and 49% “need to be confirmed or rejected as core moves” later on in the analysis when receiving information from the discourse community. When moves occur between 90% and 100%, they can be seen as obligatory which means they are “a defining feature of the genre in question” (Hüttner 2007: 110).

4.5.5. Procedure and methods

After establishing the criteria outlined above and sampling my texts, I familiarised myself with the two software programmes AntConc and AntWordProfiler. Afterwards, the features of analysis were established which will be outlined in the next chapter including high and low frequency words, technical and academic vocabulary and formulaic language. Before starting the analysis, it was necessary to organise and convert the texts into plain text files in order to make them readable for the software programmes. In addition, the spelling was checked in order to obtain a result independent from British English and American English spelling. This was done by using British spelling only. Following this, AntWordProfiler was used to examine the different types of vocabulary occurring in the data and AntConc to find out collocations and patterns as well as to compare my texts to the reference corpus. In the last step, a move analysis of the abstracts was conducted manually.

This chapter has focused on the context of the study. The genre of abstracts as well as previous research were outlined. In addition, the discipline of agriculture as well as the teaching setting of agricultural schools in Austria was discussed. Finally, the methodology was considered including a description of the corpus as well as the software tools necessary for conducting the empirical analysis.

5. Theoretical concepts for the analysis of the corpus

This chapter focuses on the theoretical concepts for the analysis of the corpus. This includes a demonstration of high and low-frequency words, academic and technical vocabulary as well as the units of analysis in AntConc.

Nation (2001: 11-12) generally distinguishes between four different types of vocabulary. These include high-frequency words, academic words, technical words and low-frequency words. For students all of these four categories, especially the first three, are of importance as

knowing the 2,000 high-frequency words and the Academic Word List will give close to 90 % coverage of the running words in most academic texts. When this is supplemented by proper nouns and technical vocabulary, learners will approach the critical 95% coverage threshold needed for reading. (Nation 2001: 197).

5.1. High and low frequency words

Words can be grouped according to their frequency of occurrence in a collection of texts. High-frequency words occur very frequently while low-frequency words appear less frequently.

High-frequency words include on the one hand function words (*in, the, of*) and on the other hand content words. Probably the most prominent list that comprises high-frequency words is the GSL (General Service List of English Words), created by West (1953). This list consists of about 2,000 word families (Nation 2001: 11, Coxhead 2002: 73). This list will be the starting point for the examination of high frequency words in the corpus as it is already included on AntWordProfiler. Low-frequency words do not occur frequently and can be identified as they do not belong to high frequency words, academic words or technical words (Nation 2001: 12).

High frequency words can also be detected by creating a wordlist with the help of the software programme AntConc. Such a list presents “all the types in a corpus together with the number of occurrences of each type” (Hunston 2002: 67). Here, it is necessary to distinguish between types and tokens in a corpus. Tokens are “sequences of letters separated by spaces or punctuation” (Hunston 2002: 17). This means that every word

form is counted individually and “if the same word form occurs more than once, then each occurrence of it is counted” (Nation 2001: 7). In contrast, when “counting each repeated item once only, so that only different words are counted”, one receives the number of types in a corpus (Hunston 2002: 17). Thus, the number of tokens in a text is always higher than the number of types. So far, frequency lists of large general corpora have shown that function words occur with a much higher frequency than lexical words (Breyer 2011: 35). In addition, it is most often the case that “a small number of words will be of very high frequency“ and there is “a very large number of word forms which occur once only“ (Scott 2001: 54).

A wordlist of a specialised corpus can be of particular interest when it is compared to another corpus as this comparison shows differences in lexis (Hunston 2002: 67). For this purpose, a keyword list can be created and key words can be explored which are words that

are usually found by comparing the target corpus with a much larger corpus to see if the words in the target corpus occur with significantly different frequencies than they do in the larger corpus. (Henry & Roseberry 2001: 110-111)

Keywords can either be positive, meaning that they are frequent, or negative, meaning that they are particularly infrequent (Evison 2010: 127). Positive keywords are an excellent starting point for “identifying words which are likely to be worthy of more detailed study” and for “allowing the study to focus on the most significant patterns for analysis” (Flowerdew & Forest 2009: 20).

5.2. Academic vocabulary

This type of vocabulary “is common to a wide range of academic fields but is not [...] technical in that it is not typically associated with just one field” (Chung & Nation 2003: 104). Academic words enable writers “to refer to other’s work” and “to work with data in academic ways” (Nation 2001: 18). Therefore, it has been suggested that for language learners who “wish to do academic study in English”, learning and being familiar with academic vocabulary is essential (Nation 2001: 197).

One of the most well-known and widely-used lists focusing on academic vocabulary is The Academic Word List (AWL). This is a list of “recurrent words in general academic English” (Gavioli 2005: 60). It was “compiled from a corpus of 3.5 million running words of written academic text” (Coxhead 2000: 213) and was created to find out “which academic vocabulary items occur with wide range and reasonable frequency in academic texts outside of the first 2,000 words of English” (Coxhead 2002: 73). The AWL includes four subcorpora in the disciplines of arts, commerce, law and science (Coxhead 2000: 219) and consists of 570 word families which are thought to be “essential for students pursuing higher education irrespective of their chosen field of specialization” (Hyland & Tse 2007: 237).

However, the notion of the AWL and academic vocabulary in general has also been challenged, for example by Hyland and Tse (2007) who propose that “individual lexical items on the list often occur and behave in different ways across disciplines in terms of range, frequency, collocation and meaning” (Hyland & Tse 2007: 235). They argue that “the AWL might not be as general as it was intended to be” and that teachers should “help students develop a more restricted, discipline-based lexical repertoire” (Hyland & Tse 2007: 235). Nevertheless, despite their critical comments, they still acknowledge the AWL as it can give insights and “guidelines for teaching purposes” (Hyland & Tse 2007: 251).

5.3. Technical vocabulary

One part of the empirical investigation will be concerned with the exploration of specific technical vocabulary which is essential to the domain of agriculture. Hüttner (2007: 155), amongst others, has already pointed to the fact that the “classification of keywords [...] according to their level of technicality” is one of the most interesting points. Many fields have vocabulary that is specific to them and therefore it is important for learners, especially in an ESP context, to understand and acquire this kind of words (Chung & Nation 2004: 251). Thus, teachers should be in the position to “prepare learners to deal with them” (Nation 2001: 204).

These technical terms are “very closely related to the topic and subject area” of a text and are “reasonably common in this topic area but not so common elsewhere” (Nation 2001: 12). In other words, they are “specific to the discipline and fully understandable only within the discipline” (Hüttner 2007: 156).

Chung and Nation (2004) propose various different ways of how to examine if a particular item has a technical status or not. One approach is to look at the text itself as sometimes the author indicates in the text “that a word is a technical term”, which can be achieved by defining the word immediately or using bold or italic font (Chung & Nation 2004: 256). Another way is to use a technical dictionary specific to a particular domain and search for the words in it (Chung & Nation 2004: 253). In addition, Chung and Nation (2003: 105; 2004: 254) propose a rating scale which classifies vocabulary according to its technicality. This scale measures “the strength of the relationship of a word to a particular specialised field” (Chung & Nation 2003: 104-105). Finally, a computer-based approach can be used which allows to statistically “compare the number of occurrences of a word in a technical corpus with the number of occurrences in a comparison corpus” (Chung & Nation 2004: 258). When doing such a statistical analysis, the researcher can find technical terms which tend to appear “only in a specialised field” or “with a much higher frequency in a specialised field than in a different field” (Chung & Nation 2004: 259).

For the analysis of the CAA, a computer-based approach was used and certain technical terms were checked in an agricultural online dictionary. In addition, I tried to establish a rating scale of technical words appearing in the CAA (see section 6.4.3. for the analysis of technical words).

In sum, technical vocabulary is “recognisably specific to a particular topic, field or discipline” (Nation 2001: 198). It “has specialised and restricted meaning in certain disciplines” and can have different meanings in different fields (Dudley Evans & St. John 1998: 82-83). In combination with high-frequency words, technical vocabulary is of high importance for language learners because if they want to “communicate in a particular subject area, then a foundation of higher-frequency vocabulary plus the specialized vocabulary for that area can be a useful target” (Schmitt 2002: 143).

So far, I have examined different types of vocabulary including high and low-frequency words as well as academic and technical vocabulary. In the following section, the focus will be on AntConc in order to show how vocabulary can be exploited in this programme.

5.4. Units of analysis in AntConc

5.4.1. Concordance lines

One of the functions of AntConc for the analysis of a corpus are concordance lines. They present the “occurrences of a given word or phrase in a corpus” with its immediate context (Scott 2001: 50). The particular search word, the node word, appears with the preceding and following words (Hunston 2002: 40). This form of display is called KeyWord-In-Context (KWIC) (Breyer 2011: 31) and highlights how a certain word “behaves” (Hunston 2002: 41). Not only are its direct collocates shown but the wider context is also provided with more words to the left and right side of the node word. However, as argued in section 3.5., concordance lists can only give information but cannot interpret it which “requires the insight and intuition of the observer” (Hunston 2002: 65).

5.4.2. Collocations

AntConc can also show collocations which are words that are “commonly used together” (Ghadessy, Henry & Roseberry 2001: XVII). In other words, collocation is “the tendency of two words to co-occur” or the “tendency of one word to attract another” (Hunston 2002: 68). It can, for instance, help when distinguishing “between two semantically similar words or expressions” as synonyms or near-synonyms (Kaltenböck & Mehlmauer-Larcher 2005: 72). Collocation is “a very important principle underlying the structure of language and accounting for much of its patterning and connections” (Moon 1997: 59). Therefore it makes sense for language learners as well as teachers to pay attention to this phenomenon as knowing collocational patterns is an “important step towards speaking idiomatically correct language” (Breyer 2011: 19). As it is even for native speaker teachers often difficult to explain collocations to students (Breyer 2011: 18-19), language corpora can be give valuable information (Breyer 2011: 19).

5.4.3. Clusters

Clusters refer to the “repeated strings found most often” in concordance lines (Scott & Tribble 2006: 41). This function can show multi-word units and patterns of more than two words that are likely to be found in a corpus (Anthony 2005: 734).

5.5. Formulaic language

Another concept that I want to explore here is formulaic language. This is important as with concordance, collocation and cluster functions, formulaic sequences can be detected in the CAA. These phrases are an essential part of the English language (Hunston 2002: 138) as the meaning often does not “belong to a single word, but to the phraseology as a whole” (Hunston 2002: 141). Therefore, they should constitute an important part in learning and teaching English (Pecorari 2009: 92).

Hüttner (2007: 97-98) describes two types of formulaic language that should be taken into account in genre analyses. The first one concerns genre-specific and the second genre- functional formulaic sequences. The former are “recurring multi-word chunks that are quantitatively typical of specific genres” and the latter are “sequences that further the communicative purpose of a particular genre move.” Especially the functional aspect of these sequences is relevant to consider (Hüttner 2007: 98) because with English as a lingua franca,

learners are motivated by becoming functionally competent in the genres they need for their professional lives. This includes competence in the use of relevant language patterns, including genre-functional formulaic sequences [...]. (Hüttner 2007: 98-99)

Hüttner (2007: 99) claims that “formulaic sequences are co-constitutive of genres.” In particular, she argues that it is

this drawing together of the study of formulaic sequences and genre analysis, ie. co-conventionalisation, which is the truly innovative aspect of extended genre analysis. (Hüttner 2007: 99)

This section aimed to explore the various types of vocabulary that will be investigated in the next chapter. In addition, the tools in AntConc have been outlined and formulaic language was considered. The next two chapters represent Hüttner’s steps 5, namely the analysis of lexico-grammar and moves in the abstracts. In chapter 6, the first part of the analysis will be conducted in as much as the vocabulary of agricultural abstracts in the CAA will be investigated according to the points outlined in this chapter.

6. Vocabulary in agricultural abstracts

The following sections show the results of the analysis of vocabulary in agricultural abstracts. First of all, the results of the analysis of high and low frequency words as well as academic and technical vocabulary is presented. In a next step, keywords are identified as well as concordances for the most relevant keywords are given. This includes presenting genre-specific formulaic language. Finally, some grammatical points are described including the use of passive constructions and personal pronouns in the corpus. For reference, the frequency list of the corpus including the first 100 words is given in the appendix. If more information is required, the author can be consulted.

6.1. Vocabulary size

Overall, the CAA consists of 28,785 tokens or 3,958 types and 2,874 word families. The following table shows the distribution of frequency in the corpus. As has already been pointed out by other scholars (Scott 201: 54), the present corpus confirms the fact that a small amount of types are present in the corpus very frequently while a large number of types is present only a few times. As table 4 indicates, a considerable small number of items occurs very often in the CAA. Only three items appear over 1001 times, while 3762 items occur less than twenty times. In particular, from these 3762 types, very many are present only once, twice or three times as will be shown in section 6.3.

<i>Frequency</i>	<i>CAA</i>
>1001 times	3
101-1000 times	23
51-100 times	36
21-50 times	139
1-20 times	3757

Table 4. Distribution of word types

6.2. Frequently occurring items

Table 5 shows a comparison between the most frequent words in the reference corpus, the British National Corpus, and my collection of agricultural abstracts. It indicates the eight most frequent words in order of their frequency of occurrence. As can be seen, the similarities at this stage are remarkable, with grammatical words being the most

frequent items in both corpora. The only exception is the word *organic* which appears on rank six in the specialised corpus. However, this is no surprise as the whole corpus deals with the specific topic of organic farming and organic agriculture. Overall, it occurs 620 times in the whole corpus (a rate of 156.64 per 1000 words).

Rank	CAA	BNC
1	THE	THE
2	AND	OF
3	OF	AND
4	IN	A
5	TO	IN
6	ORGANIC	TO
7	A	IT
8	FOR	IS

Table 5. Most frequent words

As expected and indicated in table 5, grammar (or functional) words are the most common word types in both corpora. A more interesting result can be obtained, however, when examining content (or lexical) words. Many more differences can be detected on this level. In table 6 below, the ten most frequent lexical words of each corpus are given.

CAA	BNC
organic, farming, conventional, systems, production, soil, higher, corps, different, food	time, people, know, see, new, get, way

Table 6. Most frequent lexical items

This table displays the significant difference between the two corpora. There is no agreement between them on this level of investigation. Such a comparison indicates the relevance of specialised corpora in different specialised disciplines. Example 1 shows the use of the most frequently used lexical item, *organic*. A more detail account of this

item can be found in section 6.5.1 which investigates concordances of the most important keywords.

