

Czech University of Life Sciences Prague

Faculty of Economics and Management

Department of Economics



Bachelor Thesis

**Plant growth regulators and fertilizers: organization of
production and sale in the Czech Republic**

Kateryna Lopaienko

Supervisor: Mgr. Elena Kuzmenko, Ph.D.

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CZECH UNIVERSITY OF LIFE SCIENCES PRAGUE

Faculty of Economics and Management

BACHELOR THESIS ASSIGNMENT

Kateryna Lopaienko, Art.D.

Economics Policy and Administration
Business Administration

Thesis title

Plant growth regulators and fertilizers: organization of production and sale in the Czech Republic

Objectives of thesis

The main aim of the present Bachelor thesis is to draw up a business plan of a prospective Agrochemical Manufacturing in the Czech Republic.

To achieve this goal the following research questions will be raised, discussed and gradually answered:

1. What legal, economic, marketing and management aspects should be studied and taken into account prior to launching own business?
2. What is the structure of a business plan and the content of its main parts?
3. What are the the peculiarities of agrochemical manufacturing?

Methodology

Theoretical part of the Bachelor thesis will rest on the analysis and synthesis of relevant literature comprised of selected study books, scientific articles, legal documents and some electronic sources.

Having collected all the necessary information and data, the Methodology, mainly based on descriptive and comparative techniques plus calculation of main economic and financial indicators, will be applied to answer the research questions.

The results of the conducted analysis along with their discussion will constitute the Practical part.

The proposed extent of the thesis

40-60

Keywords

Business plan, Chemistry Manufacturing, Czech Republic

Recommended information sources

FANDEL, G. – BACKES-GELLNER, U. – SCHLÜTER, M. – STAUFENBIEL, J E. *Modern concepts of the theory of the firm : managing enterprises of the new economy*. Berlin: Springer-Verlag, 2010. ISBN 978-3-642-07349-6.

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SCHNEIDER, B. – HRON, J. – ČESKÁ ZEMĚDĚLSKÁ UNIVERZITA V PRAZE. KATEDRA ŘÍZENÍ. *The successful management of small and middle sized enterprises in a specific sector : with a practical analysis*. 2003.

Expected date of thesis defence

2020/21 SS – FEM

The Bachelor Thesis Supervisor

Mgr. Elena Kuzmenko, Ph.D.

Supervising department

Department of Economics

Electronic approval: 13. 3. 2021

prof. Ing. Miroslav Svatoš, CSc.

Head of department

Electronic approval: 14. 3. 2021

Ing. Martin Pelikán, Ph.D.

Dean

Prague on 15. 03. 2021

Declaration

I declare that I have worked on my bachelor thesis titled " Plant growth regulators and fertilizers: organization of production and sale in the Czech Republic" by myself and I have used only the sources mentioned at the end of the thesis. As the author of the bachelor thesis, I declare that the thesis does not break copyrights of any their person.

In Prague on 15.03.2021

Acknowledgement

I would like to thank Mgr .Elena Kuzmenko , Ph.D., for advice and support during my work on this thesis.

Plant growth regulators and fertilizers: organization of production and sale in the Czech Republic

Abstract

This Bachelor Thesis deals with the issue of the importance of preparing business plans with comprehensive financial analytics, especially for manufacturing business projects. The relevance of this work is determined by the fact of the growing demand of agrochemicals for plant growth. This study aims to investigate the viability of such a business idea for the Czech Republic agromarket first as well as for European region.

In the theoretical part, exploring agrochemical industry-global and in the Czech Republic, finding the tendencies and demand of the market.

In the practical part, comprehensive business plan with deep financial analytics and marketing strategy is prepared. Also, the market potential is determined and its capture is planned. The comparison of major competitors with their product lines is completed and a competitive price is determined. As part of Marketing strategy, the 4Ps Marketing Mix, the 4Cs Marketing Mix. Target market is used to define and classify the group of potential customers to whom we want to sell the product.

As a result of this study, proper business plan for production and sale of plant growth regulators and fertilizers in the Czech Republic is written.

Keywords: Agriculture, Agrochemistry, Manufacturing, Chemistry Manufacturing, Business Plan, Financial Plan, Business development, Break-Even Analysis, Net Present Value, Market potential, Czech Republic

Regulátory růstu rostlin a hnojiva: organizace výroby a prodeje v České republice

Abstrakt

Tato bakalářská práce se zabývá otázkou důležitosti přípravy podnikatelských plánů s komplexní finanční analýzou, zejména pro výrobu obchodních projektů. Důležitost této práce je dána skutečností rostoucí poptávky po agrochemikáliích pro růst rostlin. Tato studie si klade za cíl nejprve prozkoumat životaschopnost takového podnikatelského nápadu jak pro český agromarket, tak pro evropský region.

V teoretické části, zkoumání agrochemického průmyslu – globálně a v České republice, zjištění tendencí a poptávky na trhu.

V praktické části je zpracován komplexní obchodní plán s hlubokou finanční analýzou a marketingovou strategií. Určuje se také tržní potenciál a plánuje se jeho zachycení. Je dokončeno srovnání hlavních konkurentů s jejich produktovými řadami a je stanovena konkurenceschopná cena. Jako součást marketingové strategie, 4Ps Marketing Mix, 4Cs Marketing Mix. Cílový trh se používá k definování a klasifikaci skupiny potenciálních zákazníků, kterým chceme produkt prodat.

Výsledkem této studie je vypracování správného obchodního plánu pro výrobu a prodej regulátorů růstu rostlin a hnojiv v České republice.

Klíčová slova: Zemědělství, agrochemie, výroba, obchodní plán, finanční plán, rozvoj podnikání, analýza rentability, čistá současná hodnota, tržní potenciál.

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1 Introduction

Agrochemical service has become an important unit of agricultural production, with the correct, innovative organization of which it significantly affects the final results of production. The potential of crop production can be realized only through high soil fertility, improving their functional properties. Maintaining the fertility of the soil heads is one of the main importance of increasing crop yields and productivity of the agroecosystem as a whole. This process is long-lasting, and to accelerate the positive indicators and improve the cultivation of crops, it is already necessary to use organic simulators for better plant development and quality indicators.

The relevance of this work is that the agrochemical industry still needs innovative quality proposals that could solve these issues.

The purpose of the thesis is to consider the possible opening of agrochemical production and its realization on the territory of the Czech Republic. The structure of the thesis includes exploring agrochemical industry - global and in the Czech Republic, finding tendencies and demand of the market, as well as making a comprehensive business plan with deep financial analytics and marketing strategy. Also, the market potential is determined and its capture is planned. The comparison of major competitors with their product lines is completed and a competitive price is determined.

It is concluded that for initial investment 11 483 890 CZK is needed for first year, but the capital that is invested will return in 4,3 years. In addition, the revenue for the first 5 years of operation is projected to grow from 1 493 734 CZK up to 84 034 240 CZK.

Thus, the business idea is found as a highly promising project. Taking into account that the chosen niche is in growing demand, we can conclude that with time the profit can be even much higher.

2 Objectives and Methodology

2.1 Objectives

This thesis will focus on research of the agrochemical market in Czech Republic, in particular on the planning of producing a chemical product with the aim of selling it. To do this, the main goal is to conduct research on the assessment of competitors, to evaluate the financial part of the project, as well as to assess the profitability as an investment project.

The main aim of the present Bachelor thesis is to define the proper business model for agrochemical production and draw up a comprehensive business plan.

2.2 Methodology

The theoretical part of the Bachelor thesis briefly describes the agrochemical market - Global and Czech ones, examining the key players and describes overall structure of Business Plan. For this purpose, relevant literature, scientific articles, and authoritative electronic sources were used.

The Practical Part is based on descriptive and comparative analysis of agrochemical market and industry, as well as preparing Financial Plan and Marketing Strategy. In order to research it, such methods were used:

- Market potential analysis is used to compare the feasibility of an idea and the level of demand in the market.
- Competitive Market Analysis is used in strategic management to identify main competitors, research their products and compare prices.
- Net Present Value (NPV) is used to determine the sum of all discounted values of all cash flows received from the project. This indicator is used in capital budgeting to analyze the profitability of a projected investment.

The general formula is:

$$PV = FV * \frac{1}{(1 + R)^n}$$

Where:

PV - present value;

FV - future value.

This formula consists the component that determines the magnitude of the reduction factor is highlighted. The formula for calculating the discount rate is:

$$r = \frac{1}{(1 + R)^n}$$

Where:

R - the establish value of the discount rate;

n - is the number of periods, representing the number of years from the future to the current moment.

- Internal Rate of Return (IRR) is used to estimate the profitability of potential investments. This term means the discount rate at which the net present value of the investment project is equal to zero.

The internal rate of return is determined by the formula:

$$NPV = \frac{CF}{(1 + R)^0} + \frac{CF}{(1 + R)^1} + \frac{CF}{(1 + R)^2}$$

Where:

NPV - net present value;

CF- cash flows;

R - % rate, cost of capital;

0,1,2... – number of time periods from today moment.

- Payback Method is used to conclude payback period and identify the break-even point. Furthermore, this payback method characterizes liquidity, not return on investment, also this method is most popular in period of inflation.

As soon as investments paid off, the less inflation affects it.

