



IFMA

TRANSFORMING AGRICULTURE

IFMA 19

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FIELD TRIP

Diversity of Farm Businesses



FACULTY OF
ECONOMIC SCIENCES
— WULS-SGGW —

Strawberry Farm: Grzegorz Mitura.

Location

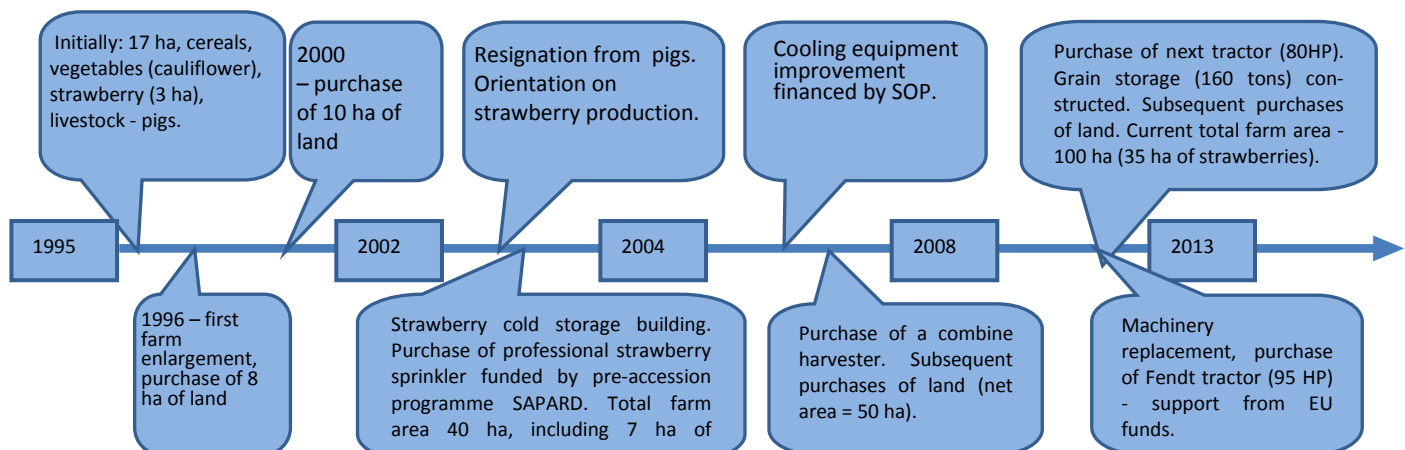
Grzegorz Mitura's farm is situated in the north-western part of the mazovian voivodeship, county Płoński, in Czerwińsk municipality. The region is a flat terrain, dominated by agricultural land (arable land constitutes 83% of it). Local economy is based on agriculture, including agro-food industry. The vast majority of agricultural land is owned by individual farmers. The area is dominated by a rather good soil - mainly III and IV quality classes (in the soil quality classification there are six classes distinguished in Poland: classes I and II - very good and good quality; classes III and IV - medium quality, classes V and IV - poor and very poor). Good insolation and mild (genial) climate are favorable for agricultural production in that region. The area is characterized by low average annual rainfall (500-600 mm) which can be unfavorable for vegetation. Czerwińsk municipality is well known for its soft fruits production, particularly strawberries and raspberries. Strawberry production constitutes about 1/3 of arable land in Czerwińsk municipality. Production of cereals and root crops play an important role too. In the community in a number of farms, breeding pigs and cattle is also carried out.



Farm history

The modern history of the farm began in 1996 after the takeover by the father of the present owner. That time it was a small multidirectional farm cultivating cereals, strawberries, cauliflowers and breeding pigs. Since then, the farm area has enlarged several times, up to over 100 ha in 2013. During that period (since 1996) the farm has orientated its production for strawberry, vegetable and cereal production. The owner decided to quit animal production.