- (1) Continued high dependence on an external supply of nutrients, which typically originate from mineral sources, poses a significant challenge to **organic** farmers' fulfilment of the principles of **organic** agriculture. (*Nutrient cycling in agroecosystems*, 98)

6.3. Less frequently occurring items

As was illustrated above, a large number of items occur with a very low frequency. 3757 items appear, for instance, only twenty times or less in the CAA. From these items, 1716 words appear only once in the corpus, 655 items occur twice and 378 items occur three times. This is shown in table 7 below.

<i>Frequency</i>	<i>CAA</i>
1 time	1716
2 times	655
3 times	378

Table 7. Distribution of infrequent word types

When the corpus is scrutinised for academic and general service words in AntWordProfiler, as shown in the next section, the results also yield items that do not belong to either of these two lists. These were categorised as on the one hand technical terms, which will be dealt with in section 6.4.3., and low-frequency words. Overall, 1108 items were classified as low-frequency items which accounts for about 28% of the whole corpus. These include, for instance, names of countries or geographical areas as in the following example.

- (2) [...] forage crop cultivation following a ryegrass-clover ley ploughed in May/June were investigated in field experiments over 3 years at the Experimental Farm for Organic Agriculture '**Wiesengut**' in **North-Rhine Westphalia, Germany**. (*Renewable Agriculture and Food Systems*, 113)

These geographical words are likely to be less important. Others include words which do not belong to the group of academic or high-frequency words and are therefore categorised as low-frequency items by AntWord Profiler as *hazard*, *initialisation*, *leverage*, *obstacle*, *paucity*, *parturition*, *optimise*, *corroborate*, *elucidate* and *dissemination*. From these items, words such as *optimise* might be of relevance as the word family occurs 11 times and this word could be given the status of academic rather than low-frequency vocabulary. This stresses the importance of subject-specific academic wordlists.

6.4. Vocabulary analysis according to the GSL and AWL

In this section, it is investigated how many items in the CAA can also be found in the GSL and the AWL. Such an analysis indicates the academic and general service vocabulary in the CAA. The results are shown in table 8.

<i>Type of vocabulary</i>	<i>Percentage of coverage of word types</i>	<i>Percentage of coverage of word families</i>
1 st 1000 most common words	31.46%	22.65%
2 nd 1000 most common words	10.36%	8.80%
GSL overall	41.82%	31.45%
AWL	19.74%	14.34%
Words not in the list	38.44%	54.21%

Table 8. Types of vocabulary and their coverage in the CAA

This table describes the distribution of the different types of vocabulary in the CAA. Before discussing the statistics, it is necessary to clarify the term *word families*. A word family includes all “inflected forms, and its closely related derived forms” of a headword (Nation 2001: 9) and “one member [...] will be more frequent than others” (Coxhead 2002: 76). Thus, the word family *optimise* includes *optimise*, *optimised*, *optimising* and *optimisation*.

Table 8 shows how many words from the Academic Word List and the General Service List are also present in the CAA. This gives a concise overview of what types of vocabulary are used frequently and what teachers and learners need to pay attention to and focus on. Taken together, the first and second 1000 most common words in English represent around 42% of the corpus. About 20% of types fall in the category of academic language. Words not found in any list constitute about 38% and rank just below the GSL as a whole. As already mentioned, this group consists of words that are particularly infrequent as well as technical language. The latter is of special importance for this analysis as well as for teachers and learners. This table indicates that if learners know the most common words and the academic words, their ability to understand a text from their specific field is rather limited as only about 62% are covered. With the additional knowledge of technical words which account for about 11%, this ability can increase to 73%. This is still not a very high percentage. The remaining part is represented by low-frequency words. This illustration suggests that the words are differently distributed in the field of agriculture and some low-frequency words might belong to academic vocabulary or to general service words. This would be a subject matter of further research.

The next two sections provide a more detail account of the distribution of words from the GSL and AWL in the CAA.

6.4.1. General Service List (GSL)

Nation (2001: 11-12) claims that words from the GSL cover about 80% of an academic text. However, this is not the case in the CAA as only just over 40% is covered by the GSL. Generally, the most common words from the GSL in my corpus include functional words as *the, and, of, in, to, a, for*. Although it is still the most dominant category in comparison with the other types of vocabulary, especially academic vocabulary seems to be of great importance in this specific discipline and genre as will be shown in the next section. To illustrate the use of general service words in the collected sample texts, some examples from the CAA are provided below. All the general service words are highlighted in bold.

(3) **The maintenance of organic farming production schemes is a theme receiving a growing interest now that there are signs of a slowing in organic farming uptake in Italy. The present study develops a model based on a Bayesian network (BN) that is aimed at investigating the factors that affect the exit of a farm from the organic sector and to simulate the probability of maintaining an organic scheme for different farm types.** (*Computers and Electronics in Agriculture*, 41)

This excerpt is the beginning of an abstract reporting on a case study in Italy. Nearly 70% of the words from this extract are covered by the GSL. Firstly, these words include function words such as *the, of, a, that* and *for*. Secondly, there are content words which can be nouns (*farming, production, interest*), verbs (*develops, aimed at, based on*) or adjectives (*present, different*). The following excerpt is concerned with assessing the consumer's perception of the term *organic* and includes even more general service words.

(4) **Some bias is introduced into the jury as most citizens either worked or came from an urban background and hence may have less knowledge of dairy systems when compared with those from a rural background. However, most CJs begin from a point where participants have little or no knowledge of the subject and their views are shaped by the CJ process itself.** (*British Food Journal*, 34)

83% of this excerpt is covered by the GSL which is a rather considerable percentage. These words include function words (*into, the, or, from*) as well as content words (*knowledge, citizens, subject, views*). Finally, a completely different example is given below which contains very few general service words.

(5) **A major conclusion of the authors is that more interaction and mutual understanding between organic and molecular oriented breeders is necessary and can benefit both research communities.** (*Euphytica*, 49)

In this extract, it can immediately be seen that it contains remarkably fewer GSL words than the examples before. Only about 54% is covered by the GSL which is significantly

less than in the two examples above. Many of them are function words as *a, of, the, or and* while some are content words including *understanding* and *necessary*.

These three examples show the difference of coverage by the GSL in individual texts. Generally, a great amount of general service words can be detected in the individual abstracts which points to the importance of general service words. The next group I will examine are academic words.

6.4.2. Academic Word List (AWL)

Vocabulary from the AWL covers almost 20% of the words in the corpus which is rather significant as Nation (2001: 11-12) suggests that academic words usually account for about 9% of an academic text. This indicates that the collected abstracts are very academic in nature. The most frequent words in the CAA that are also part of the AWL are *conventional, environmental, analysis, research, significant, energy, data, significantly* and *potential*. However, these results must be considered with caution as I would suggest the item *conventional* should rather be seen as technical word. This point is debatable and will be taken up again in section 6.6. When considering word families instead of word types, the following families are found with a high frequency in the agricultural corpus: *convene, environment, analyse, significant, consume, research, input, area* and *strategy*.

The word family *consume*, for instance, appears 71 times in the CAA (a rate of 17.94 per 1000 words) and is used in the form of four different word types. The two most frequent forms are the plural noun form *consumers* (occurring 28 times) and the singular form *consumer* (22). *Consumption* also occurs rather frequently with 20 occurrences whereas *consuming* occurs only once.

In order to illustrate the use of academic words in agricultural abstracts I will present two examples from the corpus.

- (6) Although **overall benefits** are expected from a harmonised certification system, Asian countries need to tailor their national organic **promotion policies** to suit **diverse** national **circumstances** and to improve their **technical** and **institutional capacity** to **implement** such **policies**. (*Journal of Sustainable Agriculture*, 96)

- (7) To the best of our knowledge this is the first study on soil quality and microbial **functional diversity** of soil in a semi-arid **region indicating** that **conversion** from FGL to OCF led to **significant** soil quality improvement due to the **enhanced** microbial **functional diversity**. (*Soil & Tillage Research*, 117)

Some of the academic words in these two extracts include *diverse*, *implement*, *policies*, *enhanced*, *significant* and *indicating*. The word family *diverse* occurs 33 times (a rate of 8.34 per 1000 words) in the corpus. However, the different forms of this family appear with a different frequency as the noun *diversity* occurs 24 times while *diversification* occurs only twice and the adjective *diverse* seven times. The word family *implement* is less frequently employed with *implementation* occurring three times and the verb forms *implement* and *implemented* once each. What can be detected from these two word families is that both occur mostly in their noun forms. In contrast, in the word family *significant*, the adjective *significant* appears most often with 41 occurrences followed by the adverb *significantly* which occurs 32 times and the noun *significance* which appears only once. Finally, the word family *indicate* is used in six different forms. Overall, it occurs 36 times (a rate of 9.1 per 1000 words) with various verb forms as *indicated* (11), *indicate* (10), *indicating* (5) and *indicates* (3). The two noun forms, *indicators* (5) and *indicator* (2), seem to be less relevant.

Having explored general service words and academic vocabulary in the CAA, the next section provides a description of the technical vocabulary that can be found in the corpus.

6.5. Technical Vocabulary

As already mentioned above, technical vocabulary can partly be identified by AntWordProfiler which shows the words that are not in either of the two categories, the GSL or the AWL. In the case of the CAA, nearly 40% of words do not occur in either of these lists which is a rather large amount. However, this does not mean that all of these words are technical in nature. This number also includes low-frequency words which have been examined above. All words were checked in two different ways to either confirm or reject their technical status in the corpus. On the one hand, an online agricultural dictionary was used (www.agriculturelaw.com/links/dictionary.htm). This dictionary was chosen because it is very comprehensive, containing a great amount of

technical words relating to agriculture. On the other hand, the concordances of the words in question were examined in AntConc in order to explore how a given word behaves in a specific context. When doing so, it could be investigated if a specific item behaves differently in certain environments. It could be seen if items take on a technical meaning when they are used in certain collocations.

Overall, 454 words in the corpus were identified as technical words which amounts for about 11% of the whole vocabulary in the CAA. However, they vary in their degree of technicality. The following is a list of frequently used technical words that are specific to the field of agriculture and more specifically to organic farming.

organic, species, acid, manure, nutrient, microbial, nitrogen, breeding, emissions, cultivars, biomass, arable, tillage, plots, biodiversity, rotation, fertiliser, uptake, MC (main crop), intercropping, organically, ecological, greenhouse, aphid, cultivar, faba, rearing, SOC (soil organic carbon), fertility, LC (layer cultivation), pesticide, residues, legume, ley, biogas, ecosystem, parasitoid,

Table 9. Frequently occurring technical vocabulary

Not surprisingly, *organic* is by far the most frequently used technical term with over 620 occurrences (a rate of 156.64 per 1000 words). This could be expected as *organic* was part of the search phrase and only abstracts focusing on organic farming and organic agriculture were chosen for analysis. *Organic* is followed by *species* and *acid* with 56 (a rate of 14.15 per 1000 words) and 40 (a rate of 10.11 per 1000 words) occurrences respectively.

As mentioned before, in order to detect technical vocabulary in a text or corpus, Chung and Nation (2003: 105; 2004: 254) propose a rating scale which classifies vocabulary according to its technicality. This scale measures “the strength of the relationship of a word to a particular specialised field” (Chung & Nation 2003: 104-105). Although it is often difficult to ascribe certain words to one of these categories as the boundaries are not clear cut and some words are not easy to categorise, I have tried to do so in the following table. Level 1 includes words with no particular relationship to a specific field as function words. Level 2 contains words that are minimally related to the field. Level

3 consists of words that are closely related to the field but are also used in general language or other fields. They may have restriction of usage depending on the subject field. Level 4 includes words specific to the field which are not likely to be known in general language.

Level 1 is, are, often, very, good
Level 2 hen, barley, rye, dairy, lettuce, lambs, rural, vineyards, potatoes, beef, vegetable, carrots, bulls, strawberry, melon
Level 3 organic, rotation(s), uptake, pecking, residues, pest, runoff, slurry, cradle, digestion, cuttings
Level 4 nutrient, microbial, cultivar(s), arable, tillage, phylanic, faba, intercropping, TP (two layer ploughing), DM (dry matter), vetch, ES (effective selection), LCS (life cycle assessment), triticale, mycorrhizal, herbicide, undersowing, cultivations, ruminants, pullets, agrotolerant

Table 10. Levels of technicality (Chung & Nation 2003: 105).

Words in level three and four are technical terms while words on level one and two are not (Chung & Nation 2003: 105). With respect to this, level 1 and 2 should not be important for this section. However, level 2 is a difficult case here as it includes words that are on the one hand used in general language but on the other hand, very closely related and associated with the field of farming and agriculture. As can be seen from table 10, these items include two main types. Firstly, names of agricultural products, namely crops, fruits or vegetables are given. In addition, words denoting farm animals are found as well. However, they are not field specific in the sense that level 3 or 4 imply and will therefore not be considered technical.

Some examples of words from level 3 and 4 are given in the following section. As already mentioned, level 3 includes terms that may have a specialised, restricted meaning in a certain field but can also be used in another context, in general language or in another discipline. Some of these terms will be considered in more detail here and

their meaning in the field of agriculture as compared to other meanings they can obtain will be shown.

As could be expected, the most prominent word from this category and also the technical word used most often is *organic*. With a frequency of 620 occurrences, it ranks on position six in the word list being the most frequent content word. Generally, *organic* can occur in different contexts, for example chemistry, medicine or agriculture. The distinction between the different meanings can be expressed by the following dictionary entry

Organic - Chemically, a compound or molecule containing carbon bound to hydrogen. Organic compounds make up all living matter. The term organic frequently is used to distinguish ‘natural’ products or processes from man-made ‘synthetic’ ones. [...] Likewise, organic farming and organic foods refer to the growing of food crops without the use of synthetic chemical pesticides or fertilizers; [...]
(<http://www.agriculturelaw.com/links/dictionarym-s.htm#O>, 6.9.2012).

The use of *organic* in chemistry is related but still different from the way it is employed in agriculture. This is also indicated in the concordance lines, where *organic* occurs most often with *farm* or *farming* whereas in chemistry, it would collocate with different items.

Another word of the same category is *pest* which clearly has different meanings in general or medical language. In agriculture it refers to an “animal or plant that is directly or indirectly detrimental to human interests, causing harm or reducing the quality and value of a harvestable crop or other resource”

(<http://www.agriculturelaw.com/links/dictionarym-s.htm#P>, 6.9.2012). Example 8 below illustrates the usage of these two words, *pest* and *organic*.