The formula is:

$$DPP = \ln \left(\frac{1}{1 - \frac{O_1 \times r}{CF}} \right) \div \ln(1 + r)$$

Where:

O₁ - Initial Investment;

CF - Periodic Cash Flow;

r - rate.

- Break-even Analysis is used to determine the break-even point, the position of the company in which it produces the minimum amount of products that will cover all the company expenses. In this position the company has no profit, but it also has no profit. Sales revenue allows to cover all the necessary payments, but no mor.

The formula is:

$$BEP = \frac{\textit{Fixed cost}}{\textit{Contributed margin per unit}}$$

- As part of Marketing strategy, the 4Ps Marketing Mix, the 4Cs Marketing Mix.
- Target market is used to define and classify the group of potential customers to whom we want to sell the product.

3 Theoretical part

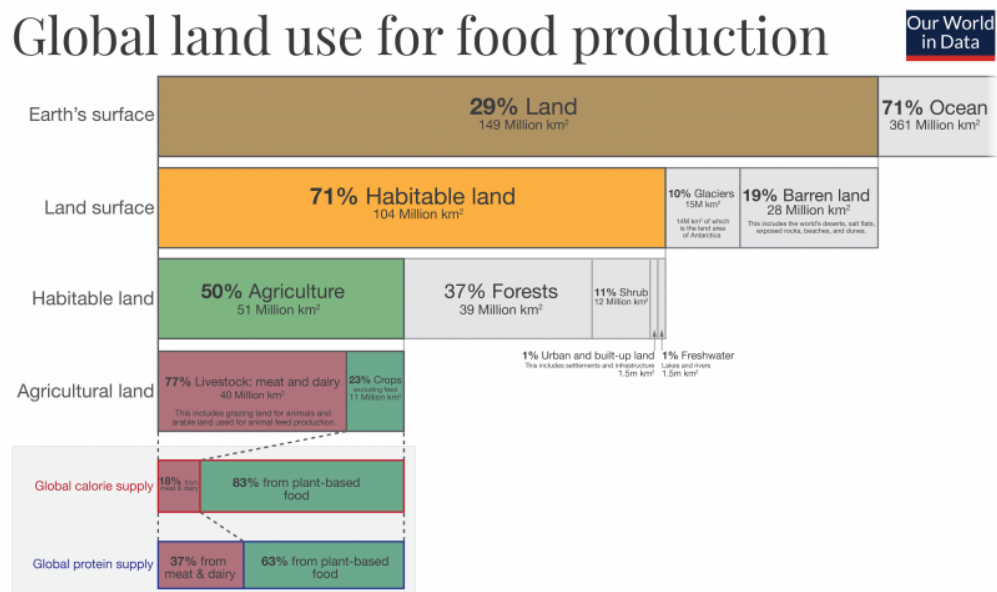
3.1 The Role of Agrochemistry

According to Jeníček and Krepl (2002), agrochemistry is an important industry in modern agriculture. Thanks to the engineering of chemical products - organic and inorganic - important indicators of agribusiness are increasing: productivity and quality of the crop. This science focuses on the development of drugs that protect against pests, insects, weeds, and other parasites, as well as stimulate plant growth and regulate the composition of trace elements.

Agrochemicals are of two types - organic, that is, biological, and inorganic, that is, chemical. With the development of this science, organic agrochemistry is still more attractive, since the synthetic one does harm to the environment and often to the human body. Thus, over time, pesticides and fertilizers of biological origin began to prevail in agrochemical production.

Agrochemistry today occupies an incredibly significant place due to global overpopulation and the increasing need for food. Moreover, not all land is fertile and suitable for cultivation. According to the UN Food and Agriculture Organization, only 10% of the earth surface, i.e., 5.1 billion hectares, is suitable for cultivation (See Figure 1).

Figure 1 Global Land Use for Food Production

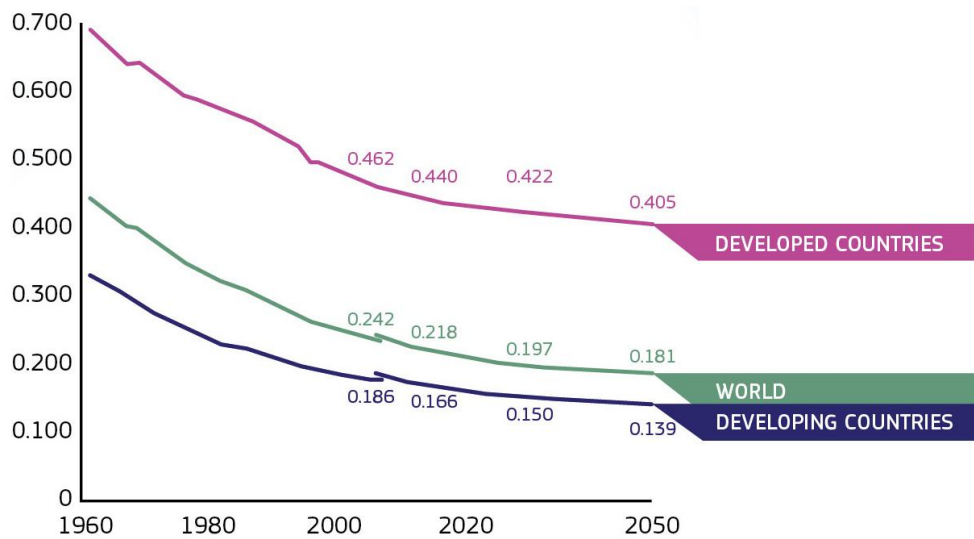


Data source: UN Food and Agriculture Organization (FAO) OurWorldinData.org - Research and data to make progress against the world's largest problems. Licensed under CC-BY by the authors Hannah Ritchie and Max Roser in 2019.

Source: Our World in Data, 2017

According to the UN Food and Agriculture Organization, over the next 30 years the amount of cropland per person will fall rapidly (See Figure 2). This is due to the uncontrolled and poorly regulated consumption of land resources. Certain plants are particularly depleting of the soil and the land requires more maintenance in order to regain its fertile strength. Maintaining its condition is incredibly important not only to meet human needs, but also to sustain the global economy.

Figure 2 Global Cropland per Capita, ha in Use per Person



Source: Alexandratos N. and Bruinsma J., 2012

Given these circumstances, it is of extreme importance to develop and increase production of agrochemicals. They play an important role in the agriculture industry, helping not only to increase the quantity of the crop, but also its quality, as well as contributing to a sustainable future.

3.1.1 Global Agrochemical Market

According to the research by Market Research Future (2021), the global Agrochemicals Market is expected to garner a revenue of USD 300 billion by 2024 with a CAGR of 4% during the forecast period of 2019–2024.

The main factor for the growth of the agrochemicals market is the increasing population. As it increases, the demand for food supply is also increasing proportionally. Using different agrochemicals, the farmers increase the crop production without any interruption. By increasing the amount of fertilizer, crops will receive additional nutrients that will help increase crop yields.

The fertilizer segment is considered the most profitable and holds the largest market share throughout the forecast period.

3.1.2 Key Players

The Chinese company Syngenta became the leader of the agrochemical company in the world in 2018 in terms of sales. Based on market capitalization, the Canadian fertilizer company Nutrien (the result of the merger of PotashCorp and Agrium) was one of the world's leading agrochemical companies as of 2019. Monsanto was formerly one of the largest and best-known agrochemical / biotech companies in the world. World. World. World. As of June 2018, Bayer has completed the acquisition of Monsanto.

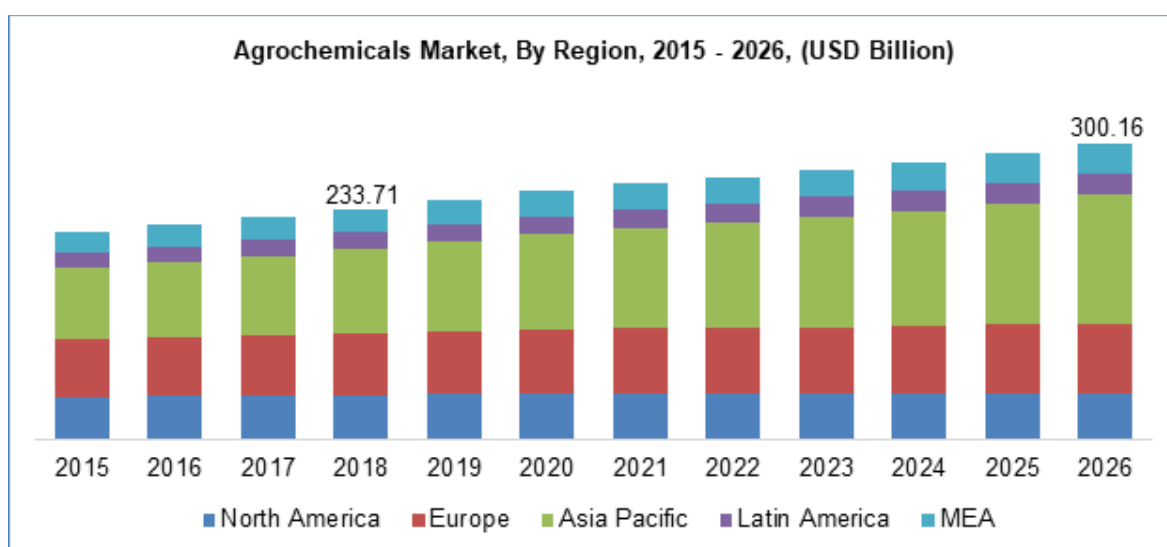
Some of the key players on the global agrochemicals market by region:

Europe and Middle East: Syngenta AG (Switzerland), Bayer CropScience (Germany), BASF SE (Germany), ADAMA Agricultural Solutions (Israel), Yara (Norway).