Farm timeline



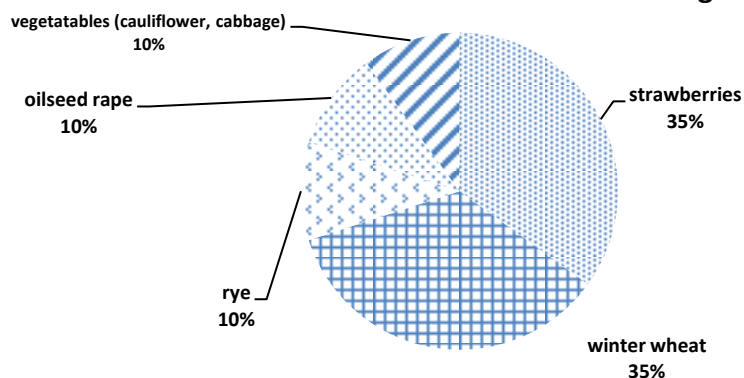
Calculation of strawberry cultivation profitability [PLN/ha]

| Specification | unit | quantity | Price | Value |
|---------------------------------------|------|----------|-------|-------|
| Production | dt | 200 | 350 | 70000 |
| Direct costs | | | | |
| seed (1/4) | pcs | 11250 | 0,35 | 3938 |
| Fertilizers | - | - | - | 2500 |
| Pesticides | - | - | - | 1500 |
| Other special costs (packages, foil) | - | - | | 2500 |
| Contract workforce | | | | |
| planting, weeding, wrapping, mulching | hour | 200 | 8 | 1600 |
| Harvest | pcs | 10000 | 1,3 | 13000 |
| Total direct costs | | | | 25038 |
| Direct cost PLN/1 kg of strawberries | | | | 0,71 |
| Gross Margin | | | | 44963 |

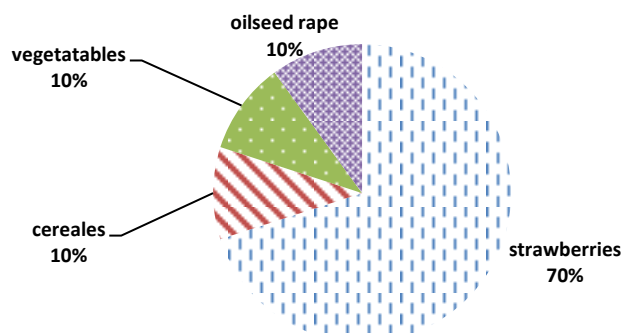
Farm characteristics – scale and direction of production, yields

- Production is carried out at about 100 ha
- Cultivation area is dominated by strawberries and cereals
- The main income comes from strawberry production
- Permanent workforce: 3 family members and one hired worker.
- Seasonal workforce: 10 up to 100 workers - harvest and weeding time (workers from Ukraine)
- 75% of strawberry production is exported (Mixma markets in Latvia, Lithuania, Estonia, Russia)
- In the past, one of the buyers was Auchan – chain of hypermarkets

Structure of sowing area



Revenue structure



Yields and levels of fertilization

| Specification | Average yield (t/ha) | Approximate dose of NPK (kg/ha) |
|----------------|----------------------|---------------------------------|
| Strawberries | 20 | 75-50-80 |
| Cereals | 7 | 90-60-70 |
| Oilseed rape | 4 | 90-60-70 |
| Cauliflower | 22 | 100-65-100 |
| Chinese leaves | 40 | 100-65-100 |

Main farm assets

- Land: 100 hectares – mainly III and IV quality class
- Irrigated vegetable and strawberry fields
- Fruit and vegetable storage - 756 m²
- Shed 480m²
- Grain Silos - 210 + 160 tonnes
- Tractor John Deere 115 and 80 hp, 95 hp Fendt, New Holland combine harvester



The main problems / threats: lack of cheap workforce

Plans for the future: Further soft fruit production development, further farm area enlargement.



