CHAPTER 1
INTRODUCTION

1.1 Statement of the study

The EU harvested in 2015 more than 0.89 million hectares (mn ha) soybeans, which represents about 1 % of the harvested areas in large soybean producing countries which was in 2015 around 85 mn ha for the US, Brazil and Argentina collectively. (Eurostat, 2016; Oil World, 2016). Reasoned by that, the EU imports over 33 million metric tons (mmt) of soybean commodities from North and South America each year (OVID, 2015). But there are concerns in doing so, because the exporting countries like for example Brazil, Argentina or the US mainly cultivate glyphosate tolerant genetically modified organisms (GMOs) varieties (ISAAA, 2016). If we consider the economic aspects, Europe is totally dependent on the soybean imports from the US, Brazil and Argentina to bridge the existing protein gap mainly in animal feed (Oil World, 2016), because Brazil is currently the only reliable non-GMO soybean producer. China uses the majority of its non-GMO soybean commodities for own consumption. The overall European consumption of soybean crush is almost three times as high as the world's currently available non-GMO soybean crush (OVID, 2015). Additionally, Chinas increasing import demand represents a leading factor for the level of prices in the world market. Imported soybean and soybean meal became expensive due to the consequent overall growing demand (USDA, 2016a; Rabobank, 2014).

Also, ecologically and socially the intense importation of soybeans creates problems. NGOs have concerns about the local consequences in exporting countries. This includes deforestation of tropical rain forest, loss of biodiversity, soil and water pollution and the negative impact on small farmers and the native population (Wilhelm, 2012; Castanheira and Freire, 2013).

In Europe, also the topic of GMO versus non-GMO is an important factor promoting the idea of a domestic soybean market. Imported soybean should be conform with European criteria. The European Seed Association (ESA) (2012) stated that the EU Commission affirmed already 14 years ago to realize thresholds for GMO traces in seed.

The claim is based on the globally continuous spread of GMO cultivars as well as the increasing number of authorized GMOs in Europe. There are 95 GMO crop events approved in the EU of which 15 soybean events are indicated by the ISAAA (2016). Inconsistent regulations within the EU due to the absence of binding rules for GMOs in seed in European countries cause uncertainties for farmers and the plant breeding sector. Furthermore, the ESA (2012) argued that these facts are dividing the farming in the European community. Until today, the situation is still the same. Although the ESA and EU Member States (MS) criticized the outdated GMO legislation on seeds already in 2012, as there are different GMO threshold values. However, for food and feed consistent threshold values within the EU are valid (EU Commission, 2003).The EU law requires that products, which contain or consist of authorized GMOs or are products from GMOs, must be clearly labelled as such (EU Commission, 2015). For the food retail industry in Europe non-GMO soybeans are much more attractive due to the bad reputation of GMOs among consumers (Stoll and Marquart, 2016). In general, unavoidable traces of EU approved GMO events up to 0.9% are legal without any labelling for food and feed (EU Commission, 2003).

In contrast, in the most countries within the EU, a strict zero-tolerance is valid for GMO contaminations in seed. This means if the competent authorities detect any GMO contaminations in seeds, the seed will be non-marketable regardless of the measured ratio of GMO content. However, the regulation of the threshold value for seeds can differ in a small range from country to country because the threshold value is up to the respective competent authorities. (EU Commission, 2015; transGEN, 2016). The zero-tolerance is a fundamental handicap in the seed industry. It makes the import and trade of soybean seeds increasingly difficult and involves additional costs for quality controls in terms of harmonized sampling and testing protocols. It has been experienced that seed imports from the US, Canada or Brazil to the EU involve a high risk of GMO contamination (Miersch and Hahn, 2015) as the global share of GMO soybeans is 83 % (James, 2015).

From this situation, it can be concluded that non-GMO soybean seeds produced in Europe would be of great interest for the agricultural industry. Yet, there is still a gap of higher-quality non-GMO varieties in terms of a high protein content and early maturity in the European market (transGen, 2015, LfL, 2015a). This could be an opportunity for

the market entry of European breeding companies as well as an extension of a non-GMO soybean value chain in Europe and a value creation depending on how and if existing market barriers could be managed.