Asia & Pacific: United Phosphorus Limited (India), China National Chemical Corp (China), Nufarm Limited (Australia), Sumitomo Chemical (Japan), Arysta LifeScience Corporation (Japan), Crystal Crop Protection Pvt. Ltd. (India), Murugappa Group (India).

North America: Corteva (US), Monsanto (US), The Mosaic Company (US).

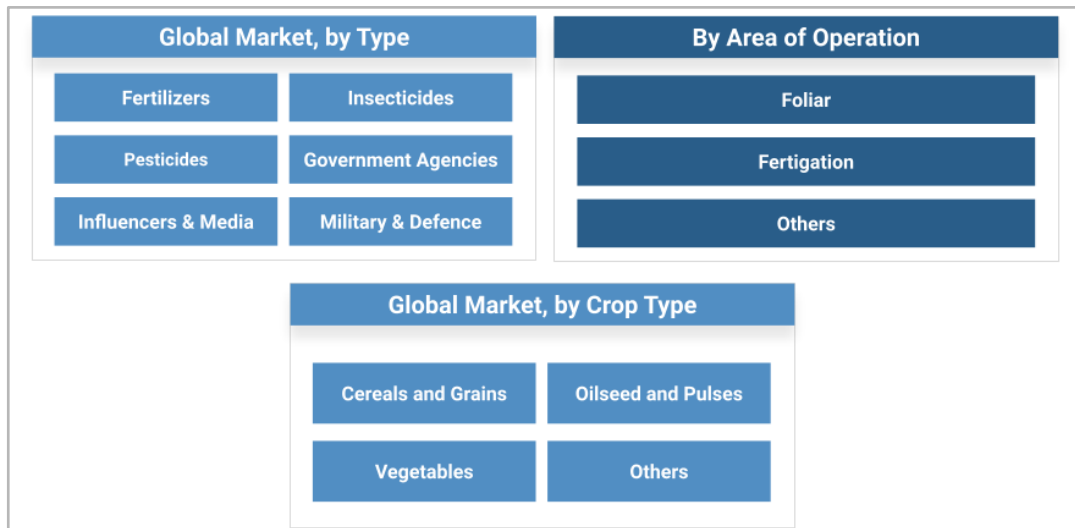
Figure 3 Global Agrochemicals Market Share (%), by Region, 2018



Source: Polaris Market Research

Moreover, as can be seen from Figure 4, the market of agriculture can be classified by type, area of operation and crop type.

Figure 4 Global Market Analysis and Classification



Source: Market Research Future (2021)

3.1.3 Overview of Agrochemical Market in Czech Republic

The European agricultural market is quite large and exports a variety of food products, therefore it is an important market for the consumption of agrochemicals. European countries are concerned about the quality and safety of food, therefore, the choice and use of agrochemicals are of great importance. However, when properly applied, the complex use of "agricultural additives" opens up many opportunities for growth and improvement.

According to report by Ministry of Agriculture of the Czech Republic (2019), in the Czech Republic, there is around 4264 thousand hectares of agricultural land, and about half (54%) of it is the total area of the country. Per one member of the population there are 0.42 hectares and 0.30 of this being arable land. Also, 30% of the land fund consists of forest land.

Over the past ten years, the territory of arable land has continued to decline. Half of the farmland fund is located in less agriculturally acceptable areas (called LFA zones), and these are the very areas that support the creation and maintenance of meadows and pastures.

3.2 Business Plan

3.2.1 Definition of Business plan

According to Pinson (2008), a business plan is a document summarizing the main statements that help evaluate a business idea, future business strategy, includes financial analytics and projections. This is an important part of planning any business, as it determines the vector for development, opportunities and potential of the idea, and helps to identify possible risks when starting and running a business to prevent them. A business plan is also important for attracting investors and determining the target audience, as often many important details go unnoticed if enough analysis of the idea is not done.

The business plan should meet such requirements:

- It must show that the product or service will find its customers;
 - Estimate the production costs and product sales offered on the market;
- Determine the profitability of future projects and show their effectiveness.

3.2.2 Business Plan Structure

According to Abrams (2010), the business plan can be divided into the following sections:

1. Executive Summary – a summary of 1-2 pages, which contains the goal of the project with a brief description of the proposed business project. It is also important to show the main economic indicators, what budget is needed to launch the project and the terms of its payback.

2. History and current state of the project, its development - this part is important for the formation of the value of the project, which consists of more than just financial profit. Also, this section can play a significant role in brand development and corporate culture.

3. Description of the project product - such items as parameters of the project product, approximate cost, price and its components, areas of application of the product should be described here.

4. Market analysis of the project product proposed for release - this item is needed to determine: a general description of the target market; market structure and trends, as well as its potential; competitive market analysis - the main competitors in the market.

5. The main tasks of the project and stages - the following points should be described:

- infrastructure tasks for the resources required for the implementation and maintenance of the project (area, raw materials base, technical equipment, other resources);
- marketing strategy and objectives (the main competitive advantages of the product, target indicators - sales volumes in a year, potential consumers, market promotion strategy, objectives for implementing a marketing strategy, commercial cost profile);
- HR tasks and management plan (required human resources, team expansion plan, etc.)

6. Financial plan. According to Pinson (2008), the financial part of the business plan is important as it shows weaknesses of the operation processes, as well as ways to solve and prevent them. The income statement shows how to run the business with better efficiency and increase profits. In financial planning, it is also important to calculate the following economic indicators of a business project:

- Net Present Value (NPV) is used to determine the sum of all discounted values of all cash flows received from the project. This indicator is used in capital budgeting to analyze the profitability of a projected investment.

The general formula is:

$$PV = FV * \frac{1}{(1 + R)^n}$$

Where:

PV-present value;

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This formula consists the component that determines the magnitude of the reduction factor is highlighted.

The formula for calculating the discount rate is:

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- Break-even Analysis is used to determine the break-even point, the position of the company in which it produces the minimum amount of products that will cover all the company expenses. In this position the company has no profit, but it also has no profit. Sales revenue allows to cover all the necessary payments, but no more.

The formula is:

$$BEP = \frac{\text{Fixed cost}}{\text{Contributed margin per unit}}$$

The marketing complex is a set of marketing instruments, a structure of which ensures the achievement of the set goal and the solution of marketing tasks in the target market. This combination forms the marketing efforts of the enterprise in the target market. Marketing tools are selected so, their optimal impact to be ensured within the selected marketing goals. There are different concepts of marketing mix. The basic concept (Jerome McCarthy's concept, 1970) tells that it consists of 4P's: Price, Product, Promotion and Place.

The second conception of marketing mix is 4C's: customer, costs, communication and convenience.

The 4P's concept consists of:

- Price -- the amount of money customer has to pay to receive the goods.
- Product – set of products or services, which the company offers to the target market.
- Place – location or distribution used as a process to bring the product or service to the end customer.
- Promotion – activities of the company to inform clients about the benefits of the products or services and its belief in the need to purchase it.

The 4C concept consists of:

- Customer – the company has to understand the customers' need, instead of focusing on the product, it focuses on filling a void in the customers life.
- Costs – is the sum of the value of all factors of production such as labor, capital, land etc.
- Convenience – it means that the company needs to know how a particular customer group prefer to make their purchases to make it convenient for them to buy.
- Communication – is interaction between the buyer and the seller. It allows to communicate with a customer on the personal level, which helps to increase brand loyalty among the clients.

4 Practical Part

4.1 Executive Summary

Donbaszol is a unique stimulator for plant growth which was developed by the qualified specialists. This product is aimed at increasing the productivity and quality of the products.

The business idea emerged from the desire to improve the quality of products in the Czech Republic and to fill the European market with a unique product.

The company sees a niche in organic agrochemicals with the most spread cereals in the Czech Republic as - wheat, barely, rye and maze. According to our calculations, we find Czech and overall European market attractive and found the average sales potential of our product of 7,856,804 liters per year.

In summary, the business idea is promising and there are a lot of places to grow and develop in this field.

4.2 Story behind the Product

Before studying and living in the Czech Republic my whole childhood I spent in Ukraine. Throughout that period I was imagining my life in Europe. I always wanted to go somewhere and once I got to Prague and realized that this is the place I want to stay. However, in some respects, European life has fallen short of expectations, including the taste of food. I was very puzzled by this issue and then I learned that one of the most important global issues is the issue of irrigated lands and the associated ecological challenges. I was greatly amazed that such a tiny fraction of the land is generally suitable for agricultural activities. Therefore, I made the decision that, as a conscientious citizen of this planet, I must do my part to protect it. Therefore, the product proposed for consideration in this business plan is one that can lead to the achievement of the Global Sustainable Goals for Zero Hunger, a contribution to the conservation of terrestrial ecosystems, and good health.