- (8) It is still unclear whether **organic** farms which typically support greater levels of biodiversity also experience greater levels of **pest** control services. We assess whether **organic** farming systems were better able to control cereal aphids due to a greater diversity and activity of naturally occurring parasitoid species.
(*Agriculture, Ecosystems & Environment*, 16)

After this description of technical vocabulary from level 3, vocabulary items from level 4 are considered more closely. Many of them are of Latin origin. In addition, a great deal of acronyms can be found. Examples for Latin words and phrases are provided in table 11 below.

lumbricus castaneus, lumbricus rubellus, desmodesmus subcapitatus, asparagus racemosus, mycorrhizal fungi, sorghum sudangrass, durum wheat

Table 11. Technical Latinate words in the CAA

All of the words in the box denote some type of species or plans. Sometimes the English name is given in the abstract as well. The following two examples provide an illustration of the usage of Latin words in the CAA. In example 9, the English name, *earthworm* is indicated while in example 10 no explanation for the Latin word is given.

- (9) Weak correlations between earthworm numbers and soil pH or organic matter of soil were found for few species, except for **Lumbricus castaneus** which was more abundant at pH>6.5. (*Agriculture, Ecosystems & Environment*, 10)
- (10) Temporary intercropping was shown to be excellent method to improve the quality of **organic durum wheat** in the Mediterranean environmental conditions. (*European Journal of Agronomy*, 53)

Acronyms are also widely used in the CAA. Here are some of the numerous examples other than the ones mentioned above already.

Pre-MC (before main crop planting) SOC (soil organic carbon) MP (mouldboard ploughing) EIOVI (environmental impact of an organic viticulture indicator) OB (organic beef) RLD (root length density) OFS (organic farming system)

Table 12. Acronyms in the CAA

Most often, these acronyms are explained in the abstracts and the full term is given to provide more information and a better understanding for the reader. This is also the case in the following example.

- (11) On an experimental organic farm in Germany, we studied during three years the effects of the three tillage systems **mouldboard ploughing (MP)**, inversion to 30cm depth), **two layer ploughing (TP)**, inversion to 15cm, loosening to 30cm) and **layer cultivation (LC)**, only loosening to 30cm) on soil properties, root and shoot growth of barley and rye and their associated weeds. (*Soil & Tillage Research*, 119)

The acronyms employed in the CAA are names for certain concepts, models, methods or phenomena. *OFS*, for instance, is a very general acronym as it refers to *organic farming systems*. More specific examples are *mouldboard ploughing (MP)* and *main crop planting (MC)*, which refer to more particular farming practices. As is evident from the examples, acronyms play an important part in the genre of agricultural abstracts as well as in the field of agriculture in general. Thus, teachers should make students aware of them as this would constitute an important step for students in becoming members of a specific discourse community.

Other very subject specific vocabulary include the ones that can be detected in the following examples:

- (12) The results revealed that **MAPs** can be successfully grown as **intercrops** [...] (*Industrial Crops and Products*, 68)
- (13) [...] after application of **herbicides** and **fungicides** [...]. (*Ecotoxicology*, 47)
- (14) We also evaluated the amount of **nitrogen** potentially available from **fixation** by **leguminous cover crops** used as **fertiliser**. (*Renewable Agriculture and Food Systems*, 111)

Before proceeding to a discussion of some relevant concordance lines, it is necessary to mention one issue here that seems to be of importance when dealing with technical words in the field of agriculture. It has to be noted that many items that are very closely related to the discipline of chemistry also appear in my agricultural corpus. Thus, the

two fields can be seen as closely related to each other. I have decided not to take into account items that seemed to be highly related to chemistry, especially the ones more associated with chemistry than agriculture. Of course, I have to admit, that they also play a major role in the field of organic farming. However, they are not seen as essential, especially with the background of my teaching situation in mind.

Nevertheless, some examples of these words are given here as they are still relevant for agriculture as well. They are mainly used when describing some chemical reaction or some chemical methodological procedures.

Phenotyping, methylheptadecanoic, glucosaminidase, anion, tannins, polymerase, radiocarbon, thermochemical, toxins, genotypes, methylhexadecanoic, glucoside

Table 13. Words related to chemistry in the CAA

This section has explored technical vocabulary and its use in the CAA. In the following section, I will give a detail account of the concordances of the most important keywords in the corpus.

6.6. Concordances

In this section I employ AntConc in order to find collocations and clusters in the corpus. First of all, however, I am concerned with keywords in the CAA. The following table shows the most frequent positive keywords.

Rank	Keywords
1	organic
2	farming
3	conventional
4	systems
5	production
6	soil
7	higher
8	crops
9	food
10	system

Table 14. Most frequent keywords in the CAA

This list is not surprising as organic and conventional farming is a highly relevant topic in the CAA. All the items can also be found among the most frequent ones in the wordlist of the CAA. Negative keywords include the items *wine*, *whole*, *western*, *weeks*, *vitamin*, *vegetable*, *varied*, *variance* and *urban*. As the positive keywords can be said to be of enormous importance in the corpus, some concordances will be outlined in the following section.

6.6.1. Concordances for *organic*

Organic can be preceded and followed by various different words. Among the most important rank the following.

Collocates	Frequency
farming	172
of	111
and	65
the	44
food	37
to	35
agriculture	35

Table 15. Collocates according to frequency for *organic*

However, there are other collocates which are worth noticing as they have a high mutual information score. The MI score “is a measure of collocational strength” and “the higher the MI score, the stronger the link between two items” (McEnery, Xiao & Tono 2006: 56). This means the higher the MI score, the higher the chance of two items occurring immediately next to each other. The words with the highest MI score include *whose*, *viticulture*, *untreated* and *terminology*, each with a score of 5.54. They only occur twice (*viticulture*) or once (*whose*, *untreated*, *terminology*) in the corpus but when they do, they appear as collocates of *organic*. These words are obviously important as the chance of appearing together is very high. However, I want to focus in more detail on the words in the table above because these are words that have an overall higher frequency and occur very often with *organic*.

Firstly, I will explore the word families *farm* and *agriculture* in connection with *organic* as the collocation *organic farming* seems to be the most common phrase. The reason for this is that organic farming/agriculture is also the subject matter of the CAA. Besides *organic farming*, the collocation *organic farms* occurs 28 times, *organic farmers* 13 times and *organic farm* 7 times. In sum, this word family is very important in connection with the item *organic*. *Organic agriculture* is less frequently used with 35 occurrences in the CAA. Three extracts from the CAA are presented to underline the usage of these collocations.

- (15) Support for **organic farming** varies from state to state, and there have been few attempts to document what types of support currently exists. This research assesses regionally specific and relevant support available to **organic farmers** at the state level. (*Journal of Sustainable Agriculture*, 87)
- (16) The results show that direct payments play an important role in the financial viability of **organic farms** in both Western and Eastern European countries. (*Food Policy*, 61)
- (17) The benefits of **organic agriculture** have not been realised to their full potential, even though the organic market has been steadily expanding due to rapid economic growth and increasing environmental and health concerns in Asia. (*Journal of Sustainable Agriculture*, 96)

In addition, there are some important clusters to be noticed here. They are shown in table 16 and include the relevant prepositions not mentioned so far.

Cluster	Frequency in CAA
of organic farming	41
organic and conventional	27
in organic farming	24
organic farming systems	15
the organic sector	14

Table 16. Clusters for *organic*

In addition, there are other clusters that might be of equal interest for learners: *organic and conventional farming*, *organic food consumption*, *organic farming policy* and *organic versus conventional*. All these clusters occur five times or more. Clusters consisting of the following patterns are also rather important in the CAA: *organic + farm*+ noun*. Conversely, they can also consist of *modifier +organic +farm**. In addition, there are also patterns with *organic+ dairy+ noun*. These patterns are highlighted in the following table.

organic farming systems	organic dairy producers
organic farming system	organic dairy sheep
organic farming policy	organic dairy products
organic farming methods	organic dairy farming
organic farming conditions	
organic farming practices	
certified organic farms	

Table 17. Patterns with *organic*

6.6.2. Concordances for *farming*

Farming is a very prominent word in the CAA and with 254 occurrences the second most common lexical item after *organic*. In the keyword list it ranks on second place, again after *organic*. Again, this is not surprising as farming is the subject matter of the

corpus. Generally, the following words are the most important collocates for farming in terms of frequency.

<i>Collocates</i>	<i>Frequency</i>
organic	172
conventional	25
systems	24
and	18
system	15
in	14

Table 18. Collocates for farming

In terms of MI score, *whilst*, *took*, *refrains* and *multifunctional* are prominent collocates, each with a score of 6.82.

As already examined in the previous section, *organic* and *farming* are popular collocates. Therefore, some other collocations associated with *farming* are explored here. With a MI score of 4.23 and 25 occurrences in connection with *farming*, *conventional* can be seen as rather important. This collocation is illustrated in 18.

- (18) Empirical evidence shows that organic farming is ranked at least equal, and in a number of instances better, than **conventional farming** for key environmental indicators. (*Crop Management*, 43)

As can be seen in 18, a comparison between the two types of farming, organic and conventional, can often be found in the abstracts. Thus, these two terms are often mentioned together in one abstract, in one sentence or even in one phrase as the following cluster shows.

- (19) We did not observe significant consistent trend in the phenolic content of eggplant samples grown with **organic and conventional farming** practices with both eggplant cultivars. (*Food Chemistry*, 60)

This phrase occurs nine times in the whole CAA, three times as it is shown in 19, with *practices* at the end. Another interesting collocation is *farming system(s)* as shown in the following example.

- (20) Organic **farming systems** are characterised by the strong regulation of the import of nutrients into the **farming system**. (*European Journal of Agronomy*, 54)

Other clusters include *organic farming systems* (15), *organic farming system* (7), and *conventional farming systems* (2).

6.6.3. Concordances for *conventional*

As this item has already been discussed with *organic* and *farming*, the most important points will be briefly described here. As already pointed out above, *conventional* can be considered a technical rather than an academic word. The examples found below underline this decision.

<i>Collocates</i>	<i>Frequency</i>
and	43
farming	25
to	18
in	14
vegetables	13

Table 19. Collocates of *conventional*

Other interesting collocates include *than*, *production*, *agriculture*, *cages* and *farms*. In contrast, when using MI score, *respective*, *ones*, *counterpart* (all 7.57) and *versus* (6.90) are most relevant.

As already indicated above, *and* in this context often functions as conjunction between *organic* and *conventional*. Interestingly, *organic* is more often in first position (*organic and conventional*), namely 28 times, than *conventional* (*conventional and organic*), 11 times. The use of *conventional* in some other contexts is illustrated below.

- (21) A move from **conventional cages** to either an enriched cage or a noncage system may affect the safety or quality, or both, of the eggs laid by hens raised in this new environment. (*Poultry Science*, 106)
- (22) Mean scores of perceived liking were higher for organic beef (OB) as compared **to conventional** beef (CB). (*Food Quality and Preference*, 64)

In these examples, it can be seen that *conventional* can rather be seen as technical term as most of the time it refers to the distinction between the two farming practices, organic and conventional. This is not the same usage as in general language.

Two patterns involving *conventional* are important in the texts. The first one includes the collocation *to conventional*. The following clusters are common when comparing conventional farming to other practices: *in contrast to conventional*, *compared to conventional*, *relative to conventional*. A variety of clusters with *to conventional* can be formed which are indicated in the following table.

compared, relative, alternative, in contrast	to	conventional	farming, production systems, beef, production, farmers, vegetables, farming conditions, farming systems
--	----	--------------	---

Table 20. Clusters for *conventional* I

Another construction which also corresponds to a comparison between two concepts is *adjective +than +conventional* as in the following examples.

healthier and safer than conventional foods
not significantly better than conventional vegetables
more environmentally friendly than conventional farming
better than conventional farming

Table 21. Clusters for *conventional* II

This pattern is also often used when a comparison between organic and conventional farming is made as in 23.

- (23) Organic farming is widely perceived as being **more environmentally friendly than conventional farming**. (*Agronomy for Sustainable Development*, 21)

6.6.4. Concordances for *systems* and *system*

In this part, the plural form *systems* and the singular form *system* are discussed together. The former occurs 133 times in the CAA while the latter only 78 times. According to frequency ranking, the following collocates can be observed.

<i>Collocates Systems</i>	<i>Frequency</i>	<i>Collocates System</i>	<i>Frequency</i>
farming	24	farming	15
production	15	the	8
and	14	production	7
cropping	13	organic	6
organic	12	housing	6
tillage	7	and	5
housing	7	a	5

Table 22. Collocates for *systems* and *system*

As expected, both forms share many similarities in terms of collocations. *Farming*, *production*, *organic* and *housing* appear in both lists with *farming* in first position. According to MI score, *mouldboard*, *outdoor* and *cropping* are relevant for *systems*, with scores of 7.76, 7.17 and 7.14 respectively. In contrast, *system* shows a high MI score with *registered*, *imposes* and *favoured* (8.53).

As *cropping* seems to be important for *systems*, both according to frequency and MI score, I will start with giving an example for *cropping systems*.

- (24) A life-cycle assessment (LCA) was carried out to compare the environmental performance of different organic **cropping systems** with and without digestion of slurry and crop residues. (*Renewable Agriculture and Food Systems*, 114)

As was already evident from the sections above, *organic* occurs in clusters with *systems*: *organic farming systems* occurs 13 times overall, *organic production systems* four times and *organic cropping systems* three times. This can also be seen in example 24.

Farming, *production*, *organic* and *housing* occur with both singular and plural forms, as illustrated in 25 and 26, but far more often with the plural form. The reason for this is the overall higher frequency of *systems* in the corpus. Thus, these items are prominent collocates for both forms and therefore worth considering.

(25) This paper discusses the US egg industry in the context of legislation and standards related to hen **housing systems**. (*Poultry Science*, 105)

(26) The development of organic protected cultivation taking place in densely populated areas has raised the question whether it is an environmentally friendly **production system**. (*Renewable Agriculture and Food Systems*, 109)

Thus, *system* and *systems* occur with a variety of different lexical items but *farming system(s)* is the most prominent collocation here.

6.6.5. Concordances for *production*

This item has already occurred in some of the examples above. Overall, it appears 131 times in the CAA. The following table shows its collocates according to frequency.