11:30 – 14:00 “GREEN FACTORY” – Vegetable Processing

Company: “GREEN FACTORY”

About us

Company: Green Factory

Basic information/history



Mission: The Mission of the company is development in the distribution, packing, customizing and selling of the top quality products; a development accomplished in an environmentally friendly way, in conformity with the quality policy and HACCP; a development that meets customers' needs, ensures constant improvement and fully uses the potential of our employees



Green Factory is a family business which came into existence in January 2006 drawing on the long-standing experience and tradition in plant production developed by the company's owners for generations. The company was established with the intention to separate traditional agricultural production (nowadays modern and intensive) from the fast-developing sales business. The company has created a Group that includes two manufacturing plants, an agency in the Wholesale Agri-Food Market and two logistics branches - in Silesia and near Warsaw (Błonie).

The 4500 m² facility was opened in 2006 to meet the needs of fast-growing sales, and was expanded in 2008. Currently, the building has two modern quick-cooling rooms using a chilled water cooling system, six cold rooms, unloading ramps, its own supply of water for irrigation with a pressure boosting station, and up-to-date staff facilities and office space.

In 2008, the Logistics Department was transformed into a separate company – Green Factory Logistics Sp. Z o.o. The company specializes in refrigerated logistics, transporting food products all over the country and Europe. The products we are entrusted with are kept within a temperature range of +2C to +6C throughout the whole supply chain. Experience, creativity, inventiveness and reliability in every situation allow the firm to provide services of the highest level. The



owner of Green Factory is also a founder and stakeholder of the company Kukumis. This company focuses on the production of fresh “ready to eat” salads. It offers a wide range of multicomponent mixtures of lettuces under the Fit & Easy brand.

Green Factory Characteristics: The scale and direction of production

- the company is engaged in the cultivation and sale of vegetables, offering a year-round assortment of salads and vegetables (see calendar of crops).
- the company currently employs 211 people.
- Vegetable cultivation is carried out on a 200 hectare farm located in the towns of Zdunowo, Zakroczym, and Smaszowo, as well as by producers who are members of producer group. The total area is about 466 hectares.
- In the next year a new farm in town Wróblewo (300 ha) will be launched
- off-season vegetables are produced for Spanish, French, Italian and Greek companies.
- Vegetables are processed in two factories located 50 km from Warsaw, (the area of the latest factory is 4500 m²).
- In autumn 2013 another manufacturing facility and a logistics center (5000 m²) near Poznan (250 km from Berlin and 330 km from Warsaw) will be opened.
- In addition to the "classic" (typical) vegetables the company offers washed and cut vegetables under the brand name "Fit & Easy", ready-made salad sets and salad mixes, including "baby leaf" (young leafy vegetables).

The area of cultivation in 2013

| | Species | (ha) |
|--------------|--------------------|--------------|
| 1. | Butterhead lettuce | 227,5 |
| 2. | Romain lettuce | 12 |
| 3. | Frisée | 11,5 |
| 4. | Radicchio | 16,5 |
| 5. | Celery | 8 |
| 6. | Broccoli | 173 |
| 7. | Baby spinach | 10 |
| 8. | Leek | 6 |
| 9. | Chinese leaves | 2 |
| Total | | 466,5 |