I was also inspired by the activities of scientists in the field of organic chemistry, whom I had the opportunity to do an internship this summer. The product is named after the Donbass region, where the research institute is located, as well as where all my wonderful childhood passed.

4.3 Product Description

The description below is built on the technological information provided by Dolina Group – association of companies specialized in agricultural chemistry (Dolina, 2018).

The product that we are going to produce and sell is a complex natural and synthetic regulator with systemic and contact properties for the treatment of seeds and plants in the vegetative stage.

Why do we recommend purchasing the plant growth stimulator Donbaszol?

PLANT GROWTH STIMULATOR Donbaszol

ECONOMIC BENEFITS:

1. Increase in productivity and quality indicators of the products due the enhanced content of protein, gluten, sugar, etc.
2. The formulation does not need any additional expenses for processing when being used in tank mixtures.
3. Protects the plants from frosts, increases drought resistance and immunity of plants.
4. Enhances the development and activity of soil microorganisms.
5. Enhances the efficiency of pesticides and fertilizers by 20-30%.

The profit due to economic benefits from application of Donbaszol plant growth regulator is multiple times higher than the cost of the formulation purchase.

Growth stimulant. Polyethylene glycols with low molecular weight are conductors of macro – and microelements, as well as other formulations, applied together with Donbaszol. In addition, these polyethylene glycols structure free intracellular water, increase its biological activity, and accelerate the processes of growth and photosynthesis. Donbaszol regulates transpiration and intensity of mineral nutrition. Washed salts of humic acid enhance root formation and improve nutrition, promoting the growth of the aerial part of plants.

Adjuvant. The formulation component of high molecular weight is characterized by high film forming ability. Due to this feature, Donbaszol provides fixing of spraying formulations on the leaf surface, thus increasing the effectiveness of biological products, plant protection products and micronutrient fertilizers. When Donbaszol is added to water,

the physical properties of the spraying solution change: the diameter of the droplets increases significantly (by 26-29%); the overall proportion of small and very large drops decreases.

Compatibility: the growth stimulator Donbaszol performs well in tank mixes with herbicides, insecticides, fungicides, macro-, micronutrient fertilizers and biological preparations (including inoculants). Prior to starting preparation of a tank mix, always check the formulations for compatibility.

Storage: the growth stimulator Donbaszol does not lose its properties when frozen. In the case of freezing, place the container in hot water or a warm place until the formulation completely acquires a liquid state.

4.4 Market Analysis

4.4.1 The Potential of the Market

- The Czech Republic consists of a capital and 13 regions (regions)
- The total area of the territory — 7.9 million hectares.
- Arable land area — 3 887 027 ha
- More than 3.7 million hectares of agricultural land is privately owned, the rest is owned by the state.
- The average area of cultivated land for individual entrepreneurs is 46.8 hectares, for "LLC" — 450 hectares, for "JSC" — 1500 hectares and for cooperatives — 1300 hectares.

According to the theoretical part, trends in agrochemistry leads the market to increase demand of organic fertilizers and it is expected that it will exceed 15.9 billion dollars by 2027, at a CAGR of 11.5% starting from 2020 (Meticulous Research Analysis).

Table 1 The Potential of the Market

	hectares	Product	Product	Product
		Consumption rate per liter	Sales potential with one-shot processing	Sales potential with triple processing
Arable land	3 887 027		3 928 402	11 785 207

Grain agricultural crops	1 540 664		1 265 782	3 797 345
Wheat	915 655	1,0	915 655	2 746 965
Barley	341 725	0,5	170 863	512 588
Maize	173 548	0,5	86 774	260 322
Rye	23 507	1,0	23 507	70 521
Triticale	39 595	0,8	31 676	95 028
Oats	37 566	0,8	30 053	90 158
Other cereals	9 068	0,8	7 254	21 763
Oilseed agricultural crops	550 325		767 821	2 303 462
Rapeseed	434 991	1,5	652 487	1 957 460
Sunflower seed	107 828	1,0	107 828	323 484
Other oleaginous	7 506	1,0	7 506	22 518
Leguminous agricultural crops	111 227		148 543	445 630
Soybeans	75 608	1,5	113 412	340 236
Peas, dry	26 601	1	26 601	79 803
Buckwheat	2 439	0,8	1 951	5 854
Other legumes	6 579	1	6 579	19 737
Technical agricultural	136 154		123 927	371 780
Hops	59 750	1	59 750	179 250
Sugar beet	61 136	0,8	48 909	146 726
Other industrial crops	15 268	1	15 268	45 804
Fresh Vegetables	45 548		46 905	140 715
Potatoes	24 914	1	24 914	74 742
Onions, dry	3 045	1	3 045	9 135
Cabbages and other brassicas	2 714	1,5	4 071	12 213
Other vegetables	14 875	1	14 875	44 625

Vineyards	23 395		46 790	140 370
Grapes	23 395	2	46 790	140 370
Gardens	48 921		97 842	293 526
Apricots	4 151	2	8 302	24 906
Apples	12 491	2	24 982	74 946
Cherries	2 423	2	4 846	14 538
Other gardens	29 856	2	59 712	179 136
Other agricultural crops	1 430 793	1	1 430 793	4 292 379
Total	3 887 027		3 928 402	11 785 207
Average sales potential of Donbaszol			7 856 804	
Development target of a five-year perspective-take 17% of the market			1 335 657	

Source: Created by the author

We conducted a market research to calculate the market potential. As a result, we selected the three main crops grown in the Czech Republic that are wheat, barley, and maize for such reasons:

- they occupy the main area of irrigated land in the Czech Republic, applying norms corresponding to each crop;
- the processing of grain crops requires less financial investment in comparison with perennial plants such as rapeseed, apples, and grapes;
- since wheat has a one-year growing cycle, it is much easier to observe its growth, which leads to annual purchases of agrochemicals, and will also allow us to monitor the quality of our goods;
- the likelihood of sales will be higher due to product handling.

We calculated the sales potential where the minimum processing (one-shot processing) is 3,928,402 liters and the desired one - 11,785,207 liters (triple processing), and for the reliability of the information, we chose the development target of a five-year perspective-take 17% of the market of 1,335,657 liters. Based on the market volume indicators, we conclude that the market is attractive for us.

4.4.2 Competitive Market Analysis

The analysis of competitors is given in Table 2 below.

Table 2 Competitor Analysis

No	Product name	Price per liter	Consumption	Processing	Minimum values per hectare	Price in CZK per hectare
1	LIGNOHUMÁT B	190,0 CZK	60-150 gram	1 - 3	0,6	114,0 CZK
2	RAZORMIN	1 280,0 CZK	0,3-0,7 l	1 - 3	0,3	384,0 CZK
3	ENERGEN AKTIVÁTOR PLUS	1 012,0 CZK	0,5-1 l	1 - 3	0,5	506,0 CZK
4	ENERGEN ALGAN	1 045,0 CZK	0,5 l	1 - 3	0,5	522,5 CZK
5	sunagreen	441,0 CZK	0,5 l	1 - 3	0,5	220,5 CZK
6	Hergit	1 700,0 CZK	0,2 l	1 - 3	0,2	340,0 CZK
7	M-SUNAGREEN	400,0 CZK	1 l	1 - 3	1	400,0 CZK
8	REXAN	1 300,0 CZK	0,1 l	1 - 3	0,1	130,0 CZK
9	FERTIGRAIN START	380,0 CZK	1 l	1 - 3	1	380,0 CZK
10	TECAMIN MAX	200,0 CZK	1-3 l	1 - 3	1	200,0 CZK
11	AUCYT START	192,0 CZK	2-4 l	1 - 3	2	384,0 CZK
12	Rooter	318,0 CZK	1 l	1 - 3	1	318,0 CZK
13	LIGNOHUMÁT AM	1 140,0 CZK	60-150 gram	1 - 3	0,6	684,0 CZK
14	Colorado	280,0 CZK	5 l	1 - 3	5	1 400,0 CZK
15	Aminocat 30	600,0 CZK	0,3-0,5 l	1 - 3	0,3	180,0 CZK
16	AGRO-SORB ® Folium	210,0 CZK	1-2 l	1 - 3	1	210,0 CZK
17	Energen Fruktus	920,0 CZK	0,5-1 l	1 - 3	0,5	460,0 CZK
18	ENERGEN FULHUM	840,0 CZK	0,25-1 l	1 - 3	0,25	210,0 CZK

19	Ligno AKTIVÁTOR	310,0 CZK	0,75 l	1 - 3	0,75	232,5 CZK
20	Lignohumát MAX	350,0 CZK	0,3-0,4 l	1 - 3	0,3	105,0 CZK
	Average price of competitors' products on the Czech market	655,4 CZK				369,0 CZK
	Donbaszol	361,2 CZK	1-1,5l	1 - 3	1	361,2 CZK

Source: Created by the author

In order to analyze the market by competition, we took the main companies that produce fertilizers, but since their segment is much wider, and at the moment we specialize in the production of only one product, we will compare products that are also stimulants, like our Donbaszol. We compared the compositions of the offered goods and came to the conclusion that our product is unique and has no analogues on the Czech market. On the other hand, from this analysis, we came to an important conclusion that the price of our product is competitive, as it is close to the average median value.