<i>Collocates</i>	<i>Frequency</i>
organic	21
systems	15
of	14
the	11
in	11
conventional	8

Table 23. Collocates for *production*

According to MI score, *shape, represents, quotas, pear and leek* are relevant with a score of 7.78. Some of the most relevant lexical collocates are shown in the following examples.

- (27) Egg **production systems** have become subject to heightened levels of scrutiny. (*Poultry Science*, 103)
- (28) The main scope of this study is to determine whether organic cherry production is rational when compared with **conventional production** in terms of unit cost and net return per unit [...]. (*Journal of Sustainable Agriculture*, 88)

The last example also shows another collocation, *cherry production*. There are many more instances of this type, referring to the production of food or agricultural products in general involving either fruits, vegetables and cereals, the production of animals or energy as illustrated in table 24.

cherry production, vegetable production, crop production, grain production, leek production, grassland production, cereal production	goat production, livestock production, meat production	biomass production, fuel production, biogas production, energy production
--	--	--

Table 24. Compounds with *production*

The two final extracts show a cluster that seems to be relevant in the context of the word *production*, namely *the production of*.

- (29) In the first two scenarios, straw was used as raw material for **production of** hydrogen or methanol via thermochemical gasification. (*Agricultural Systems*, 20)
- (30) In **the production of** "organic" meat, one of the controlled processes is the use of veterinary drugs. (*Journal of Agricultural and Food Chemistry*, 74)

6.6.6. Concordances of *soil*

The term *soil* occurs 124 times in the CAA and ranks just after *systems* and *production*.

The following table shows its most frequent collocates.

<i>Collocates</i>	<i>Frequency</i>
the	23
and	13
on	11
quality	9
organic	8
in	8
surface	7

Table 25. Collocates for *soil*

According to MI score, *texture*, *sequestering*, *promoting* and *porosity* rank among the first with 7.86.

The use of the preposition *on* in connection with *soil* can be seen in the following examples taken from the CAA. These examples highlight the clusters *on soil quality* and *on soil fertility*. Other clusters include *on soil property*, *in the soil* and *into the soil*

- (31) It is concluded that management practice had a strong impact **on soil quality** [...]. (*Applied Soil Ecology*, 30)
- (32) These results indicate that atmospheric deposition of heavy metals can have a destabilising effect **on soil fertility** in organic farming [...] (*Journal of Sustainable Agriculture*, 91)

Other interesting collocations include *soil porosity*, *soil properties*, *soil degradation*, *soil types*, *loamy soil* and *soil samples*. The following extract shows one of these collocations.

- (33) **Soil porosity**, water holding capacity, microbial biomass carbon (Cmic), substrate-induced respiration (SIR), alkaline phosphatase, and FDAase activity decreased [...] (*Journals of Sustainable Agriculture*, 91)

6.6.7. Concordances for *higher*

Higher appears 90 times in the CAA. Its collocates are outlined in the following table.

<i>Collocates</i>	<i>Frequency</i>
in	16
a	15
than	11
were	8
was	7
significantly	7
at	6

Table 26. Collocates for *higher*

In contrast, *twofold*, *therewith*, *sizes* and *sixfold* rank among the most prominent collocates with a MI score of 8.33.

The collocation *higher in* can have different meanings in the corpus. I will discuss them by means of the following examples.

- (34) [...] it was tested whether organic cheeses (n =13) and other organic dairy products (n =5) are **higher in** phytanic and pristanic acid concentrations than conventional products (n =12). (*Food Chemistry*, 59)
- (35) Microbial biomass carbon was 20-25% **higher in** the organic than in the conventional system each year and microbial biomass nitrogen 32 and 23% **higher in** 2000 and 2001, respectively. (*Applied Soil Ecology*, 30)
- (36) In most cases, concentration of organic acids was **higher in** the citrus fruits from organic farming. (*Acta Horticulturae*, 6)

In 34, *higher in* means that organic products have a higher concentration of the acids; there is more of the acids in organic dairy products. In contrast, in 35, the construction has changed. To illustrate this, in 34 it would also be possible to say *Acids are higher in organic cheese* and in 35, one could say *organic system was higher in carbon*. In contrast, *higher in 2000* is only a time indication. The last example, 36, is similar to the first one in 56 only that instead of *organic farming*, one particular fruit is mentioned, *citrus fruits*. Thus, there are slight differences in usage of *higher in* which should be considered. This usage of prepositions might also be useful for students to explore.

Another interesting combination is *higher than*. This is used for comparisons and can be preceded by certain adverbs as *generally*, *typically* or *usually*.

- (37) The growth rates of organic horticultural crop area are **typically higher than** for organic farming in general [...] (*Acta Horticulturae*, 8)

Generally, the item *significantly* is the adverb used most frequently in connection with *higher*, mostly used to report on findings and results achieved. This is illustrated below.

- (38) At harvest maturity the aboveground plant N concentration was **significantly higher in** the conventional treatments than in the organic treatments. (*Journal of Plant Nutrition*, 85)

Finally, the following three examples show the use of other prepositions in connection with *higher*. Different prepositions are used in different situations including *at*, *for* and *on*.

- (39) Weed shoot mass in barley was across years 88% and 65% **higher at** LC than at MP and TP [...] (*Soil & Tillage Research*, 119)
- (40) Mean scores of perceived liking were **higher for** organic beef (OB) as compared to conventional beef (CB). (*Food Quality and Preference*, 64)
- (41) Plant species richness was significantly **higher on** organic than conventional farms. (*Agriculture, Ecosystems & Environment*, 15)

6.6.8. Concordances for *crops*

Crops occurs 87 times in the CAA and its collocates are indicated in the following table.

<i>Collocates</i>	<i>Frequency</i>
cover	32
and	13
main	12
were	7
catch	6

Table 27. Collocates for *crops*

According to MI score, the most important items include *companion* (8.37), *acre* (8.37) and *cover* (8.01).

The collocation *cover corps* occurs in both of the lists. Therefore I will start with collocational examples of these two words.

- (42) Different species, both legumes and nonlegumes, may be used as **cover crops**. (*Renewable Agriculture and Food Systems*, 108)
- (43) Weed DW was suppressed significantly **by sowing cover crops** in both soybean and maize. (*Field Crops Research*, 58)
- (44) The **cover crops were sown** on three sowing dates [...] (*Field Crops Research*, 58)

The clusters indicated in 43 and 44 occur three times each. Other clusters that could be of relevance are *crops were grown* and *corps were used*.

6.6.9. Concordances for *food*

Food occurs 80 times in the corpus. The most frequent collocates are indicated in the following table.

<i>Collocates</i>	<i>Frequency</i>
organic	37
and	12
consumption	10
security	8
safety	5

Table 28. Collocates for *food*

As can be seen, *organic food* is the collocation occurring most often with a huge gap to the second position, *and*. According to MI score, *whom*, *resilient*, *raise* and *purchase* occur with a score of 8.49. In addition, *security* shows a score of 8.32 which is also rather high.

The following example shows the collocation *food consumption* in connection with the cluster *organic food consumption* which appears nine times and is therefore the most frequent cluster.

- (45) Appealing to these values can positively influence attitudes towards **organic food consumption**. (*British Food Journal*, 39)

Example 46 shows the use of *food* in connection with *security* as this can be considered one of the most important collocations in this context because *security* is both high in frequency and MI score. Out of eight occurrences, five are also in connection with *household*.

- (46) [...] attaining **household food security** through adoption of organic farming. (*Journal of Food, Agriculture & Environment*, 83)

The last example examines the use of *quality* and *safety* with *food*.

- (47) The present study aims to explore and compare consumer perception and scientific evidence related to **food quality** and **food safety** aspects of organic versus conventional vegetables. (*British Food Journal*, 40)

Thus, *food consumption*, *food safety* and *food security* are highly relevant phrases in the CAA which could be taken up in English courses for agricultural students.

Besides examining lexical collocations and clusters, it is also possible to explore grammatical concordances with AntConc. Two areas were chosen, passive constructions and the use of pronouns, which will be investigated in the next sections.

6.7. The passive in the CAA

Passive constructions have been reported to be of immense importance in academic writing in order to give academic texts an impersonal and formal tone. Self-reference and the use of the pronouns *I* and *we* should be kept to a minimum. Instead, passive constructions as well as the dummy *it* are employed. These impersonal constructions are an essential feature of academic writing (Hyland 2006: 14). This section explores if the genre of agricultural abstracts also conforms to this principle or if it deals differently with passive constructions in abstracts. Therefore, the corpus is scrutinised for *be*, *is*, *are*, *was*, *were*, *have been*, *has been* and *had been* in connection with passive forms. The results can be seen in the following table.

<i>Forms of to be</i>	<i>Overall frequency</i>	<i>Used as passive</i>	<i>Percentage</i>
be	104	57	55%
is	201	76	38%
are	152	69	45%
was	256	151	59%
were	230	161	70%
have been	15	13	87%
has been	8	7	88%
had been	2	2	100%

Table 29. Possibilities for passive constructions

The table shows that overall, *was* and *were* occur most frequently in the CAA. In terms of being used in a passive construction, they are again the two top words. However, the situation is different when considering percentages. It is remarkable that nearly 90% of *have been* and *has been* are used in a passive construction and all instances of *had been* are used as passive. The lowest percentage can be seen for *is* with only 38%. This indicates that *have been* and *has been* are nearly always used in a passive construction while *is* and *are* can be part of many different patterns. Overall, the passive occurs most often in the past tense (220 occurrences), followed by the present tense (126). The use of the passive is indicated in the following examples.

6.7.1. Auxiliary *be*

The auxiliary form *be* is used with various modal verbs including *should*, *must*, *could*, *can*, *may* and *need*. Example 48 occurs in the conclusion, 49 in the introduction section.

- (48) The poor results of the amendments permitted in organic farming, in light of their high prices suggest that their use **must be** carefully **considered** by farmer [sic] in their fertilisation strategies. (*European Journal of Agronomy*, 52)
- (49) These problems **may be overcome** by adopting a particular form of intercropping [...] (*European Journal of Agronomy*, 53)

These passive constructions, as outlined here, are often used on the one hand to give implications or advice and on the other hand to introduce an issue or problem of the research. In 48, the passive is used to make a strong claim while in 49, the opposite is evident as a claim is weakened.

6.7.2. Present Tense

The example sentences below indicate that present tense passive constructions can be employed in different ways.

- (50) Organic production **is considered** by many researchers to be a viable alternative to conventional farming systems. (*HortTechnology*, 67)

- (51) In this study, the relationship between weed management behaviour and the outcome of that behaviour within an organic farming system **is studied**. (*Weed Science*, 120)
- (52) The model **is based** on a database of organic farms, which has been integrated with qualitative information. (*Computer and Electronics in Agriculture*, 41)
- (53) In a first estimate, the emission reduction potential by abstention from mineral fertilisers **is calculated** to be about 20% [...] (*Renewable Agriculture and Food Systems*, 110)
- (54) It **is recommended** to control manufacturers whose organic dairy products show concentrations of below the target value [...] (*Food Chemistry*, 59)

The present tense passive can be used in the introductory section (50). General points or claims are described here. Moreover, it can be employed when stating the purpose of the study (51). In addition, the passive can be found when describing the methods (52) as well as when showing findings and outcomes (53). Finally, passives can also be detected in the concluding remarks when giving some practical implications and recommendations (54). Most often, the passive is used here instead of a personal pronoun to make the sentence more objective and impersonal. Generally, it can be said that present tense passive constructions can be found in all parts of the texts although the results sections seem to contain the lowest amount of passives.

6.7.3. Past Tense

Past tense passive construction seems to be used most frequently in the methods section (55) as well as for describing results obtained (56). However, it can also be found when outlining the purpose (57) or for concluding remarks (58).

- (55) The frequency with which ewe lambs lay on wooden surfaces at two levels, called “double bunks,” **was documented** by video recording at 6, 11 and 18 months of age: the number in each of 4 pens (n =4) lying either on double bunks (DBs) or on the expanded metal floor (EMF) **was recorded**. (*Applied Animal Behaviour Science*, 28)

- (56) In cultivation of iceberg lettuce, the best results in all quantitative and qualitative parameters **were obtained** when using pellets as a fertiliser. (*Acta Horticulturae*, 7)
- (57) The development of earthworms **was investigated** from 2001 to 2008 [...]. (*Agriculture, Ecosystems & Environment*, 10)
- (58) It **was concluded** that weeds could be controlled effectively by sowing cover crops after planting main crops in organic farming systems in a snowy-cold region. (*Field Corps Research*, 58)

Other constructions for the use of passives in describing methods include *were measured*, *were applied*, *were collected* and *were analysed*. Generally, the reasons for employing past tense passive are similar to present tense. The sentences receive a more objective and formal tone.

6.7.4. Present Perfect Tense

Present Perfect passive is most often employed when describing the methods used in the study (59). However, it can also be used when giving information on previous research (60).

- (59) Four sheep wool pellet types with a total nitrogen content of 10 to 11% DM and different supplements (10% cellulose, 20% potato starch, 20% casein) **have been tested** in open and protected cultivation. (*Acta Horticulturae*, 7)
- (60) Cover crops and organic mulches (OMs) **have been reported** as a means to reduce inputs and increase soil quality. (*Agronomy Journal*, 25)

Past perfect passive is considered less important because of its overall low frequency of occurrence.

Having examined these instances of passive usage, it can be concluded that the passive is employed rather frequently in the agricultural abstracts in the CAA. When employing the passive, the abstracts generally aim to convey an objective, impersonal and formal tone.

6.8. Personal pronouns in the CAA

As already indicated in the previous section, personal pronouns can contribute a great deal to how objective/subjective, personal/impersonal and formal/informal a text sounds. To use many personal pronouns such as *I*, *we* and *you* often makes a text very personal. However, in academic texts, writers need to state their opinion and outline their viewpoints, evaluate their findings and agree or disagree with other points of views as well as state what results they have achieved. This can be done by using personal pronouns. Thus, I argue that using *I* and *we* does not necessarily make a text less formal or less objective. It stresses the viewpoints and position of the writers and their authorship of a text. In addition, it shows their self-confidence in what they do, write and found out. It emphasises their expert status as researchers. Therefore, an exclusive *we* can be employed to strengthen claims and to exclude the audience.

In the CAA, only one instance of *I* can be found. In contrast, the personal pronoun *we* is found 75 times, which is a remarkably high number. This also indicates that most of the time, there is not just one author, but studies are conducted conjointly, together with other researchers of the field. Surprisingly, there are also some instances of *you*, which is rather unusual for such an academic genre as abstracts.