Nearly the whole amount of soybean meal is used for animal feed. On average of Europe's soybean supply only 0.3 % is used for food (FAO STAT, 2012). Thus, this study will mainly concentrate on the conventional non-GMO animal feed market regardless of biological or organic markets. For a greater demand of commodity purchasers in this sector leading obstacles must be overcome. These are especially unreliable yields and lower protein contents of European produced soybean commodities compared to imported commodities, as well as a lack of significant larger and more homogenous soybean commodity lots in terms of quality (Van der Poel, 2016; LfL 2015). As a result, price reductions on the market for a lower quality of European soybeans represent a market entry barrier. Because market actors prefer larger and more uniform lots, purchasers or processors would rather decide for cheaper and reliable Brazilian commodities in a good quality. (Van der Poel, 2016). Therefore, European non-GMO soybean prices should be competitive with world market prices from the Chicago stock exchange (CBoT) and with commodity prices of non-GMO imports from Brazil.

In terms of competitiveness, other major cash crops as well as alternative protein supplying substitutes among regional crops need to be considered in this thesis. As soybeans being one of the most important agricultural trade goods in Europe (EU Commission, 2014), the local cash crops would enter in competition to soybean regarding the worthiness of cultivation on arable land. To grow larger acreages of soybean in Europe profitability, adapted varieties are required. This includes breeding goals like earlier maturing varieties with higher protein contents, higher grain yields and a better cold tolerance (LfL, 2016; Hahn, 2015; Mayr, 2016).

From various market actors, the requirement for adapted soybean varieties were mentioned (LfL Soybean Conference, 2015). Furthermore, estimations raised regarding a general soybean growing potential with respect to available acreages within Europe. Since 2015 Soybean acreages increased significantly along with politically implemented coupled payments on ecological focus acreages in the frame of the Common Agricultural Policy (CAP) (USDA FAS, 2016a). Even the Danube Soya association reports a sustained

growth in 2016 forecasts (Kruppa, 2016) for European soybean acreages. These facts evolve an interest for the theoretically expansion of soybean acreages within Europe. Thus this will be considered as well in this thesis.

From an ecological point of view, there are also some driving non-monetary aspects. For instance, the biological nitrogen fixation is of increasing interest in ecological oriented crop rotations and as a side effect soybean can lower the risk of diseases for successional planted crops (LfL 2015a; BMEL, 2015).

All these mentioned factors represent the base of several pros and cons on competitiveness for soybean production within Europe. Political measures and associations which pursue the common goal of implementing an independent European protein strategy aim to overcome these market fluctuations (LfL, 2015a; BMEL, 2015).

1.2 Research objectives

The Thesis will reflect the field of tension of the current situation of the European non-GMO soybean market development. It shall be a market potential analysis highlighting promoting or limiting aspects on the European soybean market. From this overall research aim, the following objectives evolved:

Objectives:

1.) Analysis of the interest and expected market developments of market actors for European produced soybean under given political conditions.

2.) Determination of most important chances and limitations of a European soybean market from the view of market actors.

3.) Usage of market forecasts to make statements about the potential for a noticeable long term business trend of European soybean production.

4.) How much of total soybean imports could be replaced by a European soybean production.

1.3 Conceptual framework

This work will initially analyze the current situation of the European soybean market along the value chain mainly covering the first segments such as equipment producers and wholesale, import wholesale and Acquisition and distribution. Each of these segments is analyzed by market observations and expert interviews in consideration of the major market influencing aspects.

The research approach and applied research methods will be described in chapter two.

In chapter three the actual world trade situation and Europeans soybean imports, demands and uses will be described as well as basic knowledge about soybean characteristics and the structure of the soybean industry. Furthermore, the use of soybean in animal feeding and the European political framework will be explained and information on soybean commodity prices will be specified. In the second part of chapter three, the focus is on the growing potential of soybean as crop within Europe.

The statements of the expert interviews are presented in chapter four. The results are discussed and compared to the results of the market analysis. The market analysis is based on actual market situations that are relevant for the non-GMO soybean sector and outlooks which are performed under chapter three. In addition, the market analysis contains a usage and attitude study which is presented by expert interviews and a market forecast (see chapter 2.4).