

## SUFISA

## Poland

## APPLE SUMMARY



Apple production in Malopolska voivodeship.
Authors: Krzysztof Gorlach, Piotr Nowak, Anna Jastrzębiec-Witowska, Adam Dq̨browski
Jagiellonian University
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## Introduction

## Agriculture in Poland

Poland is considered to be a comparatively medium-sized country. Its total area is $312700 \mathrm{~km}^{2}$. With a population of 38.5 million, the country occupies 6th place in the EU-28, both in terms of population and area. It is worth noting that Poland has the highest agricultural population in the EU-28 and in terms of the total number of agricultural farms it holds second position after Romania. Poland is a rather unique country within the context of the currently conducted SUFISA project that focuses on agriculture and rural areas. There are also other arguments that can support this thesis. In Poland, the percentage of people working in agriculture, hunting, forestry and fishing industry is 2.5 times larger than the percentage of people employed in these sectors in the EU- 28 overall.

In recent years a growing rural population could be observed in Poland. The number of people in Poland in 2014 was 38.5 million people, of which 23.2 million people lived in cities and metropolitan areas and15.3 million people lived in rural areas. In the years 2005-2014 the number of rural people increased by over half a million (529000) but negative population growth in the cities meant that the overall population growth for the entire country during the analyzed period was no more than 323 000 people.

Territory-wise, Poland is divided into 16 provinces, 314 counties, 66 city counties and 2479 municipalities. Auxiliary units in municipalities include i.a village councils in number of 40617000.

## Territorial Division Units in Poland



Source: "Agriculture and food economy in Poland" Ministry of Agriculture and Rural Development, Warszawa, 2015, p. 11.

Polish agriculture is characterized by great fragmentation. However, the average farm size has been increasing in recent years, and reached 10.3 ha in 2014. The dynamics of these changes should be noted. In 2002 the average farm size was 5.8 ha, which indicates a growth of $77 \%$ in 12 years. Still, more than half of agricultural farms (51\%) in Poland operate on no more than 5 ha of utilized agricultural land, with farms of this size comprising $12.7 \%$ of total utilized agricultural areas in Poland. The farms utilizing less than 10 ha of arable land make up $75 \%$ of all farms and their total area comprises $27.7 \%$ of the utilized agricultural area in Poland. Such a farm structure is the result of farming traditions and patterns of agricultural land ownership in Poland. Referring to this farm structure it should be noted that farms up to 10 ha are characterized by traditional agricultural production with low mineral fertilization and use of agricultural chemicals. Farms of the size between 10 and 30 ha comprise $31 \%$ of utilized agricultural areas in Poland, and the largest farms (over 30 ha of utilized agricultural area) make up $5.2 \%$ of all farms. These farms comprise $41.3 \%$ of utilized agricultural land.

## Average farm size in Poland (in ha)



Source: Authors' own study based on the data from: "Agriculture and food economy in Poland" Ministry of Agriculture and Rural Development, Warszawa, 2015.

Despite its unfavourable agrarian structure, Poland plays a significant role in the production of crops, garden vegetables, and products of animal origin, both in Europe and worldwide. One of the most notable factors contributing to this is undoubtedly its easy access to an agricultural labour force. Within the structure of commodity production in 2014 the share of commodities was as follows: cow milk (18.6\%), pork (13.9\%), poultry (13.5\%), cereal (13.3\%), vegetables (9.1\%), industrial plants (7.3\%), beef and veal (6.3\%\%), hen eggs (5.7\%) and fruit (5.1\%).


Source: prepared on the basis of Eurostat data.
Source: "Agriculture and food economy in Poland" Ministry of Agriculture and Rural Development, Warszawa, 2015, p. 14. https://bip.minrol.gov.pl/Opracowania-ekspertyzy-publikacje/ROLNICTWO-I-GOSPODARKA-ZYWNOSCIOWA-W-POLSCE2

As noted earlier, regional traditions have a substantial influence on production specialization. Besides soil and climate conditions they are the most important factor contributing to Poland's diversity in terms of crops. In central, northern and eastern Poland agriculture production mostly focuses on rye, cereal mixes and corn. There are also many green areas there. Plants that require better soil and climate conditions are cultivated mostly in south-eastern and western Poland.