The instance of *I* is a very interesting case:

- (61) Every day consumers make choices about what to eat and ask themselves
“Should **I** be buying organic food?” (*Acta Horticulturae*, 6)

This example is rather unusual because *I* is not used in the same sense as *we*. *We* occurs most often with academic verbs, reporting on the research itself. Here, *I* is used at the very beginning of the abstract, in the first sentence. It is employed in a rhetorical question which is also rather unusual for the abstracts in the CAA.

In the following table, some instances of *we* are outlined, indicating that a wide range of different verbs are employed in connection with *we* in the CAA:

we explored, we highlight, we suggest, we report, we analysed, we review, we examine, we present, we show, we identify, we observed, we compared, we argue, we concluded, we studied, we found

Table 30. *We* in the CAA

The most prominent collocations are *we compared*, *we argue*, *we concluded* and *we studied*. This list also highlights the fact that *we* can occur in various parts of the texts. It can occur in the purpose section (62), in the method section (63) and also in the results (64) and the conclusion (65).

- (62) In this article **we formulate** a theory of economically optimal rates (EORs) for compost that incorporates the effects on yield in the years after application. (*Agronomy Journal*, 26)
- (63) First, **we examine** the factors co-varying with the size and density of the networks and then **we apply** a most similar system - most different outcome research design. (*Food Policy*, 62)
- (64) **We found** that spring pea grown for grain to be a poor choice for organic production due to the susceptibility of this crop to insect pests and weeds, which generally resulted in crop failure. (*Journal of Sustainable Agriculture*, 89)
- (65) **We conclude** that the information about organic farming can be a major determinant of cheese liking and consumer willingness to pay [...]. (*Journal of Dairy Research*, 76)

Besides *we*, *our* is also used in the corpus with examples such as the following.

- (66) The major objective of **our study** was to collect data on total and marketable fruit yields of sweet pepper [...] (*HortTechnology*, 67)

In summary, it can be said that both passive constructions and personal pronouns are frequently used in the CAA, passive contributing to the impersonal and formal tone of such a genre as abstracts and personal pronouns strengthening the claims of the authors.

In this section I examined high and low frequency words as well as academic and technical vocabulary. In addition, a keyword list was created and the concordances of

the most important keywords were shown. Collocates and clusters were discussed by means of examples from the CAA texts. It was shown that both collocations and clusters are an important part of the CAA and it would be beneficial if they were considered for language teaching. In addition, I focused on two grammatical areas, passive constructions and personal pronouns in order to show their usage in the CAA. In the following section, a summary of the findings obtained in this section is provided before moving on to an analysis of the move structure of the abstracts in the CAA.

6.9. Summary of results

The findings of the preceding analysis show that the CAA consists of 28,785 tokens or 3,958 types. The analysis also indicates that a very small number of word types occur in the corpus with a very high frequency while a large number occurs less frequently. When compared to the reference corpus, it can be seen that functional words are the most frequent words in both corpora while the distribution of lexical words differs dramatically. This highlights the importance of specialised corpora in various areas and disciplines.

The analysis with AntWordProfiler shows the most common academic and general service words in the corpus. Around 42% of the whole corpus is represented by the first and second 1000 most common words in English. In addition, academic vocabulary from the AWL accounts for around 20%. The remaining words can be classified into on the one hand technical vocabulary (about 11%) and on the other hand low-frequency words.

The analysis with AntConc confirms the topic of the corpus, organic farming and agriculture as a great amount of phrases and words correspond to this subject including *organic farming*, *organic production* and *organic food*. Among the most prominent technical items are *organic*, *species* and *acids*. Latinate words as well as acronyms appear rather frequently as well. A keyword list was used to create concordances for the top ten keywords including *organic*, *farming*, *conventional*, *systems*, *production*, *soil*, *higher*, *crops*, *food* and *system*. Genre-specific formulaic language was identified and not surprisingly, *organic* occurs very frequently with various different items including the other ones from the keyword list. In addition, it needs to be stressed that

especially the items *systems*, *organic*, *farming* as well as *production* are very closely related in this field, at least as indicated in the CAA.

The exploration of the grammatical concordances including passive constructions and personal pronouns yields interesting results. Both, passive voice and personal pronouns are frequently detected in the CAA. The former contributes to the formal nature of the abstracts in question while the latter strengthens the author's position as researcher and expert member of the discourse community.

In the next chapter, the generic structure of the texts in the CAA will be examined in order to establish some patterns. Moves are identified manually and their communicative purpose is underlined with examples from the CAA.

7. Move analysis

The theoretical aspects of moves and their analysis as well as the communicative purpose of abstracts have already been discussed. Section 2.2. focused on the analysis of a given genre including procedures of how to analyse moves. Section 4.1.2. provided a discussion of the moves of the genre of abstracts and section 4.5.3. dealt with the methodology of analysing moves. In this chapter, the texts in my corpus will be categorised according to the theory mentioned before. The first step in analysing the moves in my text is to read through the text in order to obtain a first impression of their structure and identify some patterns. This first analysis must be refined and elaborated when reading through the texts again. Moreover, the moves are categorised according to obligatory, core and optional moves. Finally, individual moves are scrutinised with AntConc in order to find words and phrases relevant to them, namely genre-functional formulaic sequences.

While examining the 120 abstracts I could establish a generic structure that most of the abstracts follow. However, there are also some exceptions which follow different patterns. 110 abstracts belong to the first category, which is discussed in section 7.1., and 10 abstracts are discussed under the second category in section 7.2.

7.1. Category 1

For the move analysis of the first group of abstracts I followed Hyland's (2006) model as it seems to be the most representative one. However, some modifications are necessary which are indicated in italics. Instead of *product*, I will use the term *results* as I consider it more appropriate because it indicates more clearly and directly what this section offers. In addition, some additions have been made on the right side of the table.

Move	Function
Introduction	Establishes context of the paper, motivates research or discussion, <i>provides background information</i>
Purpose	Indicates purpose, hypothesis, outlines the intention
Methods	Provides information on design, procedure, assumptions, approach, data
Results	States main findings or results, the argument, or what was accomplished
Conclusion	Interprets or extends results beyond scope of paper, draws inferences, points to applications or wider implications, <i>gives practical implications/effects, highlights value of the study and limitations encountered</i>

Table 31. Move structure Category 1 following Hyland (2006)

The five moves identified are all to a greater or lesser extent important to the genre of agricultural abstracts. No optional moves could be found. In contrast, two moves are obligatory and three moves can be considered core moves as can be seen in table 32.

Move	Percentage	
Introduction	65.45 %	Core
Purpose	94.55 %	Obligatory
Methods	83.64 %	Core
Results	98.18 %	Obligatory
Conclusion	67.27 %	Core

Table 32. Core and obligatory moves in the CAA

As can be seen, the introduction, the methods and the conclusion are core moves in this genre. The introduction is mentioned in about 65% of the abstracts, the methods are described in around 84% of the texts and the conclusion occurs in about 67% of the abstracts. Thus, out of these three, the methods are most widely verbalised. The two other moves, purpose and results, can be considered obligatory. Their high frequency is remarkable, especially in the case of the results with nearly a 100% occurrence. In the

following sections, these moves will be discussed in the order which is presented in the table.

7.1.1. Move 1: Introduction

The introduction section is an important part in the abstracts examined although not obligatory. In more detail, 72 out of 110 abstracts feature some introductory words. This move includes several steps which can but do not have to be employed. These steps are described in table 33.

Step 1: Giving the context of the study and providing background information
Step 2: Stating recent developments in the field
Step 3: Justifying the research/indicating a research gap
Step 4: Referring to previous research in the area
Step 5: Explaining models, concepts or theories

Table 33. Steps of Move 1

Step 1, which gives background information and situates the study in a context, is very common in abstracts in the CAA. The two examples below show how the writer leads into the topic of the research. A broad context is created and useful background information is given. As a result, the reader will find it easier to comprehend the whole text. It can be noticed that the present tense is employed very frequently in this part of the text to state facts and give information. In addition, example 67 indicates the purpose of the study already but modality is employed here in order to make the claim less strong.

(67) Weeds **are** a major obstacle to **successful** crop production in organic farming. Producers **may be able** to reduce inputs for weed management by designing rotations to disrupt population dynamics of weeds. (*Renewable Agriculture and Food Systems*, 107)

(68) **Turkey is** one of the world's largest producers and exporters of table grapes. (*Environmental Monitoring and Assessment*, 48)

Step 2, stating developments in the discipline, is only found in some cases. However, some examples are presented below. This section does not show developments in recent research but practical developments in the field of agriculture or the very specific area of the abstract in question. It provides more specific information on particular developments or on matters that have changed recently.

- (69) **Increased** demand for certified organic products **has led** to an **increase** in the number of certified organic farms in developing countries. (*Nutrient Cycling in Agroecosystems*, 98)
- (70) Although direct payments are an important policy instrument to support farmers in conversion to organic farming methods, **a discussion has started in many countries** about pros and cons and the amount of these payments. (*Acta Horticulturae*, 1)

Step 3 aims to give a justification of the research conducted and indicates a niche or gap in research. In example 71, the writer stresses the fact that not a great deal of research has been conducted so far on the specific topics. Example 72 states even more explicitly that there is a need for studies in a certain area.

- (71) Support for organic farming varies from state to state, and **there have been few attempts** to document what types of support currently exists. (*Journal of Sustainable Agriculture*, 87)
- (72) The use of non-renewable energy in farming, a factor which considerably reduces its energy efficiency, continues to increase. Moreover, there is growing worldwide concern regarding the emission of greenhouse gases and their effect on our climate, which is directly related to the use of fossil energy. **All this creates a need for energy studies** on changing tendencies in the management of agricultural systems, among which we find that of organic farming. (*Journal of Sustainable Agriculture*, 92)

Step 4 gives information on previous research in the area. This is mostly done, however, with an implicit strategy as writers do not explicitly refer to a certain author or a certain study. This is shown in the following examples.

- (73) Although organic farming certainly has the potential to fulfil these expectations, **studies have shown** that some certified organic farms do not. (*Agronomy for Sustainable Development*, 21)
- (74) Organic viticulture is an important part of the European Union organic farming sector, and, **according to the most recent surveys**, 1.5% of European Union wine originates from organic farms, with an upward trend. (*Journal of Environmental Quality*, 81)

Finally, Step 5 explains certain technical concepts or models as well as methods. Often, technical vocabulary or acronyms are used here. The writers explain the acronym by giving the whole name and/or the definition or an explanation. Thus, they are able to use only the acronym in the rest of the abstract and can be sure the reader knows what it means. This makes it easier for the authors as they do not have to continue writing the full name which also contributes to a short and concise text.

- (75) Organic farming practices are regarded as being beneficial for the environment by promoting soil quality and sequestering **soil organic carbon (SOC)**. (*Agronomy Journal*, 24)
- (76) Although organic farming certainly has the potential to fulfil these expectations, studies have shown that some certified organic farms do not. Their practises comply with the regulations, but not with the principles of organic farming. This trend has been called ‘**conventionalisation**’ of organic farming. (*Agronomy for Sustainable Development*, 21)

Generally, it can be said that the introduction has several functions including the following:

- Stating the importance of the work by justifying research, indicating a research gap and referring to previous research
- Introducing the topic by providing background information
- Showing that the writer is an expert in the field by describing recent developments in the field and explaining concepts or models

Thus, I would argue that the communicative purpose of this section is to provide background information, stating the importance of the work and displaying expertness.

7.1.2. Move 2: Purpose

The part describing the aims, objectives and purpose of a particular study is even more important than the introduction. It can be considered essential as it is obligatory with 104 out of 110 texts showing a purpose move. This move can again be represented by various steps which can but do not have to occur.

- Step 1: Giving the objectives/purpose/aims of the study
- Step 2: Mentioning hypotheses
- Step 3: Justifying research (in connection with the introduction)

Table 34. Steps of Move 2

Step 1 is the most important and most frequently employed of these three steps. The aims, purpose or objectives of a given study can be described in a more or less explicit way. Examples for both possibilities are given below. Example 77 very explicitly states the objective of the study with incorporating the word *objective* while example 78 only refers to the aim at the very end of the sentence. In addition, present and past tense can both be employed in this section.

- (77) **The objective of this paper is to explore** differences in costs and benefits between organic and non-organic farming practices in a broad sense. (*Acta Horticulturae*, 1)
- (78) Some agronomic (level of cucumber mildew disease resistance, commercial yield and fruit weight) and quality (°Brix, pH and sensory quality) characters **were evaluated**. (*Acta Horticulturae*, 2)

These examples indicate that there are various ways of how to compose this part of the abstract. In particular, when referring explicitly to the objective or aim of the study, several phrases might be important for language learners. Some of them are discussed in more detail below. As already pointed out in section 6.8., the personal pronoun *we* is an important indicator of the abstracts in the CAA. *We* is particularly often used when stating the purpose of the paper or when concluding the abstract. Here *we* can be found with the following collocations:

we suggest, we compared, we report, we analysed, we review, we need to assess, we examine, we present, we discuss

Table 35. Collocations with we

However, when avoiding reference to the writers, another possibility is to use the study or article as subject which makes the sentence more impersonal. Table 36 shows some examples.

This paper explores
This paper describes
This paper contributes
The present study develops
The present study investigated
The present study aims to explore
The article presents
The article discusses

Table 36. Collocations in the purpose section

A particularly important phrase here seems to be *aims to+ verb (investigate, explore, perform, provide, explore)*. In addition, a third pattern is possible which is explored in table 37.

The aim of this study was to investigate
The aim of this paper is to explore
The aim of the present paper was therefore to study
The purpose of this paper is to assess
The purpose of our work was to compare
The objective of this article is to describe

Table 37. Collocations in the purpose section

From the tables above, it is evident that there are several nouns (*study, article, work, paper*) that can be used in connection with several verbs (*investigate, explore, assess*). In addition, there are various words to express the purpose of a study (*aim, objective, purpose*). From these examples, I have drawn a list that could especially be helpful for students and language learners. Of course, this list is not exhaustive as there are many more words which students might encounter when dealing with abstracts but it highlights the most relevant academic words and constructions in the purpose section of agricultural abstracts.