| Cultivation calendar | I | II | III | IV | V | VI | VII | VIII | IX | X | XI | XII |
|---|---|----|-----|----|---|----|-----|------|----|---|----|-----|
| broccoli | x | x | x | x | x | d | d | d | d | d | x | x |
| escarole | x | x | x | x | d | d | d | d | d | d | x | x |
| frisée | x | x | x | x | d | d | d | d | d | d | x | x |
| cauliflower | x | x | x | x | x | d | d | d | d | d | x | x |
| turnip cabbage | x | x | x | x | x | d | d | d | d | d | x | x |
| fennel | x | x | x | x | x | d | d | d | d | d | x | x |
| dill | x | x | x | x | x | | | | | x | x | x |
| little gem | x | x | x | x | d | d | d | d | d | d | x | x |
| young cabbage | | x | x | x | x | | | | | | | |
| tomato | x | x | d | d | d | d | d | d | d | d | d | x |
| radicchio | x | x | x | x | x | d | d | d | d | d | d | d |
| lamb lettuce | x | x | x | x | x | x | x | x | x | x | x | x |
| rocket salad | x | x | x | x | x | x | x | x | x | x | x | x |
| radish | x | x | d | d | d | d | d | d | d | d | x | x |
| salanova lettuce | x | x | x | x | d | d | d | d | d | d | x | x |
| oak leaf lettuce | x | x | x | x | d | d | d | d | d | d | x | x |
| iceberg lettuce | x | x | x | x | d | d | d | d | d | d | x | x |
| lollo bionda | x | x | x | x | d | d | d | d | d | d | x | x |
| lollo rossa | x | x | x | x | d | d | d | d | d | d | x | x |
| butterhead lettuce | x | x | d | d | d | d | d | d | d | d | x | x |
| romain lettuce | x | x | x | x | d | d | d | d | d | d | x | x |
| celery | x | x | x | x | x | d | d | d | d | d | x | x |
| baby spinach | x | x | x | x | d | d | d | d | d | d | x | x |
| spinach | x | x | x | x | d | d | d | d | d | d | | x |
| Production form domestic (inland) cultivation | | | | | | | d | | | | | |
| Production form imported cultivation | | | | | | | x | | | | | |

The company's customers:

- the largest retail chains in Poland
- HoReCa market (McDonald's) – Green Factory is one of two suppliers of salads)
- in large cities (Warsaw, Poznan, Torun, Bydgoszcz, Lodz, Wroclaw, Krakow, Katowice)
Green Factory conducts van-selling
- export to foreign markets: Germany, Czech Republic, Slovakia, Scandinavia, Ukraine, Greece, and Italy

Quality Standards

Green Factory aims to achieve greater customer satisfaction as far as the production and distribution of fresh vegetables are concerned. Our effort is aimed at meeting quality requirements concerning production, sale, distribution and dealing with recipients. In order to achieve these goals Green Factory:

- operates in accordance with the GMP, GHP, GLP, HACCAP, ISO 22000 systems,
- implements ISO 14001 and IFS systems,
- modernizes production technology, adjusting it to the changing preferences on the part of customers,
- makes sure that Green Factory's crops and those of its sub-suppliers are grown in accordance with the GLOBALGAP system and Good Agricultural Practice

Food Safety

Green Factory:

- uses only certified raw materials (from domestic and foreign suppliers) for its production.
- audits raw materials suppliers. The purpose of these audits is to confirm the compliance of crop cultivations with the requirements (fertilizers, plant protection and irrigation systems),
- conducts laboratory testing
- uses certified fertilizers only,
- does not use raw organic fertilizers,
- invests in arable land which is situated at a safe distance from potential threats (e.g. intensive livestock farming, landfills, meat and dairy processing plants),
- implements certified systems: primary production quality - GLOBALGAP and, in processing plants, HACCP and SQMS.