4.5 Financial Plan

4.5.1 Production capacity

Production capacity is a maximum possible volume, which can be produced with available resources for a certain period of time.

Table 3 Calculation of the Production Capacity of Equipment

Years	0	1	2	3	4	5
Production volume, liters		90 000	225 000	675 000	1 125 000	1 335 657
Reactor volume, liters	2 500					
Reactor product production volume = reactor volume * 0.8	2 000					
The productive capacity of the equipment, per year = the volume of production of the reactor * 21 working days * 11	462 000			929 280	1 393 920	1 393 920

months (1 month vacation, equipment changeover)						
462,000						
Equipment productive capacity - sales volume		372 000	90 000	-213 000		
3- year of sales- purchase of new equipment						
New production capacity - sales volume	924 000			249 000	-201 000	
4- year of sales- purchase of new equipment						
New production capacity - sales volume	1 386 000				261 000	50 343

Source: Created by the author

After calculating the market potential, we can start planning the sales volume and calculate the capacity of the equipment for our production. For the period we take 5 years. As we can see in the table above, our volume will increase every year until it reaches the limit point. Since the purchase of equipment requires significant financial investments, it will be purchased in addition in the process of production development.

4.5.2 Capital Equipment

Suppose that the equipment can be sold at the end of the project at its residual value, then the equipment is 0 year, the residual value is 0, the equipment purchased in the 3rd year, the residual value is 510756 CZK, the equipment purchased at the end of the 3 year of the project, the residual value is 766134 CZK. The total income received from the sale of equipment will be 1 276 890 CZK.

Table 4 Capital Equipment

Equipment/years	0	1	2	3	4	5
Electric steam generator	130 000,00 CZK			130 000,00 CZK	130 000,00 CZK	

Jacket stainless steel reactor 2.5 m3	150 000,00 CZK			150 000,00 CZK	150 000,00 CZK	
Stainless steel chemical centrifugal pump	42 000,00 CZK			42 000,00 CZK	42 000,00 CZK	
Semi automatic filling machine	11 634,00 CZK			11 634,00 CZK	11 634,00 CZK	
Cartridge filter	1 071,00 CZK			1 071,00 CZK	1 071,00 CZK	
Container for finished products 5m3	100 000,00 CZK			100 000,00 CZK	100 000,00 CZK	
Rocla	790 000,00 CZK			790 000,00 CZK	790 000,00 CZK	
Supply and exhaust ventilation	52 185,00 CZK			52 185,00 CZK	52 185,00 CZK	
Total Equipment	1 276 890,00 CZK			1 276 890,00 CZK	1 276 890,00 CZK	
*Income from the sale of equipment at residual value						1 276 890,00 Czk
amortization						
liquidation value	0,00 CZK					
amortization period	5 years					
amortization method	straight-line					
amortization in year		255 378,00 CZK	255 378,00 CZK	510 756,00 CZK	766 134,00 CZK	766 134,00 CZK
tax shield (income tax rate 19%)		48 521,82 CZK	48 521,82 CZK	97 043,64 CZK	145 565,46 CZK	145 565,46 CZK

Equipment installation costs, connection to the technological scheme	95 000,00 CZK			95 000,00 CZK	95 000,00 CZK	
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Source: Created by the author

4.5.3 Initial Registration Costs

In the Table 5 we can see company registration cost for opening firm in the Czech Republic and fertilizer registration cost for the possibility of selling goods on the market.

Table 5 Initial Registration Costs

Company registration	12 000,00 CZK
Fertilizer registration	100 000,00 CZK
Total	112 000,00 CZK

Source: Created by the author

4.5.4 Labor Costs

In the Table 6 below we can see the organization plan of the company and labor costs. The first two years our staff will consist of a chief, an accountant, a technologist, agronomist consultant, storekeeper, driver and two workers. With the development of the company the number of employees will increase.

We have also added a remuneration for the volume of sales to Labor Expenses, which is 0,5 CZK for a chief and 1 CZK for agronomist consultants per 1 liter of product sold. What contributes to motivate employees to sell more products.

Table 6 Labor Costs

Fixed salary in CZK	month	1 year	2 year	3 year	4 year	5 year
Chief	45 000	540 000	540 000	540 000	540 000	540 000
Accountant	35 000,00 CZK	35 000,00 CZK	35 000,00 CZK	35 000,00 CZK	35 000,00 CZK	35 000,00 CZK
Production technologist	30 000,00 CZK	360 000,00 CZK	360 000,00 CZK	360 000,00 CZK	360 000,00 CZK	360 000,00 CZK
Production worker and packing	25 000,00 CZK	300 000,00 CZK	300 000,00 CZK	300 000,00 CZK	300 000,00 CZK	300 000,00 CZK
Production worker and packing	25 000,00 CZK	300 000,00 CZK	300 000,00 CZK	300 000,00 CZK	300 000,00 CZK	300 000,00 CZK

Production worker and packing	25 000,00 CZK			300 000,00 CZK	300 000,00 CZK	300 000,00 CZK
Production worker and packing	25 000,00 CZK			300 000,00 CZK	300 000,00 CZK	300 000,00 CZK
Production worker and packing	25 000,00 CZK				300 000,00 CZK	300 000,00 CZK
Production worker and packing	25 000,00 CZK				300 000,00 CZK	300 000,00 CZK
Storekeeper	27 000,00 CZK	324 000,00 CZK	324 000,00 CZK	324 000,00 CZK	324 000,00 CZK	324 000,00 CZK
Loader driver	25 000,00 CZK	300 000,00 CZK	300 000,00 CZK	300 000,00 CZK	300 000,00 CZK	300 000,00 CZK
Loader driver	25 000,00 CZK			300 000,00 CZK	300 000,00 CZK	300 000,00 CZK
Loader driver	25 000,00 CZK				300 000,00 CZK	300 000,00 CZK
Agronomist Sales Consultant	35 000,00 CZK	420 000,00 CZK	420 000,00 CZK	420 000,00 CZK	420 000,00 CZK	420 000,00 CZK
Agronomist Sales Consultant	35 000,00 CZK			420 000,00 CZK	420 000,00 CZK	420 000,00 CZK
Agronomist Sales Consultant	35 000,00 CZK				420 000,00 CZK	420 000,00 CZK
Salaries	467 000,00 CZK	2 579 000,00 CZK	2 579 000,00 CZK	3 899 000,00 CZK	5 219 000,00 CZK	5 219 000,00 CZK
Payroll tax			0	0	0	0
Social insurance 24,8%	115 816,00 CZK	639 592,00 CZK	639 592,00 CZK	966 952,00 CZK	1 294 312,00 CZK	1 294 312,00 CZK
Medical insurance 9%	42 030,00 CZK	232 110,00 CZK	232 110,00 CZK	350 910,00 CZK	469 710,00 CZK	469 710,00 CZK
Total Fixed costs	624 846,00 CZK	3 450 702,00 CZK	3 450 702,00 CZK	5 216 862,00 CZK	6 983 022,00 CZK	6 983 022,00 CZK
Variable costs Salary						
Sales commission for chief 0,5 czk per liter		45 000,00 CZK	112 500,00 CZK	337 500,00 CZK	562 500,00 CZK	667 828,37 CZK
Sales commission for agronomist 1 czk per liter		90 000,00 CZK	225 000,00 CZK	675 000,00 CZK	1 125 000,00 CZK	1 335 656,75 CZK
Variable pay		135 000,00 CZK	337 500,00 CZK	1 012 500,00 CZK	1 687 500,00 CZK	2 003 485,12 CZK

Payroll taxes			0	0	0	0
Social insurance 24,8%	0,00 CZK	33 480,00 CZK	33 480,00 CZK	251 100,00 CZK	418 500,00 CZK	418 500,00 CZK
Medical insurance 9%	0,00 CZK	12 150,00 CZK	12 150,00 CZK	91 125,00 CZK	151 875,00 CZK	151 875,00 CZK
Total variable costs	0,00 CZK	180 630,00 CZK	383 130,00 CZK	1 354 725,00 CZK	2 257 875,00 CZK	2 573 860,12 CZK
Total labor cost		3 631 332,00 CZK	3 833 832,00 CZK	6 571 587,00 CZK	9 240 897,00 CZK	9 556 882,12 CZK

Source: Created by author

4.5.5 Other Operating Expenses

Below, there are two tables (Table 7 and Table 8) that represent fixed and variable costs of operating processes.

For our company we rent an office to provide image support and a production site. Counting on the volume of production, we can calculate the area of the territory. Since one ton of product occupies 2 square metres, we conclude that 200 square metres will be enough at the initial stages of work. In the future, starting from 3 year, we plan to rent an additional space for the warehouse.