The	current	research	develops, assesses, analyses, presents an analysis,
This	present	study	aims to investigated, was conducted, was carried
		paper	out to investigate, reports, addresses, provides,
		article	proposes, evaluates, presents, discusses, provides,
			explores, describes, performs

Table 38. Useful phrases for writing the purpose section I

The	aim	of this	study	is to	evaluate, investigate, explore,
	purpose	of our	paper	was to	determine, compare, investigate,
	objective		research		assess, study, examine, describe
	main scope		work		
			article		

Table 39. Useful phrases for writing the purpose section II

In this paper, we	suggest, compare, report, examine, explore, focus, identify,
In this article, we	present, discuss, analysed, review, need to assess, formulate,
	show, studied, evaluated, were interested in, focus, analysed

Table 40. Useful phrases for writing the purpose section III

Step 2, mentioning the hypotheses of the research, is less commonly found in the abstracts. It can take the form of example 79 below.

(79) **It is hypothesised** that differences in weed pressure between organic farms can be related to differences in farmers weed management behaviour. (*Weed Science*, 120)

Step 3, justifying the research, can be detected in the introduction as well as in the purpose section. When it occurs in the purpose section, there is often a connection to the introduction. This is evident in the following examples.

(80) **Thus, to resolve this debate** whether organic farming hampers or helps in attaining household food security the current study was conducted among the smallholder organic farming adopters of Tangail district in Bangladesh. (*Journal of Food, Agriculture & Environment*, 83)

(81) **To address this challenge**, we compared a conventional production system with an integrated organic system in Western Uzbekistan. (*Journal of Sustainable Agriculture*, 90)

This debate in 80 and *this challenge* in 81 refer back to the introduction section where these issues are explained in more detail.

Thus, it can be argued that the purpose section is generally employed to present the main purpose and objectives of the study.

7.1.3. Move 3: Methods

With 83.64%, this move is a core move and appears in 92 out of 110 abstracts. Thus, stating the methods is an important but not obligatory part of the abstracts examined. This move can be realised by two steps (see table 41).

Step 1: Describing the general methodology
Step 2: Describing specific methods used

Table 41. Steps of Move 3

Step 1 only states the methodology in general but does not mention any specific methods or names of procedures and approaches used in the study. This is indicated in examples 82 and 83, the former rather long, the latter very short.

- (82) Besides direct costs and benefits at crop level, which are commonly seen as the basis for direct payment, other less visible costs such as transaction costs and risk increase are considered and translated to cost components at farm and/or crop level. Where possible they were quantified in monetary units in order to examine the possibility to integrate them in direct area payment schemes. For each of the factors, a time dimension is taken into account, the transition and the organic period. (*Acta Horticulturae*, 1)
- (83) Eighteen organic market gardeners were surveyed. (*Journal of Sustainably Agriculture*, 93)

Step 2 is realised by stating a specific method or approach that is used when conducting the research which is shown in the following two examples.

- (84) Detailed nutrient and contaminant databases were developed for organic and conventional vegetables separately. **Non-parametric (Mann-Whitney test) methods** were used to detect significant differences between both types of vegetables. **A chi-square test** was used to compare the incidence of pesticide residues in organic and conventional vegetables. (*British Food Journal*, 32)
- (85) For this purpose, a **sensitive gas chromatography-mass spectrometry method** in the selected ion monitoring mode was developed. (*Food Chemistry*, 59)

Finally, it is necessary to mention one point that seems to be of relevance in these abstracts. It can sometimes be the case that the authors state the purpose in combination with stating the method used. Purpose and the methods can then appear in one sentence. This is indicated in the following example. The purpose is highlighted in italics while the methods are highlighted in bold.

- (86) **In a pot experiment, using radioactive P labelling techniques, we studied ryegrass uptake of P applied with animal manure and water soluble mineral fertiliser to soils that had been cropped for 22 years according to organic or conventional farming practices.** (*Plant and Soil*, 102)

In summary, the communicative purpose of this move is to indicate the methodology and methods used in the study.

7.1.4. Move 4: Results

This move, which occurs in 98.18% per cent of all abstracts, is obligatory. It is the move used most often in the abstracts and therefore crucial. Generally, it indicates the main results, findings and outcomes of the study. As was the case in the purpose section, this section mainly uses explicit words to state the findings of a study. Two different ways of expression the outcomes can be seen in the following examples.

- (87) **The results of the study showed** that among the respondent farmers 98% had attained household level food security, while only those who failed to attain household food security had started organic farming within last 4 years. (*Journal of Food, Agriculture & Environment*, 83)
- (88) Fully fleeced lambs aged 6 months preferred to lie on EMF rather than DB ($P < 0.001$). After shearing, the use of EMF for resting declined ($P < 0.05$) and no significant preference between EMF and DB **was found**. (*Applied Animal Behaviour Science*, 28)

There is some important vocabulary that is characteristic for this section. *Results* (occurring 60 times) is the most important noun while *found* (23) is an important verb occurring with *we*, or in passive form with *are*, *was* and *were*. However, one must be careful as some these collocations can also occur in the conclusion, as will be shown in the next section. Table 42 indicates some patterns for writing the results section.

Main	results	show, reveal(ed), indicate(d), suggest
The	results of the study	
These		

Table 42. Clusters for result section

Generally, the communicative purpose of this part of the abstract is to outline the main results of the study.

7.1.5. Move 5: Conclusion

The concluding section is a core move and appears in 67.27% of all abstracts. The table below shows the five steps that can be employed to realise this move.

Step 1: Giving general implications
Step 2: Stating practical implications/effects
Step 3: Proposing future research
Step 4: Highlighting value of the study
Step 5: Giving limitations of the research

Table 43. Steps of Move 5

Step 1 gives only general implications or a conclusion and summary of the abstract. No practical implications or effects are mentioned and no further research is proposed. 89 and 90 are examples of this step.

(89) According to these results, transition from conventional agriculture to organic agriculture for cherry production in Turkey is important for both net return and protection of the environment. (*Journal of Sustainable Agriculture*, 88)

(90) Overall, the study does not support a benefit of organic farming on SOC contents compared with conventional systems with manure. (*Agronomy Journal*, 24)

In contrast, Step 2 gives specific advice for practical changes or states particular implications and effects for the practical work of farmers or people working in the agricultural sector in general. This pattern can be observed in the following extracts.

(91) With some improvements, the EIOVI **will be a helpful assessment tool** for vine growers, consultants, environmental agencies, and scientists. (*Journal of Environmental Quality*, 81)

- (92) We conclude that the information about organic farming can be a major determinant of beef liking, thus **providing a potential tool** for meat differentiation to traditional farms. (*Food Quality and Preference*, 64)

Step 3 proposes further research in the specific area of the study as is evident in the following examples. Present tense can be employed here (94) and modal verbs are common as well (93).

- (93) The research is a cradle-to-farm gate LCA, **future research can be expanded** to comprise all phases from cradle-to-grave to get an idea of the total sustainability of our present food consumption patterns. (*British Food Journal*, 35)
- (94) It is concluded that management practice had a strong impact on soil quality, but **more extensive studies are warranted** for defining soil variables of major importance for crop yield. (*Applied Soil Ecology*, 30)

Step 4 highlights the value of the study. This step indicates that and why this particular study is of importance, relevance and value. It is related to indicating a research gap which observable in the following extracts.

- (95) **So far only few studies compared** both nutrient and contaminant contents between organic and conventional plant foods. **This paper covers therefore an important, not well-explored research sub area.** (*British Food Journal*, 32)
- (96) **To the best of our knowledge this is the first study** on soil quality and microbial functional diversity of soil in a semi-arid region indicating that conversion from FGL to OCF led to significant soil quality improvement due to the enhanced microbial functional diversity. (*Soil & Tillage Research*, 117).

Step 5 is rather interesting as it provides some limitations of the current research. In example 97, a combination of Steps 5 and 3 can be seen in so far as future research is implied as result of the limitations. Example 98 emphasises this pattern as suggestions for further research and limitations are combined. Thus, it can be said that this step is most often combined with proposing further research.

(97) Confidence in the EOR was hindered by our **limited understanding** of carryover in dryland systems, which should be a **priority for future research**.

(*Agronomy Journal*, 26)

(98) The research is also **limited** to the case of leek production. **Future research** can apply the methodology to other crops. (*British Food Journal*, 35)

As already pointed out in the previous section, there are several collocations or clusters that can appear in both, the results section as well as the concluding remarks. Firstly, some general clusters are presented in table 44, then the issue of similar collocations will be addressed.

We conclude that

It was concluded that

Implications for

Further research is needed

For future research

Results indicate

Results suggest

Table 44. Clusters for Move 5

The two last collocations, *results indicate* and *results suggest*, are also commonly used in the purpose section. Thus, students should be made aware of this and of the possibility to use these phrases in both sections.

Generally, this move provides general as well as specific implications, suggestions for further research and the relevance of the study (value). As the first point seems to be most important, the communicative purpose of this move can be said to be giving implications and practical effects.

7.2. Category 2

As already pointed out earlier, 10 of the abstracts examined do not correspond to the move structure described above. Thus, they will be dealt with in more detail here. In section 4.1.3., the different types of abstracts including informative and indicative have already been discussed. A distinction can now be made between the abstracts described above, which can be said to be informative and the ten others which share the fact that they are indicative, i.e. no results or conclusion can be detected as only introduction, purpose and sometimes methods are given (cf. Davis 1997: 101, Rowley 1988: 15). The statistics can be found in table 44.

Move	Percentage	
Background information	100 %	Obligatory
Purpose	50 %	Core
Methods	20 %	Optional

Table 44. Moves category 2

The name *Background information* is chosen as it represents this move more appropriately. *Introduction* would not be suitable here as it is not an introduction into a topic which is followed by a more detail account of a study. Some of the texts even consist of one broad background move only. Thus background information is the most important move in these abstracts with an occurrence of 100%. It is followed by the purpose section which is a core move and the methods which are optional.

These abstracts vary in their structure. In some of them, introduction and purpose are given and sometimes the methods are added as well. Interestingly, there are also some that provide background knowledge only. No information about purpose, methods or results can be located. Therefore, they seem like a brief summary. One of the abstracts is rather unusual as it comments on a project that has already been conducted and finished. In the end, it indicates the current project they are working on.

(*HortTechnology*, 66) Another one is general introduction to the situation of organic agriculture in Asia with an insertion about organic farming in general (*Journal of Sustainable Agriculture*, 96). These two examples show a completely different pattern in comparison to the 110 abstracts discussed in the previous section. The reason for the

unusual structure of these ten abstracts is most probably that they do not report on an actual research undertaken but give an overview of a certain topic or area of interest.

After having explored the generic structure of both categories, one more point needs to be mentioned here. The sequencing of the different moves is, of course, not always identical. Some moves follow the neat order of introduction – purpose – methods – results – conclusion while others show a less stable pattern. Although the conventional structure of abstracts is confirmed as no optional moves could be found, individual abstracts still vary in their sequencing. This implies that authors can still decide what information is most important to them or which information they want to combine or put first. It can, for instance, be the case that the methods section is interrupted by reporting initial results or, as already discussed above, the method and purpose sections can be combined.

7.3. Summary of results

The move analysis of the 120 abstract shows that most of the texts follow the same generic structure. However, 10 abstracts are found to be characterised by a different macrostructure. These two groups were examined individually. The first category shows only obligatory and core moves including introduction, purpose, methods, results and conclusion. The percentages of the two obligatory moves are especially significant, namely 94.55% for the purpose section and 98.18% for the results. These findings attribute great relevance to these two moves in agricultural abstracts. With regard to the communicative purposes of the moves, the following result is achieved:

<i>Move</i>	<i>Communicative purpose</i>
Introduction	Providing background information, stating the importance of the work and displaying expertness
Purpose	Presenting the purpose/objective/main aims of the study
Methods	Indicating the methodology and methods used in the study
Results	Outlining the main results of the study
Conclusion	Giving implications and practical effects of the study

Table 45. Communicative purpose of individual moves

The texts in the second category were identified as indicative abstracts as they lack results and conclusions. All these texts include background information and some of them also a purpose and very few a methods section. As a result of these two categories, students should be made aware of different possibilities to structure and write abstracts. Genre- functional sequences of the individual moves were identified and relevant collocations and clusters, especially for the purpose and results section, could be detected.

8. The genre analysis in the context of ESP teaching and learning

The last chapters explored the vocabulary as well as the genre structure of agricultural abstracts in the CAA. This was the fifth stage of Hüttner's model of analysing genres. The teaching situation has also been described in chapter 4.4. already. It is now important to link these chapters and explore the context of ESP teaching and learning as well as some implications and applications of such a genre analysis.

First of all, it is necessary to point out that such an analysis could contribute twofold to teaching and learning English in higher secondary schools with a focus on agriculture. On the one hand, it could be beneficial as it provides important vocabulary for learners. Academic vocabulary is relevant as not only abstracts are written in an academic style but also other genres such as the whole research paper. Thus, students could definitely benefit from such an analysis with regards to academic vocabulary as they will need it for other genres, if they proceed to university or start a job working with various academic text types. In addition, they might also already need it at school itself.

Technical vocabulary has an important status in these English classes as well because knowing the technical terms of a field enables students and novices to enter into the discourse community in question more easily. There is a great probability that students have to read or write a text or paper encountering or using technical words in the English language. This could for example happen when doing research at university or when working in an international company. On the other hand, such a study could also be interesting for students with regard to the great amount of information it provides about abstracts. The genre might not be the most important text type in comparison with others such as CV or letter of application that these students should learn in school. However, teachers could still benefit from such an analysis as they could incorporate the results, the moves and the genre-functional formulaic language in their teaching.

The results of such a genre analysis could be explored in the classroom by means of various exercises and tasks. On the one hand, the concordance lines could be used directly or in a modified form. On the other hand, the results might be used by teachers when creating teaching materials and handouts. Some applications are provided in this paragraph. Firstly, collocations and clusters could be used for a matching exercise. This enables students to explore the relationship and use of various words and their meaning when they occur together. Secondly, lists of technical or academic vocabulary could be

established and distributed for individual study by students. Such lists could also serve as reference material for students. Students should also be given the possibility to explore technical items in class by means of reading articles and reports from the specific subject area as well as by practicing pronunciation and writing these items themselves. Thirdly, the move structure could be practiced by letting students read several abstracts. They could identify the moves themselves or teachers can provide matching exercises. They could even establish their own names in groups. Of course, they should also practice writing abstracts themselves. Another task would be to practice passive constructions and how they can be used in the abstracts, in which moves they can be employed and what functions passive constructions have. The same could be done for personal pronouns. Finally, word fields could also be developed for the semantic field of organic farming.