Company: „MINTEX”, Farm of Mikołajczyk Family, Lisiewo

About us

Location

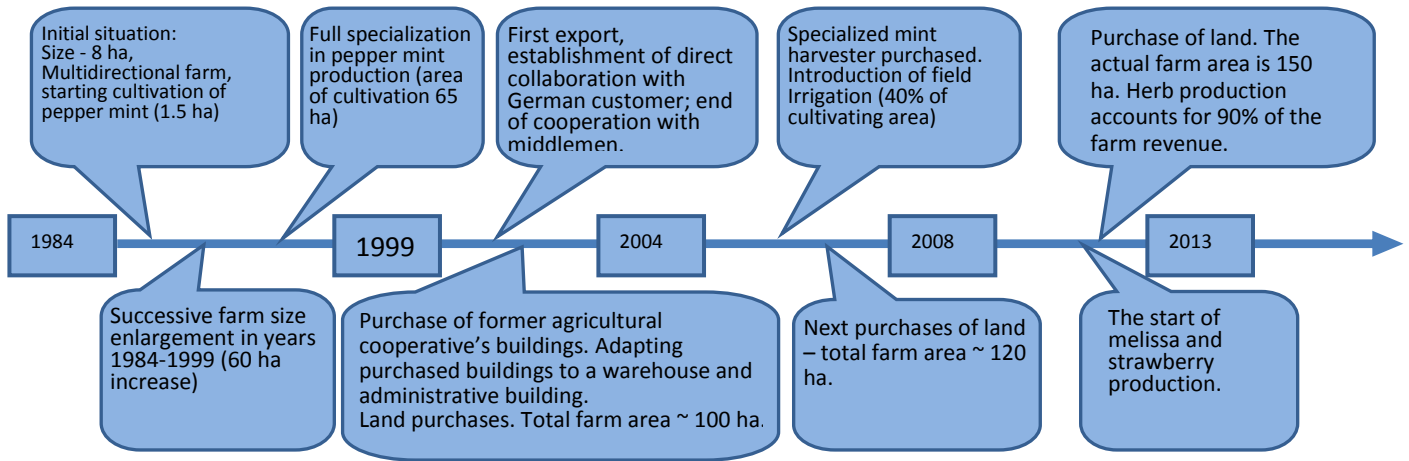
The Mikołajczyks' family farm is situated in the North-western part of the Mazovian Voivodship, in the district and municipality of Płońsk. The Mazovian Voivodship is the largest in Poland (11.4% area of Poland). The Mazovian Voivodship is typical lowland. The size of this region means that both the climate and the agricultural production conditions vary considerably. The region where the Mikołajczyks' farm is located has flat terrain, dominated by agricultural land. The local economy is based on agriculture, including the agro-food industry. Three thousand eight hundred and ninety five of the inhabitants (54% of total population) are engaged in agribusiness. The vast majority of agricultural land is owned by individual farmers. The area is dominated by rather good soil - mainly quality classes III and IV (in soil quality classification there are six classes distinguished in Poland: classes I and II - very good and good quality; classes III and IV - medium quality, classes V and IV - poor and very poor). Cultivation is dominated by cereals, potatoes and sugar beet. Production of oilseeds, fibre, herbs, vegetables and fruit play an important role in production too. Herbs, especially pepper mint, are cultivated on more than 100 ha in the Municipality of Płońsk. Livestock production is dominated mainly by cattle and pigs. Płońsk is characterized by having the lowest average annual rainfall in Poland (500 mm, while Poland receives an average of 600 mm). This is favorable for plant growth since the highest rainfall (more than 60% of the annual total) falls during the growing season. The growing season is relatively long and lasts about 210 days, from April until October.



Farm history

The origins of the farm date back to 1980 when it was taken over by the parents of the current owners. The total area of the farm was about 8 hectares (1.5 ha of pepper mint). Herbapol in Strachówek was the key factor which contributed to the decision about pepper mint cultivation. Mrs. and Mr. Mikołajczyk were the first farmers who introduced the production of mint in the Płońsk district. The most intense period in the farm history were the years from 1994 to 2001, when the farm size increased to over 100 hectares. Currently, the farm is the largest producer of pepper mint in Poland, cultivating the herb on approximately 120 hectares.