Data on the number of farms in particular years confirm the tendency for changes in Polish agriculture observed in recent years, especially after the accession to the European Union. Comparing the newest data with those collected for the Agricultural Census in 2002 the changes relate to:

- Reduction in the number of farms combined with a parallel increase in their size;
- Significant changes in the structure of agricultural farms, with a $49.4 \%$ drop in the number of the smallest farms (1-2 ha), a $27.4 \%$ drop in the number of farms in the group 2-10 ha, a $19.4 \%$ drop in the group of farms sized 10-15 ha, and a 10.2\% drop in farms sized $15-30$ ha. These changes are accompanied by a significant increase of $25,1 \%$ in the number of farms sized $30-50$ ha, and a 66,8\% increase in the number of farms of 50 ha and more;
- Slow but steady dissemination of the functional farm model, particularly in the group of small farms, which take up non-agricultural activities and partially or entirely resign agricultural activity;
- Reduction in overall arable land that could be utilized due to conversion of agricultural areas to serve non-agricultural purposes such as infrastructure. The total area of utilized agricultural land in Poland has decreased from 16.9 million hectares to 14.6 million hectares.
- Small reduction of cultivated areas with parallel changes in the structure of cultivated crops a drop in the areas of rye, barley, and oats cultivation and an increase in areas where triticale, corn for grains, potatoes, and sugar beets are cultivated. There is also an increase in areas of canola and fodder plants cultivation;
- Increase of total cattle stock with smaller herds which are more efficient. This tendency is connected with an increasing interest in cattle production intended for slaughter after Poland' accession to the European Union and an increase in the profitability of production;
- Improvement in agricultural farm equipment in production means, which confirms the process of agricultural modernization after the access to the European Union;

This overview of Polish agriculture was prepared based upon publications from the Ministry of Agriculture and Rural Development ( www.minrol.gov.pl ).

## Case Study: APPLE (Malopolska Region)

## Fruit market in Poland

Fruit harvests in Poland in 2014 were record high and amounted to 4.2 million tons. Production of fruit from the trees was 3.6 million tons and it was $2.8 \%$ higher than fruit harvests of 2013. It was also 44\% higher than the average fruit production in the years 2006-2010. Apple yields were 3.2 million tons and were 3.6\% higher than harvest in 2013 and almost 50\% higher than the average yields in the years 2006-2010 (table 17). Pear yields amounted to 74 thousand tons, plums to 106 thousand tons and cherries to 176500 tons, while sweet cherries reached 48 thousand tons. Combined yields of peaches, apricots and walnuts were estimated as 20.4 thousand tons.

Total fruit harvests from fruit bushes and berry plantations reached 569 thousand tons in 2014 and were about $6.3 \%$ lower than in the previous year but still $11 \%$ higher than the average yields in the years 2006-2010. The most dramatic drop of $20 \%$ was observed in the black currents yields.

Production of fruit preserves in Poland in the 2014/15 season was estimated as 1065 thousand tons and was $5 \%$ higher than the production in the previous season. The production of concentrated apple juice reached the record level of 335 thousand tons. The production of jams, fruit purees as well as canned fruit and dried fruit also increased significantly. Production of frozen fruit remained at 415-416 thousand tons. The production of concentrated juice produced from coloured fruit declined as well.

In the 2014/15 season the buying-in prices of almost all kind of fruit were lower than in the previous season. The prices of cherries and black currents were at their lowest. The prices of dessert apples dropped by $13 \%$ and the prices of apples designated for processing dropped by $44 \%$. The situation on apple market in the fall of 2014 was greatly destabilized after Russia introduced the embargo. Only raspberries, pears and sweet cherries had higher than usual buying-in prices in that season.

## Prices paid to fruit producers in Poland in years 2010-2016, expressed in PLN/kg



Source: Bożena Nosecka (ed.) Rynek owoców i warzyw stan i perspektywy, Institute of Food Economy - National Research Institute, June 2016, p.12.

Prices paid to farmers for their fruit in Poland in years 2010-2016, expressed in Euro/kg

|  | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| dessert apples | 0.21 | 0.31 | 0.31 | 0.27 | 0.24 | 0.29 | 0.30 |
| industrial apples | 0.15 | 0.15 | 0.10 | 0.11 | 0.06 | 0.09 | 0.10 |

Source: Bożena Nosecka (ed.) Rynek owoców i warzyw stan i perspektywy, Institute of Food Economy

- National Research Institute , June 2016, p.12. (average course of Euro in years 2010-2016 was 4.2 PLN).