There is one essential issue that needs to be addressed here which is relevant for ESP research rather than the classroom itself. As can be seen from the results section, words from the GSL, the AWL and technical terms represent only 73% of all vocabulary in the CAA. In contrast, low-frequency words constitute a major part. This suggests that words may be distributed differently in the field of agriculture. It might be the case that some of these so-called low-frequency words belong to academic vocabulary or to general service words. Therefore, it would be crucial to develop a distinct academic wordlist for the field of agriculture. This was already suggested by Martínez, Beck and Panza (2009) and is confirmed by the present study. Some academic words carry technical meaning in the corpus and some low-frequency vocabulary seems to be used as academic vocabulary. These are exactly the same outcomes as the previous study showed. Therefore, this present study strongly supports the study of Martínez, Beck and Panza (2009).

Finally, two further points are of importance here with respect to the teaching situation in agricultural higher schools in Austria. According to my specialist informants, no subject-specific book is used in class that is concerned with the subject matter of agriculture. Students either do not use a book at all or have a textbook for grammar exercises and language practice but this is only for learning general aspects of English. Therefore, a great deal of material and data that is presented to students is retrieved from the Internet by the teacher. When browsing through some websites offering this

material, I received the impression that it is rather useful. However, having a book to rely on would be an enormous improvement for these schools. This lack of textbooks in specialised disciplines has already been noted by Breyer (2011: 57). Because of the lack of textbooks in this area, corpus work can be of particular value in an ESP teaching context because it can provide teachers with additional information on certain lexical and grammatical points and can help to create material for class. The current study could at least be an addition to the material already available on websites.

The second point relates to the fact that the situation in these schools is complicated by the various branches that are offered. This means students can specialise in different directions and have “different needs and backgrounds” (Dudley-Evans & St. John 1998: 8). Therefore, students specialising in different branches of agriculture would profit from different subject-specific material. However, this requires a great deal of work from the side of the teacher. With regard to this problem, cross-disciplinary subject areas such as organic farming, which is the topic of this study, seem to be efficient because these topics are relevant for a variety of areas such as general agriculture, viticulture or food production. Thus, results of such studies could be incorporated not only in one branch of agricultural education but in various different ones.

Thus, corpus analysis in the field of agriculture can have positive effects for the teaching setting outlined. In addition, it might not only be used for higher secondary schools but also for students studying at university as they would certainly also profit from the vocabulary examined. In addition, they would probably benefit even more from the move analysis of abstracts as this genre has a great importance in academic university life.

In summary, it can be concluded that students as well as teachers could benefit from a corpus-based genre analysis. Many more aspects could be investigated that might be of relevance for such schools. The best way to intensify research in this field would therefore be to work in close accordance with teachers from these schools in order be able to address and include their needs and their students’ needs. In addition, it is clear that specific applications need to be worked out by teachers or teachers and researchers conjointly as findings from such a genre analysis cannot be taken over directly into

classroom or for teaching material. Therefore, I would argue that the relationship and cooperation between teachers and researchers should be strengthened and reinforced.

9. Conclusion

In this paper, a genre analysis based on a corpus of abstracts from the field of agriculture was conducted. Firstly, the lexical and grammatical features which are characteristic of the genre of agricultural abstracts were analysed. Secondly, a move analysis was conducted in order to show the abstracts' generic structure and genre functional formulaic sequences were detected. Finally, the results of the analysis were linked to a specific ESP situation, namely higher secondary schools in Austria with a focus on agricultural education. Generally, I aimed to highlight the relevance of such corpus work for the field of ESP, especially for the specific target group in question.

In the empirical analysis of 120 abstracts taken from the specific area of organic farming two software programmes, AntConc and AntWordProfiler, were used. By means of these programmes, it was possible to analyse different types of vocabulary, including high-frequency words, academic and technical terms as well as low-frequency items. This analysis showed that although general service words cover the largest part of the vocabulary, the texts in the CAA are very academic in nature. The results also suggest that it would be necessary to establish an individual academic word list as well as general service list for the field of agriculture because of the distinct coverage and distribution of words in the CAA. Technical vocabulary, although constituting a rather small part, is still essential for language learners and should not be neglected. In addition, concordance lines were investigated and common collocations and clusters were found which are constitutive of the genre of agricultural abstracts. The corpus was also compared to a reference corpus, the BNC, in order to gain insight on keywords. These were analysed in more detail according to the concordance function of AntConc. Some grammatical points including passive constructions and personal pronouns were investigated as well which were both found to occur rather frequently in the corpus.

In addition, a move analysis was conducted manually and moves were categorised according to their frequency of occurrence. Obligatory as well as core moves were identified and it was shown that the abstracts follow two structural patterns. Five moves were established in 110 of the abstract while 10 of the texts show another structure. In addition, common phrases and clusters were found that are important for individual moves of this genre. From the purposes of the individual moves, the overall communicative purpose was investigated which can be said to be informative as well as

persuasive. Table 46 gives an overall summary of the most important features of my corpus.

Genre	Agricultural abstracts dealing with the topic of organic farming
Addressers	Experts in the field of organic farming; researchers; professors; not necessarily native speakers of English
Addressees	Broad audience: mainly professional; experts in the field of organic farming; researchers; university professors; even students of agricultural subjects; sometimes even practicing farmers when informing themselves about a new method; different people working in the agricultural sector (food production, marketing, trade); politicians working in the ministry for agriculture.
Communicative purpose	<u>Informative function</u>: inform the reader about the research, give an overview of the whole research <u>Persuasive function</u>: persuade reader of the importance of the work, persuade reader to read the whole abstract, persuade the reader of a certain method or technique that can be used in the field

Table 46. The genre based on the CAA

As this is only a small scale study, some of the limitations of this paper could be overcome by further research. Firstly, only one field and one genre were investigated. Future research could focus on different genres within the field of agriculture to provide more generalisable results for this field or compare this discipline to other ones. Many more lexical and grammatical features could be focused on in the analysis as well. Secondly, Hüttner's step 6, 7 and 8, establishing sets of relationship of the genre to other genres and obtaining more information from experts after the analysis has finished, have not been carried out yet and can also be dealt with in future research. This can take the form of exploring the relationship between agricultural abstracts and the whole research paper it is a part of and showing this analysis to expert members of the discourse community.

In general, it can be concluded that a corpus analysis as conducted in this study can be a useful tool for different target settings in ESP, for students as well as for teachers. With this paper, I hope to have contributed to the linguistic research in the field of agriculture as this combination has not been explored by many researches so far. Generally, I have been able to show the relevance of corpus-based genre analyses for ESP teaching, especially in insufficiently studied areas such as agricultural education in Austria.

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Appendix

Journals and abstracts used

Acta Horticulturae

1. "A critical view on direct area payments to organic vegetables producers". 2012, 933.
2. "Agronomic and quality evaluation of Spanish melon landraces grown under organic farming in Extremadura". 2010, 933.
3. "Bottlenecks for organic agriculture and the way out - the case of Curitiba's metropolitan area Brazil". 2012, 933.
4. "Evaluation of pre-crops and organic fertilization program on soil chemical properties and on the subsequent crop under Mediterranean conditions: case of South Italy". 2012, 933.
5. "Local landraces of dry beans (*Phaseolus vulgaris* L.): a valuable resource for organic production in Greece". 2012, 933.
6. "Organic acids concentration in citrus juice from conventional versus organic farming". 2012, 933.
7. "Sheep wool as fertiliser for vegetables and flowers in organic farming". 2012, 933.
8. "The global extent and expansion of organic horticulture production". 2012, 933.

Agriculture and Human Values

9. "Alternative modes of governance: organic as civic engagement". 2009, 26 (1-2).

Agriculture, Ecosystem & Environment

10. "Changes in earthworm populations during conversion from conventional to organic farming". 2010, 135 (3).
11. "Consequences of organic and non-organic farming practices for field, farm and landscape complexity". 2009, 129 (1-3).
12. "Does hedgerow management on organic farms benefit small mammal populations"? 2009, 129 (1-3).

13. "Impacts of land-use change on biodiversity: An assessment of agricultural biodiversity in the European Union". 2006, 114 (1).
14. "Landscape composition influences farm management effects on farmland birds in winter: A pan-European approach". 2010, 139 (4).
15. "Management regimes and farming practices enhancing plant species richness on ditch banks". 2007, 119 (3-4).
16. "Parasitoid control of aphids in organic and conventional farming systems". 2009, 133 (1-2).
17. "Quantifying the effect of organic farming, field boundary type and landscape structure on the vegetation of field boundaries". 2010, 135 (3).
18. "Responses in plant and carabid communities to farming practises in boreal landscapes". 2010, 135, (4).

Agricultural Systems

19. "Analysis of information systems and communication networks for organic and conventional hazelnut producers in the Samsun province of Turkey". 2010, 103 (7).
20. "Tractive power in organic farming based on fuel cell technology - Energy balance and environmental load". 2009, 102 (1-3).

Agronomy for Sustainable Development

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22. "Conversion to organic farming: a multidimensional research object at the crossroads of agricultural and social sciences. A review". 2009, 29 (1).
23. "Emerging Agrosience". 2010, 30 (1).

Agronomy Journal

24. "Consequences of Conventional versus Organic farming on Soil Carbon: Results from a 27-Year Field Experiment". 2009, 101 (5).
25. "Cover Crops and Organic Mulch to Improve Tomato Yields and Soil Fertility". 2009, 101 (2).
26. "Economically Optimal Compost Rates for Organic Crop Production". 2010, 102 (4).

American Journal of Clinical Nutrition

27. "Nutrition-related health effects of organic foods: a systematic review". 2010, 92 (1).

Applied Animal Behaviour Science

28. "Are double bunks used by indoor wintering sheep?: Testing a proposal for organic farming in Norway". 2008, 115 (1-2).
29. "Influence of farm factors on the occurrence of feather pecking in organic reared hens and their predictability for feather pecking in the laying period". 2009, 121 (2).

Applied Soil Ecology

30. "Effects of cropping history and peat amendments on the quality of a silt soil cropped with strawberries". 42 (1).
31. "Soil microbial communities and activities under intensive organic and conventional vegetable farming in West Java, Indonesia". 2010, 45 (2).

British Food Journal

32. "A literature-based comparison of nutrient and contaminant contents between organic and conventional vegetables and potatoes". 2009, 111 (10).
33. "A meta-analysis of the differences in environmental impacts between organic and conventional farming". 2009, 111 (10).
34. "Assessing the consumer perception of the term "organic": a citizens' jury approach". 2009, 111 (1-2).
35. "Assessing the ecological soundness of organic and conventional agriculture by means of life cycle assessment (LCA): A case study of leek production". 2009, 111 (10).
36. "Coverage of organic agriculture in North American newspapers: Media: linking food safety, the environment, human health and organic agriculture". 2010, 112 (6-7).
37. "Importance of health and environment as quality traits in the buying decision of organic products". 2009, 111 (10).

38. "Marketing concentration and geographical dispersion: A survey of organic farms in England and Wales". 2010, 112 (8-9).
39. "Personal determinants of organic food consumption: a review". 2009, 111 (10).
40. "The nutritional and toxicological value of organic vegetables: Consumer perception versus scientific evidence". 2009, 111 (10).

Computers and Electronics in Agriculture

41. "A Bayesian network to predict the probability of organic farms' exit from the sector: A case study from Marche, Italy". 2010, 71(1).

Crop Management

42. "Broadening the Education Infrastructure in Organic Agriculture for Farmers". 2007.
43. "Measuring and Communicating the Environmental Benefits of Organic Food Production". 2007.
44. "Organic Farmers: Opportunities, Realities and Barriers". 2006.

Crop Protection

45. "Peach orchard protection strategies and aphid communities: Towards an integrated agroecosystem approach". 2010, 29 (10).

Crop Science

46. "Effectiveness of Single-Plant Selection at Low Density under Organic Environment: A Field Study with Lentil". 2011, 51 (2).

Ecotoxicology

47. "Ecotoxicological effects of rice field waters on selected planktonic species: comparison between conventional and organic farming". 2010, 19 (8).

Environmental Monitoring and Assessment

48. "Determination of pesticide residues in Turkey's table grapes: the effect of integrated pest management, organic farming, and conventional farming". 2011, 173 (1-4).

Euphytica

49. "The role of molecular markers and marker assisted selection in breeding for organic agriculture". 2010, 175 (1).

European Food Research & Technology

50. "Investigating the day-to-day variations of potential marker fatty acids for organic milk in milk from conventionally and organically raised cows". 2011, 232 (1).

European Journal of Agronomy

51. "Cereal yield and quality as affected by nitrogen availability in organic and conventional arable crop rotations: A combined modeling and experimental approach". 2011, 34 (2).
52. "Crops use-efficiency of nitrogen from manures permitted in organic farming". 2006, 25 (4).
53. "Durum wheat-faba bean temporary intercropping: Effects on nitrogen supply and wheat quality". 2010, 33 (3).
54. "Inner farm nutrient flows between arable land and permanent grassland via the stable in organic cropping systems". 2009, 31 (4).
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56. "Sustainability of dairy farming system in Tuscany in a changing climate". 2010, 32 (1).

Field Crops Research

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Food Chemistry

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60. "Influence of conventional and organic agricultural practices on the phenolic content in eggplant pulp: Plant-to-plant variation". 2010, 121 (2).

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61. "Dependency of organic farms on direct payments in selected EU member states: Today and tomorrow". 2009, 34 (3).
62. "Organic farming policy networks in Europe: Context, actors and variation". 2009, 34 (3).
63. "Policy for organic farming: Rationale and concepts". 2009, 34 (3).

Food Quality and Preference

64. "Effect of information about organic production on beef liking and consumer willingness to pay". 2010, 21 (2).

HortScience

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HortTechnology

66. "Development of a year-round student organic farm and organic farming curriculum at Michigan State University". 2006, 16 (3).
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Journal of Agricultural and Food Chemistry

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Journal of Agricultural & Food Industrial Organization

- 75. "Understanding Consumer Interest in Organics: Production Values vs. Purchasing Behavior". 2008, 6 (1).

Journal of Dairy Research

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- 77. "Conjugated linoleic acid (CLA) and fatty acid composition of milk, curd and Grana Padano cheese in conventional and organic farming systems". 2009, 76 (3).
- 78. "Differences in sheep and goats milk fatty acid profile between conventional and organic farming systems". 2010, 77 (3).
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Journal of Dairy Science

- 80. "Development and Daily Management of an Explicit Strategy of Nonuse of Antimicrobial Drugs in Twelve Danish Organic Dairy Herds". 2006, 89 (5).