Table 7 Other Operating Expenses - Fixed Costs

Types of expenses	month	1 year	2 year	3 year	4 year	5 year
Rent office	11 400,00 CZK	136 800,00 CZK	136 800,00 CZK	136 800,00 CZK	136 800,00 CZK	136 800,00 CZK
Industrial premises rent	35 439,00 CZK	425 268,00 CZK	425 268,00 CZK	850 536,00 CZK	850 536,00 CZK	850 536,00 CZK
Warehouse rent	35 439,00 CZK			425 268,00 CZK	425 268,00 CZK	425 268,00 CZK
Cars rental	13 000,00 CZK	312 000,00 CZK	312 000,00 CZK	468 000,00 CZK	494 000,00 CZK	494 000,00 CZK
Research expenditure	30 000,00 CZK	360 000,00 CZK	432 000,00 CZK	518 400,00 CZK	622 080,00 CZK	746 496,00 CZK
Fuel	6 240,00 CZK	149 760,00 CZK	149 760,00 CZK	224 640,00 CZK	299 520,00 CZK	299 520,00 CZK
Marketing	30 000,00 CZK	360 000,00 CZK	432 000,00 CZK	518 400,00 CZK	622 080,00 CZK	746 496,00 CZK
Third Party Costs*	20 700,00 CZK	248 400,00 CZK	248 400,00 CZK	248 400,00 CZK	248 400,00 CZK	248 400,00 CZK

Other expenses	13 000,00 CZK	156 000,00 CZK	187 200,00 CZK	224 640,00 CZK	269 568,00 CZK	323 481,60 CZK
Total operating expenses	195 218,00 CZK	2 148 228,00 CZK	2 323 428,00 CZK	3 615 084,00 CZK	3 968 252,00 CZK	4 270 997,60 CZK

Source: Created by author

Note: In the expenses of third-party specialists, we include legal support, assistance in recruiting personnel, etc.

To be careful in our forecasts, we created reserves for unscrupulous distributors in the amount of 2 percent of revenue. In the Table 8 variable costs represented as well as total operating expenses as sum of both fixed and variable parts.

Table 8 Other Operating Expenses - Variable Costs

Types of expenses	1 year	2 year	3 year	4 year	5 year
Maintenance costs	225 000,00 CZK	562 500,00 CZK	1 687 500,00 CZK	2 812 500,00 CZK	3 339 141,87 CZK
Vehicle expenses	450 000,00 CZK	1 125 000,00 CZK	3 375 000,00 CZK	5 625 000,00 CZK	6 678 283,74 CZK
Bad debt 2 percent	456 246,00 CZK	1 140 615,00 CZK	3 421 845,00 CZK	5 703 075,00 CZK	6 770 978,32 CZK
Total operating cost	1 131 246,00 CZK	2 828 115,00 CZK	8 484 345,00 CZK	14 140 575,00 CZK	16 788 403,93 CZK
Total operating expenses	3 279 474,00 CZK	5 151 543,00 CZK	12 099 429,00 CZK	18 108 827,00 CZK	21 059 401,53 CZK

Source: Created by author

Also to be sure that the product is good, we will test it on quality. All experiments will be carried out at research institutes which will be a market for referrals and increase the sales market.

4.5.6 Evaluation of Investment

Relevant cash flows can be examined in either a written or calculation format. It is also important that candidates can identify relevant cash flows in order to be able to use them in the context of investment appraisals.

Further, we are defining the relevant cash flow of the project, in Czech korunas: NPV, IRR of the new project for the production and sale of plant growth regulators (PGR).

Cash flow analysis: financing with working capital: to determine the relevant cash flow, working capital (procurement of raw materials, other expenses) is needed before the start of the project, and the first three years, since the inventory turnover is low due to the specifics of the agricultural market, and we expect that the working capital should return in full at the end of the project, in the 5th year.

Table 9 Relevant Cash Flows

Operating cash flow	0 year	1 year	2 year	3 year	4 years	5 year
Sales volume		90 000	225 000	675 000	1 125 000	1 335 657
Sales price		362,1	362,1	362,1	362,1	362,1
Gross revenue		32 589 000	81 472 500	244 417 500	407 362 500	483 641 308
Distribution cost 30%		-9 776 700	-24 441 750	-73 325 250	-122 208 750	-145 092 393
Net revenue		22 812 300	57 030 750	171 092 250	285 153 750	338 548 916
Direct material costs		-13 707 000	-34 267 500	-102 802 500	-171 337 500	-203 420 523
Marginal income		9 105 300	22 763 250	68 289 750	113 816 250	135 128 393
Operating expenses	-112 000					
Labor costs		-3 631 332	-3 833 832	-6 571 587	-9 240 897	-9 556 882
Other operating expenses		-3 279 474	-5 151 543	-12 099 429	-18 108 827	-21 059 402
Increase in operating cash flow		2 194 494	13 777 875	49 618 734	86 466 526	104 512 110
Cash Flow After Taxes	-112 000	1 686 820	11 160 079	40 191 175	70 037 886	84 654 809
Capital expenditure						

Equipment investment	-1 276 890		0	-1 276 890	-1 276 890	0
Depreciation Tax Shield		48 522	48 522	97 044	145 565	145 565
Maintenance expense	-95 000		0	-95 000	-95 000	
Proceeds from sale of equipment						1 276 890
CapEx	-1 371 890	48 522	48 522	-1 274 846	-1 226 325	1 422 455
Working capital finance	-10 000 000	-15 000 000	-20 000 000	-10 000 000		55 000 000
Relevant cash flows	-11 483 890	-13 264 658	-8 791 399	28 916 328	68 811 562	141 077 264

Source: Created by author

4.5.7 Net Present Value

For Net Present value calculations we apply the discount rate based on the average profitability of the industry (production of chemical fertilizers for agriculture 11%).

Table 10 Net Present Value

Years	Cash flow	Discount rate 11%	PV present value 11%
0	-11 483 890 CZK	1	-11 483 890 CZK
1	-13 264 658 CZK	0,901	-11 951 457 CZK
2	-8 791 399 CZK	0,812	-7 138 616 CZK
3	28 916 328 CZK	0,731	21 137 836 CZK
4	68 811 562 CZK	0,659	45 346 819 CZK
5	141 077 264 CZK	0,593	83 658 818 CZK
Total	205 265 206 CZK		119 569 509 CZK

Source: Created by author

From the calculations above we can conclude NPV 11% = the sum of all monetary projects for PV 11% = 119 569 509 CZK. As NPV 11% is significantly more than zero - the project should be accepted.

4.5.8 Internal Rate of Return of the project

The IRR of the project will be determined by the method of successive approximations, we will take a value close to the applied discount rate 11% -13%.

Table 11 Internal Rate of Return of the Project

Years	Cash flow	Discount rate 13%	PV 13%
0	-11 483 890 CZK	1	-11 483 890 CZK
1	-13 264 658 CZK	0,885	-11 739 222 CZK
2	-8 791 399 CZK	0,783	-6 883 666 CZK
3	28 916 328 CZK	0,693	20 039 015 CZK
4	68 811 562 CZK	0,613	42 181 487 CZK
5	141 077 264 CZK	0,543	76 604 954 CZK
Total	205 265 206 CZK		108 718 679 CZK

Source: Created by author

As a conclusion for this calculation, IRR for our project is 33,04%. The investment project has an internal rate of return higher than the cost of equity and debt capital. This draft should be accepted for further analysis.

4.5.9 Payback Period

According to the calculation in Table 12, the payback period will take 4,3 years.

Table 12 Payback Period

Total investments	59 227 670 CZK	
Registration expense	112 000 CZK	
Capital investment costs	4 115 670 CZK	

Working capital financing	55 000 000 CZK	
Years	Total relevant discounted cash flow (at 11% rate)	Payback = total investment - cash flow = 4.3 years
0	-11 483 890 CZK	
1	-11 951 457 CZK	-23 435 347 CZK
2	-7 138 616 CZK	-30 573 963 CZK
3	21 137 836 CZK	-9 436 127 CZK
4	45 346 819 CZK	35 910 692 CZK
5	83 658 818 CZK	23 316 978 CZK

Source: Created by the author

4.5.10 Break-even Analysis

Break-even analysis shows that the most realistic scenario will be made upon the sale of 69 997 liters for average price 362,10 CZK, when the payment of all fixed and variable costs are complete and the company will report a net profit (or loss of 0\$).

Table 13 Break-Even Point Calculation

	1 year	2 year	3 year	4 year	5 year
Gross cost	362,10 CZK	362,10 CZK	362,10 CZK	362,10 CZK	362,10 CZK
Distribution Cost 30%	108,63 CZK	108,63 CZK	108,63 CZK	108,63 CZK	108,63 CZK
Net cost	253,47 CZK	253,47 CZK	253,47 CZK	253,47 CZK	253,47 CZK
Variable cost					
Direct material costs	152,30 CZK	152,30 CZK	152,30 CZK	152,30 CZK	152,30 CZK
Maintenance costs	2,50 CZK	2,50 CZK	2,50 CZK	2,50 CZK	2,50 CZK
Vehicle expenses	5,00 CZK	5,00 CZK	5,00 CZK	5,00 CZK	5,00 CZK
Sales commission	1,50 CZK	1,50 CZK	1,50 CZK	1,50 CZK	1,50 CZK
Social insurance 24,8%	0,37 CZK	0,37 CZK	0,37 CZK	0,37 CZK	0,37 CZK
Medical insurance 9%	0,14 CZK	0,14 CZK	0,14 CZK	0,14 CZK	0,14 CZK

Bad debt 2%	5,07 CZK	5,07 CZK	5,07 CZK	5,07 CZK	5,07 CZK
Total variable cost	166,88 CZK	166,88 CZK	166,88 CZK	166,88 CZK	166,88 CZK
Contribution margin per 1 liter	86,59 CZK	86,59 CZK	86,59 CZK	86,59 CZK	86,59 CZK
Fixed costs					
Amortization	255 378 CZK	255 378 CZK	510 756 CZK	766 134 CZK	766 134 CZK
Maintenance expense	95 000 CZK		95 000 CZK	95 000 CZK	
Registration expenses	112 000 CZK				
Labor fixed costs	3 450 702 CZK	3 450 702 CZK	5 216 862 CZK	6 983 022 CZK	6 983 022 CZK
Operating expenses	2 148 228 CZK	2 323 428 CZK	3 615 084 CZK	3 968 252 CZK	4 270 998 CZK
Total fixed costs	6 061 308 CZK	6 029 508 CZK	9 437 702 CZK	11 812 408 CZK	12 020 154 CZK
Break-even point, liters	69 997	69 630	108 988	136 412	138 811

Source: Created by the author

4.5.11 Profit and Loss Statement

In the Table 14 we can see the information about company's profit and loss calculations, planned for the next 5 years after launching. As it can be seen, our operating profit will increase from 1 493 734 CZK to 84 034 240 CZK after taxation.