The above chart presents volatility of prices that farmers received for dessert apples and industrial apples in the years 2010-2016. The lowest prices of 2014 are undoubtedly the effect of embargo on Polish apples implemented by the Russian Federation.

## Case study introduction

Małopolska is one of the smallest regions in Poland (NUT 2). Its area is roughly 15 thousand square kilometres that takes less than 5\% of the total area of Poland. However, concerning the population density Małopolska region is the second in the country with 221 persons per square kilometer. Małopolska is inhabited by 3.35 million people who make $8.7 \%$ of the total population in Poland. Majority of inhabitants live in rural areas and only three cities in the region (Kraków, Tarnów, Nowy Sącz) together have only slightly more than $28 \%$ of the total number of the regional dwellers. Małopolska is quite diverse in terms of landscape and climate. In the northern part of the region one might observe the presence of the industrial type of agricultural production as a result of the better quality of soils as well as a more visible number of larger and market-oriented farms. In the central part of the region the impact of the major regional cities seems to be visible. Therefore, in this area
the involvement in agricultural work is only an additional type of labor activity for the population. In turn, the southern part of the region has been perceived as the most interesting one due to natural conditions (mountain areas) but mostly rather difficult conditions for agricultural production. In this particular area farms are rather traditional as well as small. Therefore farm operators have been seeking for some amenities in the niches (agritourist services, organic production, regional and local production). In Małopolska we might still observe more than 150 thousand of farms which are mostly small. About $83 \%$ of farms are smaller than 5 ha, and only $3.1 \%$ of them occupy more than 15 ha. The average size of farm in the region is currently of 3.8 ha. It should be noted however that Małopolska region has the largest number of farms among all the regions in Poland. Almost all of them might be defined as individual/family units. Horticulture has been the most important part of the Małopolska agriculture and, at the same time, the region has been one of the biggest producers of fruits as well as vegetables in the country. It should be stressed here that the production of fruits and vegetables is an agricultural activity based on the tradition as well as local/regional knowledge. In the years of 2013 - 2014 Poland became a leading producer of fruits in the European Union. In 2013, the production reached more than 4 million of metric tons. In the context of European Union market one has to stress that apples have been the number one export product for Poland and Małopolska in the recent years. Production of peaches, raspberries, strawberries, cherries as well as plums and strawberries in Małopolska should to be mentioned here as well. The region might be characterized as the area with a workforce surplus in rural areas. Family farms in the region have been using family labour almost exclusively (99.6\%). In turn, farm operators tent to be older than 45 . Almost $2 / 3$ of family farm operators are over the age of 45 . Very young people (under the age of 25 ) are rare among farm operators and make slightly more than $1 \%$ (!). It should be also stressed that agricultural activities provide rather minor part of the total income of farming families (only 13.1\%). Major sources of income might be identified as industry labour and work in services sectors (37 \%) and social benefits transfers (26.3\%).

The respondents in our study belonged to the following categories: a. farming families with dominant wheat production, b. farming families with farm operators under the age of 40 (the youngest ones); c. farming families with farm operators aged 41-50 (the largest category of family farm operators); d. an investigated community is divided into those farms where agricultural (fruits) productions has been the major source of income and those where the agricultural (fruits) production has been an additional source of family income.


Source: Characteristics of agricultural farms in the Małopolska voivodeship in 2013, Central Office of Statistics, Kraków 2014, p. 40-44.

## Producer strategies

Producer groups, assets:
a. they were able to represent individual orchard fruit producers at the fruit exchange market as these producers devoted most of their time to farm and orchard work;
b. the producer groups facilitated the storage and sales of fruit to large market chains;
c. the groups enabled farmers to conduct activities like the sorting of apples, which was required by large purchasers from supermarket chains and rather impossible to be done by individual producers

Cooperatives were known to have their stores and refrigerated storage facilities for storing fruit. Such measures were ensuring fruit sales in the regions and within the cooperatives' own store.

Small family farms were established because of inheritance or through marriages and the farm owners and operators combined agricultural work (orchard work) with non-agricultural work.