Farm timeline



Calculation of peppermint cultivation profitability [PLN/ha]

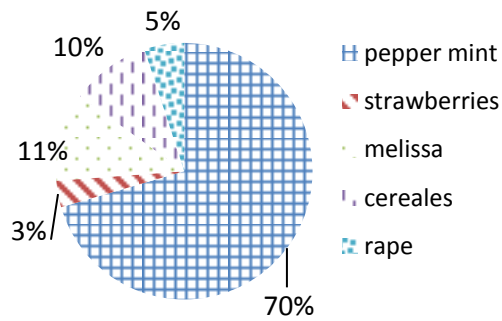
| Specification | Unit | Quantity | Price (PLN) | Value (PLN) |
|------------------------------|------|----------|-------------|-------------|
| Main production | dt | 30 | 500 | 15000 |
| Direct costs | | | | |
| Seeds (1/4 of seedling cost) | pcs | 10000 | 0,1 | 1000 |
| Fertilizers | | | | |
| N | kg | 110 | 4 | 440 |
| P | kg | 90 | 3,75 | 338 |
| K | kg | 120 | 3,1 | 372 |
| Pesticides | - | - | - | 600 |
| Drying (self-catering) | - | - | - | 1000 |
| Hired workforce | | | | |
| planting (1/4 of workload) | hour | 20 | 10 | 200 |
| weeding | hour | 280 | 10 | 2800 |
| Harvest time | hour | 170 | 10 | 1700 |
| Total direct costs | - | - | - | 8450 |
| Direct cost per 1 kg | - | - | - | 2,8 |
| Gross Margin per ha | | | | 6550 |

Farm characteristics: scale, direction of production, yields

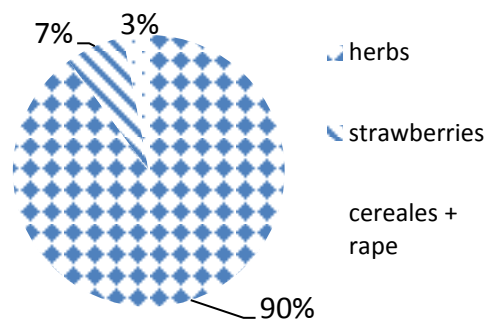
- The largest producer of pepper mint in Poland (annual volume of production – more than 300 tons of herb)
- Almost all production is exported (Germany) – on long-term contracts
- Farm is buying herbs (pepper mint) from smaller producers (through a separate operator)
- The farm complies with high quality standards set by the German customer
- Due to the problem of obtaining cheap seasonal labour the farm owner decided to start the production of strawberries. It extended the workforce demand and made the seasonal work more attractive to workers from the Ukraine



Structure of sowing area



Structure of revenues



Yields and fertilization level of main crops

| Specification | Average yield (t/ha) | Estimated doze of NPK (kg/ha) |
|---------------|----------------------|-------------------------------|
| Pepper mint | 3,0 | N: 80-120 kg |
| melissa | 4,0 | P: 60-90 kg K: 100-140 kg |

The main assets of the farm:

- 150 ha of arable land (7% of II class, 20% of III class, 68% of IV class, 5% of V class)
- 7 tractors: 2 New Holland, 3 Ursus, 1 tractor Lomborghini, 1 Belarus
- specialized mint harvester
- 2 farm buildings and warehouses with an area of 2700 m²
- permanent full-time workforce: 4 family members
- seasonal hired workforce: up to 30 workers (harvest and weeding time)





Main problems/threats:

- The main problem is the high cost of hired labour.
- Pesticides suitability in herb production is limited. Crop maintenance is based mostly on manual labour (weeding).
- Farm size enlargement opportunities are limited due to the problem of purchasing land. Arable land is inaccessible or the prices are high (50000-60000 PLN per ha).

Company: Kowalski Krzysztof

About us

Farm: Kowalski Krzysztof (Winniki, Nasielsk Municipality)

Krzysztof Kowalski's farm is situated in the Northern part of the Mazovian Voivodship in the Nasielsk Municipality. That region is typically an agricultural area (agricultural land constitutes 81% of Nasielsk Municipality). The area is dominated by rather good soils - mainly quality classes III and IV (in the soil quality classification there are six classes distinguished in Poland: classes I and II - very good and good quality; classes III and IV - medium quality, classes V and IV - poor and very poor). Cultivation is dominated by cereals (especially rye and cereal mixes) and potatoes. Production of corn for animal feed plays an important role in crop production too.