Journal of Environmental Quality

81. "Development of a Management Tool to Indicate the Environmental Impact of Organic Viticulture". 2009, 38 (2).
82. "Organic agriculture and nitrous oxide emissions at sub-zero soil temperatures". 2007, 36 (1).

Journal of Food, Agriculture & Environment

83. "Adoption of organic farming and household food security of the smallholders: A case study from Bangladesh". 2010, 8 (1).

Journal of Insect Conservation

84. "Surface-active arthropods in organic vineyards, integrated vineyards and natural habitat in the Cape Floristic Region". 2010, 14 (6).

Journal of Plant Nutrition

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91. "Atmospheric Deposition and Heavy Metal Contamination in an Organic Farming System in a Seasonally Dry Tropical Region of India". 2009, 33 (4).

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93. "How do Farming Systems Cope with Marketing Channel Requirements in Organic Horticulture? The Case of Market-Gardening in Southeastern France". 2009, 33 (5).
94. "Improving Energy Efficiency and GHG Mitigation Potentials in Canadian Organic Farming Systems". 2010, 34 (5-6).
95. "Personal, Farm and Value Orientations in Conversion to Organic Farming". 2009, 33 (8).
96. "Some Policy Suggestions for Promoting Organic Agriculture in Asia". 2010, 34 (1-2).

Livestock Science

97. "Farming strategies in organic dairy farming: Effects on breeding goal and choice of breed. An explorative study". 2009, 121 (2-3).

Nutrient Cycling in Agroecosystems

98. "A comparative study of farm nutrient budgets and nutrient flows of certified organic and non-organic farms in China, Brazil and Egypt". 2010, 87 (3).
99. "Nitrogen management in organic farming: comparison of crop rotation residual effects on yields, N leaching and soil conditions". 2010, 87 (1).
100. "Potassium uptake and requirement in organic grassland farming". 2010, 87 (1).
101. "Simulated cereal nitrogen uptake and soil mineral nitrogen after clover-grass leys". 2009, 85 (1).

Plant and Soil

102. "Fresh and residual phosphorus uptake by ryegrass from soils with different fertilization histories". 2010, 334 (1-2).

Poultry Science

103. "Environmental impacts and sustainability of egg production systems". 2011, 90 (1).
104. "Hen welfare in different housing systems". 2011, 90 (1).

105. "Sustainability of egg production in the United States--The policy and market context". 2011, 90 (1).
106. "The impact of different housing systems on egg safety and quality". 2011, 90 (1).

Renewable Agriculture and Food Systems

107. "A rotation design to reduce weed density in organic farming". 2010, 25 (3).
108. "Effect of different cover crops on organic tomato production". 2009, 24 (2).
109. "Energy efficiency of organic pear production in greenhouses in China". 2010, 25 (23).
110. "Organic agriculture and climate change". 2010, 25 (2).
111. "Organic agriculture and the global food supply". 2007, 22 (2).
112. "Organic weed control in white lupin (*Lupinus albus* L.)". 2011, 26 (3).
113. "Strategies to control Canada thistle (*Cirsium arvense*) under organic farming conditions". 2008, 23 (1).
114. "The effect of biogas digestion on the environmental impact and energy balances in organic cropping systems using the life-cycle assessment methodology". 2010, 25 (3).

Small Ruminant Research

115. "Organic goat production, processing and marketing: Opportunities, challenges and outlook". 2010, 89 (2-3).

Soil Biology & Biochemistry

116. "Microbial community composition and carbon cycling within soil microenvironments of conventional, low-input, and organic cropping systems". 2011, 43 (1).

Soil & Tillage Research

117. "Changes in soil physico-chemical properties and microbial functional diversity due to 14 years of conversion of grassland to organic agriculture in semi-arid agroecosystem". 2010, 109 (2).
118. "Impact of organic farming systems on runoff formation processes--A long-term sequential rainfall experiment". 2009, 102 (1).

119. “Reduced tillage effects on soil properties and growth of cereals and associated weeds under organic farming”. 2011, 111 (2).

Weed Science

120. “Linking Farmer Weed Management Behavior with Weed Pressure: More than Just Technology”. 2010, 58 (4).

Wordlist of the CAA

Rank	Frequency	Word
1	1570	the
2	1147	and
3	1130	of
4	781	in
5	649	to
6	620	organic
7	381	a
8	319	for
9	277	on
10	256	was
11	254	farming
12	230	were
13	210	that
14	205	with
15	201	is
16	189	as
17	169	from
18	152	are
19	151	conventional
20	141	by
21	139	this
22	133	systems
23	131	production
24	124	soil
25	111	n
26	104	be
27	97	than
28	96	at
29	93	or
30	90	an
31	90	higher
32	87	crops
33	83	different
34	82	between
35	80	food
36	78	system
37	77	more
38	77	study
39	76	management
40	76	not
41	75	farm
42	75	we

43	70	crop
44	68	yield
45	67	it
46	67	these
47	66	agriculture
48	65	their
49	65	two
50	63	farms
51	62	which
52	60	both
53	60	have
54	60	results
55	59	quality
56	57	p
57	57	under
58	56	farmers
59	56	species
60	55	also
61	54	weed
62	53	most
63	50	can
64	50	environmental
65	50	field
66	50	use
67	48	however
68	46	effects
69	46	plant
70	45	agricultural
71	45	analysis
72	45	used
73	44	main
74	44	research
75	43	all
76	43	c
77	43	other
78	42	compared
79	42	such
80	41	but
81	41	cover
82	41	had
83	40	acid
84	40	significant
85	39	energy
86	39	land
87	39	no

88	38	has
89	38	manure
90	37	data
91	37	effect
92	37	level
93	36	products
94	36	s
95	36	when
96	35	may
97	34	k
98	34	lower
99	34	value
100	34	year

Abstract (English)

Corpus-based genre analysis has received a great deal of attention in recent years, especially in the context of ESP teaching. Various different disciplines and genres have been investigated. However, the field of agriculture has not been explored by many researchers yet. Thus, a corpus-based genre analysis is conducted in the present study in order to reveal lexico-grammatical features as well as the genre structure of abstracts in the field of agriculture. In addition, the context of ESP teaching in higher secondary schools focusing on agriculture is investigated.

For this purpose, a corpus of 120 abstracts from the field of agriculture was compiled. These abstracts focus on the more specific subject of organic farming and organic agriculture. This genre was chosen as abstracts are of enormous importance for the academic world. Furthermore, the more specific subject area of organic farming was selected because it is a very topical issue in Austria and it is also dealt with in agricultural schools already. The corpus was analysed according to vocabulary as well as genre structure. Two software programmes were employed for studying vocabulary in the corpus, namely AntConc and AntWordProfiler. As reference corpus, the BNC, The British National Corpus, was chosen. In contrast, the investigation of moves was conducted manually. Different types of vocabulary including high-frequency words, academic and technical vocabulary and low-frequency words were analysed. In addition, concordances, collocations and clusters were investigated in order to present genre-specific as well as genre-functional formulaic language. Finally, the analysis was linked to ESP teaching in general as well as to the specific teaching situation in agricultural schools.

The analysis of different types of vocabulary showed that general service words make up the largest part of the vocabulary. However, it was also found that the texts in the corpus are very academic in nature. The analysis also revealed that it would be necessary to establish an individual academic word list as well as a general service list for the field of agriculture because of the distinct coverage and distribution of words in the texts of the corpus. Technical vocabulary, although constituting a rather small part of the words in the texts, can still be considered essential for language learners as well. In addition, important collocations and clusters were found which are constitutive of the genre of agricultural abstracts. It was also observed that both passive voice and personal

pronouns occur rather frequently in the corpus. The results of the move analysis showed that the texts mainly consist of obligatory as well as core moves. In addition, the abstracts follow two general patterns. 110 abstracts consist of five moves (introduction, purpose, methods, results, and conclusion) while 10 of the texts show a different pattern. Besides analysing the structure of the abstracts, phrases and clusters were detected that are commonly used in individual moves. From the purposes of the given moves, the overall communicative purpose of these abstracts was established which can be said to be informative as well as persuasive.

It can be concluded that a corpus analysis as conducted in this study can be a useful tool for different target settings in ESP, for students as well as for teachers. The relevance of such analyses for ESP teaching is shown, especially in insufficiently studied areas such as agricultural education in Austria. Thus, this paper contributes to the linguistic research in the field of agriculture as this combination has not been explored by many researchers so far.

Abstract (German)

Dem Konzept der Genreanalyse wurde in den letzten Jahren große Aufmerksamkeit geschenkt, vor allem im Zusammenhang mit dem Unterricht Englisch als Fachsprache. Verschiedene Disziplinen und Genres wurden behandelt aber dem Fachgebiet Landwirtschaft wurde bis jetzt kaum Beachtung geschenkt. Diese Masterarbeit hat sich deswegen zum Ziel gesetzt eine solche Analyse mit landwirtschaftlichen Abstracts durchzuführen um lexiko-grammatikalische Merkmale sowie die typische Struktur dieser Textsorte aufzuzeigen. Außerdem soll diese Genreanalyse im Kontext des englischen Fachsprachenunterrichts in berufsbildenden höheren Schulen (BHS) in Österreich, welche sich auf landwirtschaftliche Ausbildung spezialisieren, betrachtet werden.

Für diesen Zweck wurde ein Korpus, bestehend aus 120 Abstracts aus dem landwirtschaftlichen Bereich, angelegt. Die gesammelten Texte stammen alle aus dem spezifischen Bereich biologischer Landwirtschaft. Das Genre Abstracts wurde für die Analyse ausgewählt weil es eine enorme Bedeutung für die akademische Welt hat. Das Feld der biologischen Landwirtschaft wurde gewählt da es ein thematisch sehr aktuelles Thema in Österreich ist und es im Englischunterricht in landwirtschaftlichen Schulen bereits behandelt wird. Einerseits wurden das Vokabular und andererseits die typische Struktur der Texte im Korpus analysiert. Das Vokabular wurde anhand von zwei Computerprogrammen, AntConc und AntWordProfiler, geprüft. Der Korpus wurde auch mit einem größeren, allgemeinen Korpus, dem British National Corpus, verglichen um Eigenheiten zu erkennen. Verschiedene Arten von Wörtern wurden untersucht, unter anderem Vokabular das häufig in den Texten verwendet wird (high-frequency words), akademisches Vokabular und Fachausdrücke sowie weniger häufig vorkommende Wörter (low-frequency words). Dafür wurden die Texte mit zwei vorhanden Listen verglichen, die einerseits akademisches, andererseits allgemeines Vokabular beinhalten. Diese sind die AWL (academic word list) und GSL (general service list). Außerdem wurden Kollokationen, Wörter die mit großer Wahrscheinlichkeit in den Texten zusammen erscheinen, analysiert um Phrasen zu erkennen. So wurde versucht das Vokabular auszumachen welches typisch für dieses Genre in diesem Fachgebiet ist. Die Untersuchung der Struktur der Texte erfolgte manuell. Diese Analyse wird Move Analysis genannt, wobei ein Move ein Abschnitt im

Text darstellt. Zuletzt wurde der Zusammenhang zwischen einer solchen Analyse und dem englischen Fachsprachenunterricht untersucht.

Die Analyse der verschiedenen Wortarten zeigte, dass, obwohl Allgemeinvokabular den größten Anteil hat, diese Texte zu einem hohen Grad akademisch sind. Die Resultate zeigten auch, dass die Notwendigkeit einer eigenen akademischen Vokabelliste sowie einer Liste mit Allgemeinvokabular für das Gebiet Landwirtschaft besteht weil der Korpus eine ungleichmäßige Verteilung und Deckung solcher Vokabel im Vergleich mit den bereits bestehenden Listen zeigt. Fachvokabular sollte, obwohl es einen verhältnismäßig kleinen Teil der Wörter in den Texten ausmacht, trotzdem ein wichtiger Bestandteil für Schüler sein. In der Analyse wurden außerdem wichtige Kollokationen gefunden, die als wesentlich für landwirtschaftliche Abstracts angesehen werden können. Die Analyse von zwei grammatikalischen Aspekten zeigte, dass das Passive sowie Personalpronomen wichtige Bestandteile dieser Texte sind. Die Move Analysis ergab interessante Ergebnisse. Die wesentlichen Textabschnitte wurden herausgefunden und es wurde aufgezeigt, dass die Abstracts zwei verschiedenen Mustern folgen. 110 Texten beinhalten fünf Moves, nämlich Einführung, Zielsetzung, Methoden, Resultate und Fazit. Die restlichen 10 Texte folgen einem anderen Muster. Zusätzliche wurden wichtige Phrasen und Kollokationen für die jeweiligen einzelnen Moves gefunden. Diesen einzelnen Textabschnitten konnte auch jeweils ein eigener Zweck (purpose) zugeschrieben werden, die sie im Text erfüllen. Von diesen einzelnen Zwecken wurde auf den gesamten Zweck (communicative purpose) von Abstracts geschlossen, welcher informierend und überzeugend ist.

Allgemein kann gesagt werden, dass eine solche Analyse, wie sie in dieser Arbeit durchgeführt wurde, ein brauchbares Instrument für verschiedene ESP Situationen darstellt, für Schüler wie auch für Lehrende. Die Relevanz einer solchen Analyse wurde aufgezeigt, besonders mit Hinblick auf wenige erforschte Bereiche wie landwirtschaftliche Ausbildung in Österreich. Diese Arbeit versucht damit einen Beitrag zur linguistischen Forschung im Fachbereich Landwirtschaft zu leisten, besonders da diese Kombination bis jetzt nur selten untersucht wurde.

Curriculum Vitae

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Ausbildung

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April 2011-August 2011: Beschäftigung als Nachhilfelehrerin bei Auf Zack

Februar 2011: Praktikum England (landwirtschaftlicher Betrieb)

August 2010- Jänner 2011: Praktikum bei Aviareps/Tourism Ireland in Wien

Juli 2010: Praktikum Schottland (landwirtschaftlicher Betrieb)

September 2009-Juni 2010: Beschäftigung als Nachhilfelehrerin bei Schülerhilfe

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2005: Ferialjob Druckerei Berger (3 Wochen)

2004, 2006, 2009: Ferialjob Wallenberger& Linhard Regionalberatung
(Sommermonate)

Sprachkenntnisse: Deutsch (Muttersprache), English (C2), Französisch (A2)

Sonstiges: ECDL- Führerschein