Table 14 Profit and Loss Statement

	1 year	2 year	3 year	4 year	5 year
Gross revenue	32 589 000 CZK	81 472 500 CZK	244 417 500 CZK	407 362 500 CZK	483 641 308 CZK
Distribution Cost 30%	-9 776 700 CZK	-24 441 750 CZK	-73 325 250 CZK	-122 208 750 CZK	-145 092 393 CZK
Net revenue	22 812 300 CZK	57 030 750 CZK	171 092 250 CZK	285 153 750 CZK	338 548 916 CZK
Direct material costs	-13 707 000 CZK	-34 267 500 CZK	-102 802 500 CZK	-171 337 500 CZK	-203 420 523 CZK
Maintenance costs	-225 000 CZK	-562 500 CZK	-1 687 500 CZK	-2 812 500 CZK	-3 339 142 CZK
Vehicle costs	-450 000 CZK	-1 125 000 CZK	-3 375 000 CZK	-5 625 000 CZK	-6 678 284 CZK
Labor costs	-3 631 332 CZK	-3 833 832 CZK	-6 571 587 CZK	-9 240 897 CZK	-9 556 882 CZK
Operating costs	-2 148 228 CZK	-2 323 428 CZK	-3 615 084 CZK	-3 968 252 CZK	-4 270 998 CZK

Amortization	-255 378 CZK	-255 378 CZK	-510 756 CZK	-766 134 CZK	-766 134 CZK
Maintenance costs	-95 000 CZK	0 CZK	-95 000 CZK	-95 000 CZK	0 CZK
Bad debt	-456 246 CZK	-1 140 615 CZK	-3 421 845 CZK	-5 703 075 CZK	-6 770 978 CZK
Total expenses	-20 968 184 CZK	-43 508 253 CZK	-122 079 272 CZK	-199 548 358 CZK	-234 802 940 CZK
Operating income	1 844 116 CZK	13 522 497 CZK	49 012 978 CZK	85 605 392 CZK	103 745 976 CZK
Income tax	350 382 CZK	2 569 274 CZK	9 312 466 CZK	16 265 024 CZK	19 711 735 CZK
Net Operating Profit After Tax	1 493 734 CZK	10 953 223 CZK	39 700 512 CZK	69 340 368 CZK	84 034 240 CZK

Source: Created by the author

4.6 Marketing Strategy

4.6.1 The 4Ps Marketing Mix

1. Product

We offer a unique product which is a complex natural and synthetic regulator with systemic and contact properties for treatment of seeds and plants in the vegetative stage. It increases the productivity and quality indicators of the products due the enhanced content of protein, gluten, sugar, etc. Also, protects the plants from frosts, increases drought resistance and immunity of plants. Enhances the development and activity of soil microorganisms and efficiency of pesticides and fertilizers by 20-30%.

2. Price

The price of the product depends on how competitive it is to cover costs, profit margins and how much the consumer can pay. As noticed before, our price is average.

3. Place of distribution

Our product can be bought through intermediaries such as distributors or retailers. Also the purchase is also possible through the website and other internet resources.

4. Promotion

Promotion will be focused on internet advertising of the uniqueness of our product and its high quality. Our managers will create well-designed, distinctive advertising appealing directly to prospective customers and burn their interest. In addition our

distributors will offer our product with the goal to increase margin income and the number of the sold production.

4.6.2 The 4Cs Marketing Mix

1. Consumer

Since the product is well researched, and statistically gives an increase of at least half a ton with a single processing of 5 centners per 1 hectare; and 0,7 at double. The average price for cereals is 200 euros per ton, the profit can be 100 euros, and with a double processing is 140 euros for the final consumer. So as we see, the profit efficiency indicator depends on the yield per hectare. The product increases productivity by 20 percent and decreases the risks of natural factors.

2. Cost

The costs for consumers are lower than the benefits that this product brings, namely, the payback will be 5-10 times higher.

3. Communication

For communication with customers we use articles on the internet, media, also clients' reviews. As our product is new on the market we use different leading research universities to use them as the market advisors. We also take part in various exhibitions, where we communicate with clients and present our product. One of the additional ways of communication is through our sales managers and distributors who work with end users.

4. Convenience to buy

We suppose that our product will be stored in distributors' warehouses in order to use their supply chain to ensure the speed of product delivery. The maximum delivery period we take is 2 days. We expect that distributors will provide our product with other pesticides and herbicides.

4.6.3 Stages of Buying Activity-Customer Lifecycle

The most productive scheme is one in which there are at least two control contours of indicators for analyzing sales performance:

1. Sales of Products Performance measures (accounting data - described in Financial Plan chapter above);

2. Customer service metrics. This metric shows the quality of customer attraction and product development.

For the company described in this thesis, one of the key indicators of work with end consumers is called the indicator SBA - stages of buying activity. We took 2 basic concepts of Customer Loyalty Ladder (Raphel, 1995) and Sales Funnel (Williams, 2017) and put them together. In this table, we have categorized customers for retention purposes and in order to reach our target which is 17% of the market.

Table 15 Stages of Buying Activity-Customer Lifecycle

№	Stages of buying activity-Customer Lifecycle	Criteria
0	Intended client	Client, agricultural producer (own or leased hectares). A prospective customer is a customer who can become a customer of a company, while the consumer may not know anything about the company or its products. After the prospective client has received information about the company, he goes into the stage of hesitant clients.
1	Client Antagonist	The client for whom there is information that he: 1. Has a negative attitude towards our products, our company; 2. Negatively refers to any plant growth regulators, micronutrient fertilizers, adjuvants.
2	Former client	1. There is information in the sales reports about the purchases of our products in the previous year, there are no sales in the current year. Former customers can also be considered potential and involved in the loyalty program
3	Doubtful customer	There is information that personal meetings were held, there is no information about sales. 1. The consumer knows the name of the company, the name of the products, knows the name of the manager and is ready to communicate further. 2. The end user has shown interest, asks questions about the products, the company.
4	Potential client	There is information that personal meetings were held, there is no information about sales. The consumer asks questions about the product's performance. The manager has formed a need for our products.

5	One-time buyer	First purchase, or restoration of a purchase after a break A one-time, usually insignificant trade (test).
6	Client	A client who has made a number of purchases in the current year - purchase of min. 2 times on the date of analysis (for 2 cultures or 2 processing phases). When you make a repeat purchase (repeat purchase as part of the initial sale), a one-time buyer becomes a customer of the company. As a result, if the company's products and customer support methods satisfy the buyer, then he becomes a loyal customer or even a market for referrals.
7	Regular customer	Multiple purchases - purchases for at least the last two years in a row as of the date of analysis.
8	Loyal customer	Multiple purchases - purchases for at least three consecutive years at the date of analysis. volume more than 150% l per hectare.
9	Client Referer	Friendly recommendations (attracting new customers), when buying for at least 2 years in a row, the Consumer has an expert opinion on the market. The client, who has become the market for the company's recommendation (protector), not only regularly purchases the company's products, himself (a loyal client), but is also a source of new sales, since he recommends purchasing the company's products to other potential customers. Referrer Markets are consumers who only buy from us, they are committed to our brand and are its bearers. These are our "lawyers". However, fans are very vulnerable, if offended, they can go into the "antagonist" category.
10	Discontinued client	Changed the field of activity or liquidated (there is information in the official databases), no hectares.

Source: Created by the author

According to John Tschohl (p.65, 1991), it is better to retain old customers than constantly attract new ones: the cost of finding and attracting a new audience is 5-10 times more expensive than retaining old ones, and also depends on the scope of the enterprise. This is also due to market saturation, which forces businesses to spend more money to find a client, while the cost of retaining an existing one remains at the same level. Thus, the company can save about 75% of the costs for customer service. Also, a company that has a customer base with which it constantly communicates and from whom it constantly receives feedback - generates more trust and respect, and also looks more attractive for investments.

The task of the indicator system "Stages of buying activity" - creation of key points - providing control tools for the head of the sales company, compliance with the current situation with the planned one, and in case of deviation - more effectively make decisions on their elimination, improve planning, correctly prioritize work.