A significant area is used for horticulture. Livestock production is dominated mainly by cattle and pigs. An increasing number of farms focus upon extreme specialization. The Nasielsk region has favorable conditions for agricultural production in general.

General information

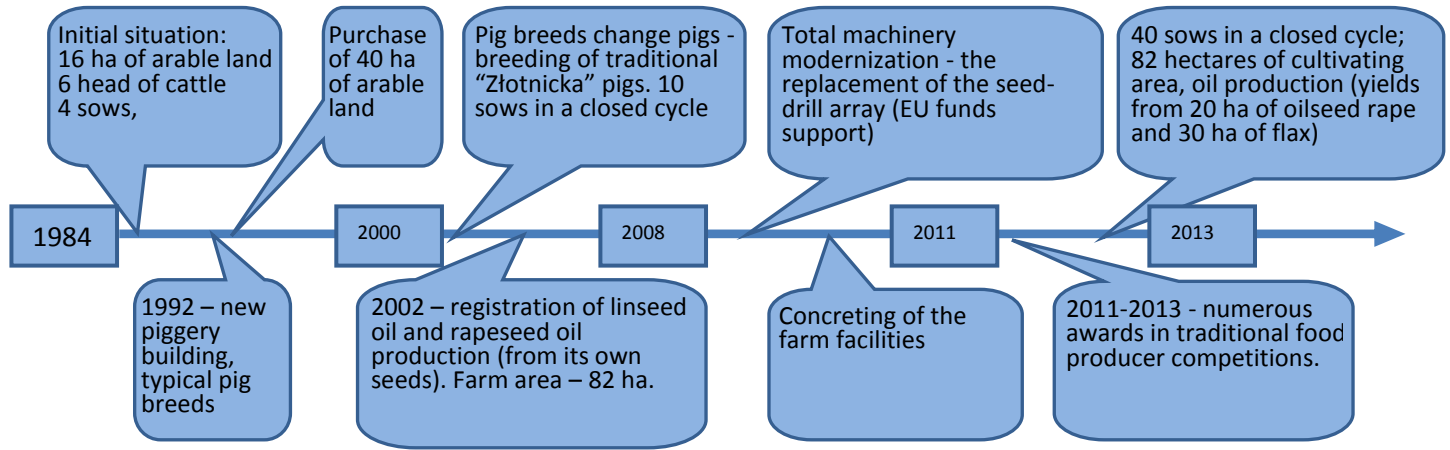
Krzysztof Kowalski's farm is a family farm. The owner works with his wife Hanna and two daughters (who study). One of them studies veterinary medicine, and the other is secondary school student (economic school). It hires two additional seasonal workers. The farm cultivates plants and breeds animals by following the principles of Good Agricultural Practice for sustainable development of the environment.

Krzysztof Kowalski's farm produces traditional cold pressed linseed and rapeseed oil. The farm is also undertaking the breeding of Złotnicka White pigs under the strict control and regulation by the University of Life Sciences in Poznań. Both the oil and the meat are sold directly from the farm. The flax and oilseed rape which are used in the production of oil come from their own farm. The cake which remains after the oil pressing process is used as a natural high protein feed for porkers (pigs). The oil made using cold technology has health benefits and is a rich source of unsaturated fatty acids, particularly omega 3.

Farm history

The modern history of the farm dates back to 1984 when it was taken over by the present owner. Intensive farm development began in the early nineteen nineties and was associated with the construction of a new barn. In subsequent years Mr. Kowalski has expanded the farm size gradually by purchasing land from his neighbours. Currently, the agricultural activities of the farm are carried out on 82 hectares (situated close to the farm center).