According to the respondents only $10-20 \%$ supported themselves exclusively through agricultural work (in orchards). In such farms orchards were usually not profitable (they did not generate significant incomes) and they were mostly kept due to family tradition. Orchards required long-term care and maintenance, so the investment could bring income and profitability. Some growers were mostly supporting their orchards through agricultural subsidies from the European Union. There were also problems of a generational change as there were no orchard successors. The respondents described orchard work as hard and unprofitable and thus not very attractive to young people. The younger generations preferred working in different sectors where stable employment was possible. They perceived employment in agriculture as risky, with little predictability in terms of income.
Producer groups

- Focus on medium and
large producers
- Trades with market
chains
- Own purchase of
product
- Own processing food
- Own infrastructure and
trucks
- Negotiating terms
possible
- Contracting agreements
- Management problems
- National and global
competition
- Hiring workers

| Cooperatives |
| :--- |
| - Focus on medium and |
| small producers |
| - Trades by they own |
| shops and with local |
| market chainsOwn |
| infrastructure |
| - Management problems |
| - Contracting agreements |
| - Regional Competition |
| - Hiring workers |
|  |

## Small family farms

- Direct distribution on local markets
- Distribution to local processors
- Strategy for farm survival
- No hiring of additional persons


## Adaptation strategies to policy and regulation

The respondents were rather critical of the implications of current state policy on their economic activities. They reported observed difficulties with access to production subsidies. It was stressed that the state policy was not supportive of orchard fruit growing due to limited access to subsidies (increased requirements on producers, additional criteria to qualify for subsidies). They also noted that the state response to the Russian embargo included the distribution of free apples in Malopolska Province, favouring producers from the area around Warsaw, where the apples came from. The respondents thought that the state policy was giving advantage to mass production of low quality fruit (production of industrial apples amounts to $60 \%$ of Poland's entire apple production) and there is no tendency to change this situation. Generally, the respondents complained about the lack of a national policy regarding apple production, which would point out production directions and possible investment needs.

The interview participants paid a lot attention to certain political issues influencing production and its profitability. In their opinions, the policies of farm losses compensation did not consider the fact that the majority of farms in the Malopolska, Subcarpathian, and Swietokrzyskie regions were
relatively small and operated by older farmers (over the age of 40). According to the participants the compensation money was mostly flowing to larger farms, operated by younger (under the age of 40) farmers/orchard fruit growers. Another negative point of the state agricultural policy noted by the focus group participants had to do with giving advantage to farmers who formally graduated from a certain type of school over farmers who had significant experience but no formal agricultural education. Insurance and compensation issues also contributed to the participants' discontent. They admitted lacking trust in a compensation system. In their view, the companies offering these insurance policies were from foreign countries and calculated losses by focusing on the individual fruit. To meet the compensation eligibility criteria, an apple had to be damaged in such a way that it was only possible to sell it as an industrial fruit. For the fruit that was not badly damaged farmers were not receiving any compensation, even though they were not able to sell such fruit as dessert apples.

The issues of Common Agricultural Policy of the European Union also received a lot of attention from the respondents. In their opinion, starting in 2016 Polish farmers should receive direct subsidies equal to those received in the countries of the old European Union. They claimed that Polish producers were not currently competitive as their incomes were lower than the incomes of their Western counterparts. Additionally, production means were more expensive in our country. The respondents advocated for a change in the philosophy of spending the financial means allocated to Poland within the framework of Common Agricultural Policy. In their view the Polish state should decide how these means would be spent. The financial support should be directed into the production areas where there were no surpluses and a real need to increase production and into ensuring a good price for the producer. In the mountainous areas (such as Łącko municipality) the subsidies should be higher for the producers who used their land properly without setting aside arable land. This was very important to our respondents, who suggested going a few steps in the direction of individualized subsidies, which would address the specifics of particular farms. It was stated several times that the position of orchard farmers from Małopolska (and from mountainous regions in particular) was more difficult than the position of orchard farmers from other regions of Poland. In this context the climate conditions, shape of terrain, and traditional farm structure were discussed as influencing production of fruit, and apples in particular, in two ways. On one hand, the climate conditions were thought to be harsher than in other parts of Poland or the European Union. The transport conditions were also seen as more problematic than in other EU countries. On the other hand, there was a necessity to cultivate fruit due to the dispersed farm structure 0 ( $80-90 \%$ of farms operated in an area smaller than 5 ha ), soil quality, and shape of the terrain that eliminated any other type of agricultural production besides fruit production and forestation. The need to manage the surpluses of fruit and vegetable production by increased fruit processing was expressed by workshop participants and it was viewed as an issue pertinent to all the EU countries.

## Adaptation strategies to markets

In Poland, one might distinguish three various models of selling apples that altogether form the complex system of selling networks.