When developing a communication component, a company must take into account that its consumers are at different stages of development of relationships with it. Each type of clientele requires a different approach. In the Table 16 we can see that each type of customer should be addressed with a different message, ensuring a consistent transition of hesitant consumers to buyers, and then to the so-called company advocates, which is the result of a well-designed communication strategy.

Table 16 Classification of the Company's Customers by the Type of Regularity of Purchases and Emphasis on Relationships

№	Stages of relationships with counterparties	Consumer type	Accent	Purchase regularity type
0	Intended client	Potential client	Focus on new customers (catching consumers)	no
1	Client Antagonist	Potential client	1. Catching consumers. 2. Return of consumers.	no
2	Former client	Potential client	Emphasis on rebuilding customer relationships (consumer return)	no
3	Doubtful customer	Potential client	Focus on new customers (catching consumers)	no
4	Potential client	Potential client	Focus on new customers (catching consumers)	no
5	One-time buyer	Potential client	Emphasis on building relationships (attraction to purchase)	First deal (purchase) or restoration of a purchase after a break
6	Client	Potential client	Emphasis on establishing and developing relationships (attracting repeat purchases, retaining customers)	purchase of min. 2 times on the date of analysis

7	Regular customer	Current client	Emphasis on establishing and developing relationships (attracting repeat purchases, retaining customers)	- purchases for at least 2 recent years in a row on the date of analysis.
8	Loyal customer	Current client	Emphasis on developing relationships (customer retention)	- purchases for at least the last three years in a row as of the date of analysis, the volume is more than 150% 1 per hectare.
9	Client Referee	Existing client - Attracting new clients	Emphasis on developing relationships (customer retention)	when purchased for at least 2 years in a row, the volume is more than 50% 1 per hectare + recommendations
10	Discontinued client	Out of the target segment		no

Source: Created by author

In the Table 17 we can see information about different types of relationship between the company and the customers. This classification helps to determine what tactical steps the company needs to take to improve brand attitude.

Table 17 The Goals of the Relationship with the End Consumer in Accordance with the Stages of Purchasing Activity

No	Stages	Type of relationship on the part of the Company	Type of relationship	Tactical relationship goal
0	Intended client	Cold contact	Lack of information, knowledge about the product, the company	consumer transfer from 0 to 3
1	Client Antagonist	Receiving, analyzing and reacting information	Negative attitude towards the company's products	consumer transfer from 1 to 3
2	Former client	Identifying and analyzing dissatisfaction with the company's products from competitors	The need for us is lost, the need for competitors is manifested	consumer transfer from 2 to 3

3	Doubtful customer	Knowledge, Dealing with client doubts, persuasion	Acquaintance, consideration, questions	consumer transfer from 3to 4
4	Potential client	Attraction.	Awareness, acquaintance, consideration, need to buy Attraction.The company has formed a need	consumer transfer from 4to 5
5	One-time buyer	Selling through a distributor (pulling up a client)	Approbation, purchase	consumer transfer from 7to 8
6	Client	Resale, Customer Satisfaction, Product Performance, After Sales Service	Application, repeat purchase	consumer transfer from 6to 7
7	Regular customer	Long-term sales, customer satisfaction, product performance After-sales service	Long-term purchases, repeated use	consumer transfer from 7to 8
8	Loyal customer	Long-term sales, customer satisfaction, product performance After-sales service	Long-term purchases, repeated use	consumer transfer from 8 to 9 2. hold at 8
9	Referee (Defender)	Long-term sales, customer satisfaction, product performance After-sales service	Years of purchase, reapplication Brand loyalty.	Hold at 8 / increase in sales
0	Discontinued client	terminated	terminated	

Source: Created by the author

In the Table 18 we can see information about levels of customer interaction, analyze what is important for clients and what it is leading to.

Table 18 Levels of Customer Interactions.

No.	Stages	Customer interaction level	Required competencies	Type of relationship - what is important for the client	What does it lead to?
0	Intended client	Level 1.	Needs and solutions.	First, you need to establish and polish	1. Point of entry.

1	Client Antagonist	Build a close bond with the client. - Building connections.	1. Correctly make the connection between the client's needs and the company's offer. The result of such work is an irresistible offer. Specific people 2. Demonstrate an ability to listen and understand the client's needs. Personal contact and being attentive to the client's specific problems and difficulties.	the quality of interaction with customers. This means improving the quality of the first contact with customers, developing a customer feedback management program, analyzing the demand and key needs of customers, developing a plan to improve and develop the company's product. According to customer surveys, winning companies communicate with customers 2.5 times more often than lagging companies.	2.Required, but not enough to win.
2	Former client				
4	Temporarily lost client (sleeping)				
3	Doubtful customer				
5	Potential client	Level 2. Convincing the result. Or conviction	The best choice 1. Create a distinctive and superior offer Maximum impact 2.Convincing results Minimal risk 3. Form the image of a professional, experienced, reliable partner	Winning companies are best at convincing their customers in three ways: 1.Demonstrate a return on investment that proves the need for collaboration 2.Best convinced of no risk or minimal risk 3. Prove that their company is the best choice of all alternatives. Clients identified several factors that, in their opinion, can significantly reduce the perception of the riskiness of the transaction: 1.Respect for the company in the market and within the client's organization, positive experience of cooperation 2. Whether the supplier of goods or services has	1.Minimizes the probability of postponing a decision. 2Maximizes competitiveness
7	One-time buyer				

				<p>experience in the required industry</p> <p>3 Professionalism of the supplier company (perceived + real)</p> <p>4. Reliability of the supplier company</p> <p>5. Detailed and accurate description of the transaction process</p> <p>6. The ability of the supplier company to instill confidence</p> <p>7. Recommendations and tips to prevent possible mistakes</p>	
8	Client	Level 3. Demonstrate collaboration	<p>What to do?</p> <p>1.Help develop the client's business.</p> <p>2. Introduce new methods, ideas, growth opportunities.</p> <p>How to lead?</p> <p>3.Simplify the purchase / transaction process as much as possible</p> <p>4. Be a proactive, responsive partner</p>	<p>Research results have shown that winning companies are perceived to be faster, more proactive and accessible due to their methods of work. At the third level of cooperation with clients, it is necessary to work with the client together to achieve the goal, to demonstrate an interest in the client's success. This has its advantages: 1. This behavior is likely to make the company unique 2. Allows you to demonstrate more effort than the client expects. This means that he feels himself "in the black."</p> <p>3. Builds a close connection and allows you to influence the opinion of the buyer in the future, increases trust and simplifies work.</p>	<p>1.Develops demand.</p> <p>2.Increases loyalty</p> <p>3.Become a mandatory criterion for success.</p>
9	Prospective Client				
10	Attracted Client				
11	Regular customer				
12	Interested client				
14	Client Follower				
15	Customer Super-consumer (Unconditional adherent)				
16	Client Referee				

Source:Created by the author

5 Conclusion

The main purpose of the presented Bachelor thesis is to define the proper business model for agrochemical production and draw up a comprehensive business plan. Firstly, for this purpose the market was explored, and it was found the growing demand on growth plants stimulators.

The business idea emerged from the desire to improve the quality of products in the Czech Republic and to fill the European market with a unique product. The author sees a niche in organic agrochemicals for the most spread cereals in the Czech Republic, such as - wheat, barley and maize. According to our calculations, we find Czech and overall European market attractive and found the average sales potential of our product is 7,856,804 liters. Thus, our business plan is prepared in order to launch the production of the Donbaszol stimulator.

Donbaszol is a unique stimulator for plant growth which was developed by qualified specialists. This product is a complex natural and synthetic regulator with systemic and contact properties for treatment of seeds and plants in the vegetative stage. It increases the productivity and quality indicators of the products due the enhanced content of protein, gluten, sugar, etc. Also, protects the plants from frost, increases drought resistance and immunity of plants. Enhances the development and activity of soil microorganisms and efficiency of pesticides and fertilizers by 20-30%.

The initial investment needed is 11 483 890 CZK, with the payback period 4,3 years. IRR for our project is 33,04%. The investment project has an internal rate of return higher than the cost of equity and debt capital. The revenue for the first 5 years of operation is projected to grow from 1 493 734 CZK up to 84 034 240 CZK. Break-even analysis shows that the most realistic scenario will be made upon the sale of 69 997 liters for average price 362,10 CZK, when the payment of all fixed and variable costs are complete and the company will report a net profit (or loss of 0\$).

For our company we rent an office to provide image support and a production site. Counting on the volume of production, we can calculate the area of the territory. Since one ton of product occupies 2 square metres, we conclude that 200 square metres will be enough at the initial stages of work. In the future, starting from 3 years, we plan to rent an additional space for the warehouse.

The first two years our staff will consist of a chief, an accountant, a technologist, agronomist consultant, storekeeper, driver and two workers. With the development of the company the number of employees will increase.

For communication with customers we use articles on the internet, media, also clients' reviews. As our product is new on the market we use different leading research institutes to use them as the market advisors. We also take part in various exhibitions, where we communicate with clients and present our product. One of the additional ways of communication is through our sales managers and distributors who work with end users.

We suppose that our product will be stored in distributors' warehouses in order to use their supply chain to ensure the speed of product delivery. The maximum delivery period we take is 2 days. We expect that distributors will provide our product with other pesticides and herbicides.

In summary, the business idea is promising and there are a lot of places to grow and develop in this field.

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