Farm timeline



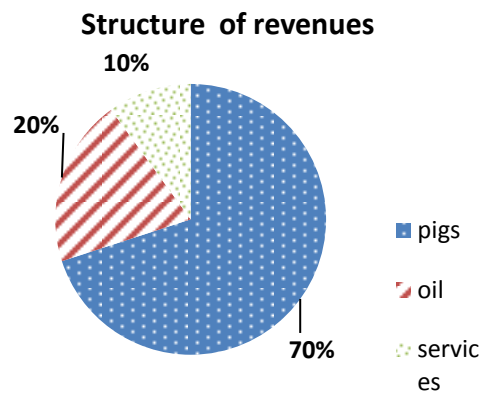
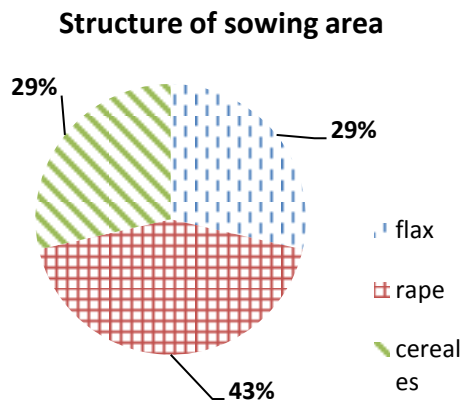
Characteristics of the "Złotnicka" – traditional pig breed

The "Złotnicka" pig breed is derived from more primitive breeds of pigs. At the end of the twentieth century, the Agricultural Academy in Poznań started a program of restoration of traditional pig breeds. Currently „Złotnicka White" pigs are kept in 49 herds and "Złotnicka Mottled" pigs in 31 herds. The meat level of this breed ranges from 50% to 55% (the meat is fatter than in the case of modern pig breeds). The meat is characterized by a very good quality and performance (it does not shrink under the influence of culinary processes, does not absorb water) and has a very good fragrance and flavour. These breeds are not suitable for industrial fattening (they need a relatively long period of fattening). The meat of these breeds is suitable for making slowly maturing cold meats.



Farm characteristics: scale, direction of production, yields

- Area of cultivation: flax - 30 ha, oilseed rape - 20 ha
- Cold pressed oil production and sales:
 - 1 ton of flax = about 250 litres of oil
 - 1 ton of oilseed rape = 300 litres of oil
 - direct sales from the farm, restaurant supply
- Breeding and rearing of the tradition Polish pig breed - Złotnicka:
 - 40 sows (only 600 sows in Poland in total)
 - 14 piglets per year in average (2 liters per year)
 - fattening period: about eight months (1 to 1.5 months longer than the modern breeds)
 - sales by weight: 100-120 kg
 - sale places: sales to restaurants, direct sales from the farm
- Breeding draught-blood horses (4 mares)



Fieldcrops yields

| Specification | Yield t/ha | Estimated level of NPK fertilization |
|-------------------------------------|------------|--|
| Oilseed rape | 3,5 | 330 kg NPK on average (regardless the type of cultivation) |
| Flax | 1,8 | |
| Cereals (winter barley + triticale) | 5,0 | |

The main assets of the farm

- 82 ha of land
- Piggery - 600 m²
- Oil mill - 100 m
- 3 New Holland tractors (power: 80 HP, 140 HP, 155 HP)
- New Holland combine harvester
- Runoland seed-drill array



Main accomplishments:

- collaboration with the University of Life Sciences in Poznań
- Mazovian Voivodship Marshal's award for the best traditional natural product: i.e. linseed oil
- Gold medal at Polagra Food fairs – the linseed oil
- Mazovian Voivodship Marshal's award for the best traditional natural product: „Cold pressed rapeseed oil”
- GMP, GHP and HACCAP certificates
- Application for adding „Cold pressed rapeseed oil” to the List of Traditional Products

Plans for the future

- to start tourism activities
- to consider meat processing at the farm
- to attempt to wild rose production