## Producer groups model



## Cooperatives model



## Family farms model



The model of selling apples in Poland shows that each particularly group of producers needs various directions of selling networks, namely: producer groups are mostly focused on international (global) and national markets, cooperatives are mostly focused on regional markets and small family producers are mostly focused on local markets.


Russia was a very important consumer of apples from Poland. However as a result of Russia embargo of Polish apples (and other food products from Poland and other EU countries) the national apples market in Poland has been destabilized. Big Polish producers begin to look for national consumers and therefore they strongly limited the opportunities for small family producers on local markets.


## Adaptation strategies to socio-economic issues

The responses indicated the presence of three models of production and sales for apples in the region. The first one was a producer group, the second a cooperative, and a third one could be described as dispersed operations of small, family farms. The interviewees emphasized that cooperation between the producer group and large supermarket chains allowed for trading of the region's apples with European purchasers. Various producer groups were complementary with each other, exchanging different varieties of fruit which they produced. In turn, cooperatives were known to have their stores and refrigerated storage facilities for storing fruit. Such measures were ensuring fruit sales in the regions and within the cooperatives' own store. According to fruit growers, a horizontal coordination of cooperation among farmers could be seen in cases of broken farm machinery or equipment. A farmer who experienced such misfortune was able to borrow the machinery from another farmer. No other examples of horizontal cooperation were recognized in the focus group interview. Generally, the respondents complained about the lack of a national policy regarding apple production, which would point out production directions and possible investment needs. The interviewed fruit growers highlighted the need for subsidizing plant protection products, which year after year were becoming more expensive.

Direct marketing was also discussed but it was said to involve only $10 \%$ of orchard fruit producers. Producer groups or cooperatives were seen as dominating actors here as they could sell their products directly to stores. The high quality of the product and good storage conditions were guaranteed by producer groups and it meant meeting the expectations of the consumers.

## Sustainability of the sector

Orchard producers emphasized compatibility of their practices with environmental regulations but they admitted that their limited use of chemicals in production was mostly due to high costs. The environmentally friendly attitude was in that sense forced upon them. Intensification of production rather than its mere maintenance as well as its improved quality were seen as the remedies for the current situation. These participants pointed out the weak lobbying position of farmers who operated orchards. They wished it was as significant as the lobbying position of miners or other professions, which had their own unions fighting for their interests. The respondents were not very optimistic about the new direction of production, namely cider production, which in their view was rather small scale, and not likely to bring significant changes.

Another problem that was addressed in the focus group interview pertained to ecological production. In this context, the respondents emphasized the superiority of so called integrated production over ecological production. They saw the following downsides of organic production: a/ lack of any intervention in production; b/ in Poland - unlike in the West - so-called ecological product did not generate better price; and c/ the lack of any recognizable certification that the product was indeed ecological. Integrated production, on the other hand had, according to the respondents, had numerous positive sides related to production of fruit and apples, in particular: a/ integrated production allowed for the use of chemical products but it needed to be done under the strict supervision of responsible institutions; b/ it was possible to set up appropriate price of the product; $c /$ in the process of integrated production there were numerous inspections ensuring the safety of the product.

The issues related to credits and mortgages were also present in the discussion and they involved two main problems. The first one was related to the institution that could be involved in the funding of apple production in the most suitable way. Here, the respondents alluded to cooperative banks as local institutions, close to local matters, cooperating with local government, and potential allies to local development. In cooperative banks the customer was never anonymous and the decisions were made locally.

One of the survey section of questions given to apple growers related to their opinions on the influence of a membership agreement in collective organization. Their viewpoints were described in the previous section on sustainable development. Several statements concerning how membership agreements could influence environment, society, and economics and the respondents could agree or not. Here, the indecisiveness of respondents was also significant. Almost half of the answers were neutral. This was the case with the evaluation of the influence of membership agreement on: maintain good quality of water ( $51 \%$ - neutral answer, $35 \%$ - I disagree, $5 \%-1$ agree, $9 \%$ - I don't know), maintaining biodiversity on the farm ( $42 \%$ - neutral answer, $42 \%$ - I disagree, $7 \%$ - I agree, $9 \%$ - I don't know), maintain the organic matter of the soil ( $46 \%$ - neutral answer, $33 \%$ - I disagree, $14 \%$ I agree, $7 \%$ - I don't know), achieve societal recognition for farmer's profession ( $42 \%$ - neutral answer, $41 \%$ - I agree, $12 \%$ - I disagree, $5 \%$ - I don't know), secure successor of the farm (44\% neutral answer, $30 \%$ - I agree, $20 \%$ - I disagree, $6 \%$ - I don't know) sales during periods of time when apple prices were low ( $36 \%$ - neutral answer, $33 \%$ - I agree, 26\% - I disagree, 5\% - I don't know). In the remaining cases, the answers that affirmed the presented statements were prevailing. They related to: creating good networking connections with buyers and input providers ( $64 \% \mathrm{I}$ agree, 20\% - neutral answer, 9\% - I disagree, 7\% - I don’t know), connecting with other farmers (72\% - I agree, 12\% - neutral answer, 11\% - I disagree, 5\%-I don't know), maintaining profitability of agricultural production (49\% - I agree, 24\% - neutral answer, 17\% - I disagree, 10\% - I don't know), investing in farm business (40\% - I agree, 33\% - neutral answer, 22\% - I disagree, 5\% - I don't know) and dealing with changing market conditions (53\% - I agree, 30\% - neutral answer, 12\% - I disagree, $5 \%-1$ do not know).

## Sales channels and agreements

Considering the basic form of sale, the farms can be divided almost equally. For $52 \%$ of farms, individual sales channels were the dominant form of sales and for the remaining part (48\%) collective sales channels prevailed. The average area of apple cultivation for the surveyed farms was 4.9 ha and average volume of apple production (in tons) was 98 tons, which equalled a productivity of 20 tons from 1 hectare of the orchard. It is worth noting that no respondent indicated apple production that was certified as ecological.

The respondents reported on the day of survey that on average they sold over $90 \%$ of their production in the last completed production year. The percentage share of purchasers of apples produced in the last completed production year 2016-2017 looked interesting. Within the collective sales channels, the most popular form of sales involved selling to or through producer group (31.5\%), and cooperatives ( $22.5 \%$ ). Other collective sales channels were used by respondents only to a small extent. Only $2.5 \%$ of respondents sold their production through unions and $2 \%$ though an interbranch organization. It is worth mentioning that besides the small number of people that used these last two sales channels, the volume of sales was small, between $10-20 \%$ in the entire population. The analysis shows that individual sales channels are more diversified. Local markets were the most
popular channel of individual sales and this type of sales included selling at farmers' markets and selling to final consumers (38\%) and selling directly to apple processors (apple juice producers, etc.) (36.5\%). Over $1 / 4$ of respondents sold their apples to wholesalers and traders (28.5\%) and $21.5 \%$ of them sold to small farms, independent retail sellers and restaurants. The least popular channel of individual sale involved selling to supermarkets and retail chains (14\%) and for export (3.5\%). The channels of individual sales were very diverse in term of how they were being used. It means that single channels are used by some farmers to a small extent (up to $10 \%$ of production), while others almost completely focus on one channel (up to $100 \%$ of production). This demonstrates the various sales strategies of the farmers.

Over half of respondents declared membership in some agricultural organization (59\%) which corresponded with the result indicating that for almost half (48\%) of respondents, the collective model of produce sales was dominant on their agricultural farm. The largest percentage of respondents reported membership in a producer group (35\%), and $21 \%$ said they were members of an agricultural cooperative (orchard production cooperative). $3 \%$ of surveyed farmers were members of a farmers' union or association. The data confirmed that membership in organizations largely determined a particular sales strategy of apple production.

Respondents were also asked to describe what kind of services the organization provided to their members. Almost all cooperative members (93\%) declared that the cooperative bought production from its members, while $50 \%$ stated that the cooperative helped them to make contacts with purchasers. $35.7 \%$ of respondents who were members of a cooperative declared that the organization negotiated the purchase price for them, and $21.4 \%$ of them said they received support from the cooperative while working on contract/transaction terms (i.e. duration of the contract, notice period, etc.).

The next series of questions that respondents had to answer dealt with terms of contracts/ transactions, which were previously described (individual or collective channels) Firstly, it is worth noting that the diversification of contracts/transactions is quite significant. The largest percent of respondents (29\%) indicated that their sales were based on an informal contract (i.e. a situation in which an orchard fruit producer continuously sold products to the same purchasers based on an oral agreement made before or during production). Slightly less than $1 / 4$ of respondents also pointed to informal agreements, but apparently meant agreements during sales (23\%) (i.e. sales to wholesalers or retail stores). It can be said that $52 \%$ of transaction sales were based on informal agreements rather than a legally binding contract. The second form of sales was reported by $29 \%$ of respondents (18\% - legal contract or oral agreement before starting the phase of production or during production, which could be legally executed, $11 \%$ - legal contract or oral agreement made at the time of sale or right before delivery of the produce, which could be legally executed). $15 \%$ of respondents said that their sales were regulated by the statute of the collective organization they were members of and $2 \%$ pointed to other forms of contracts. Besides the form of agreement, another differentiating aspect of the transactions had to do with the timeframe for which the sales or membership agreement in a collective organization was set up. Half of respondents signed sales contracts effective for over 5 years (50\%), while agreements related to one, concrete transaction were made by $30 \%$ of respondents. These were two completely different, and at the same, most frequent forms of transactions. The answers that dealt with other contract timeframes combined for a total of $20 \%$ of all answers ( $7 \%$ - for contracts between 25 months and 5 years, $4 \%$ - for contracts ranging between

13 months and 2 years, $4 \%$ - for contracts ranging between 7 months to 1 year, $3 \%$ - from 3 to 6 months, $2 \%$ - less than 3 months). The analysis of answer distribution could suggest that the vast majority of transactions agreements were set up with a longer perspective of cooperation in mind (not just a one-time transaction).

Next, the respondents were asked to describe the characteristics of their formal or informal agreement, typical for apple sales in the fully completed production year 2016-2017. The analysis of collected data was quite surprising, as it did not allow for determining the typical structure for the majority of contracts. What $40 \%$ of contracts had in common was the possibility of receiving support with storage, transport, etc. In slightly more than $1 / 3$ of contracts a clause relating to the possibility of receiving premiums for delivering high quality products appeared. In $22.5 \%$ of contracts there were clauses about penalties that the producer could face for not delivering the agreed-upon volume of produce. For less than $1 / 5$ of contracts ( $19.5 \%$ ) the possibility of receiving managerial support and technical assistance was standard. Only $17 \%$ of agreements had clauses regarding the possibility of receiving special assets and help with production technology. $15.5 \%$ of contracts required exclusivity (obligation to sell $100 \%$ of production) and had clauses allowing for automatic extension of agreements. Other types of requirements were rather rare. Only $12 \%$ of contracts addressed the issue of compensating farmers in situations when the purchasers did not keep the terms of contracts. Clauses relating to the possibility of compensation in cases of delayed payments could only be found in $4.5 \%$ of contract agreements. The same percentage of contracts had clauses regarding the possibility of receiving guarantee of credit.

Another aspect of the research was the formula according to which the price of apples is set through a signed agreement. In $74.5 \%$ of contracts the merchandise price was subject to change, connected to the market price at the moment of product delivery, and for $59.5 \%$ the quality of delivered produce was quite important and had an effect on price. The volume of delivered production was somewhat less important in price setting (20\%). Occasionally, factors affecting the price of apples included production costs (7\%) and share in the organization's profit (7\%). The price was stable for only $2.5 \%$ of contracts and it was set at the moment of sale and not subject to change. This situation is understandable as the mechanisms of the market affect the price, which changes over time, depending on various factors. Therefore, in a significant majority of contracts the final price for merchandise was determined by the actual market situation and on merchandise characteristics. On the other hand, such a situation might not be beneficial to farmers. Even though they enter longterm agreements/contracts (50\% of contracts were set for over 5 years) they were not given the benefit of deciding on a profit rate. At the moment of engaging in farm activities (such as spraying) a farmer usually knew how much he could invest in farm/cultivation, so managing the farm could be profitable.

## Strategies and drivers of farming

The last section dealt with the issue of broader strategies that farmers decide to follow. This section concentrated on factors which affect farmers' decisions on how to manage the farms.

Initially, the respondents were asked to evaluate various types of risk that orchard fruit growers have to consider while making decisions on production of apples and farm strategy. The respondents reported their decisions were most influenced by a significant drop in market prices ( $79 \%$ of respondents recognized significant or even very strong influence), unfavourable climate conditions
and pests ( $71 \%$ thought such influence was significant or very strong) fluctuations of input prices such as prices of seeds, synthetic fertilizers, pesticides, gas, energy, etc. ( $62 \%$ of respondents said the influence was significant or very strong). Changes in consumer behaviour and preferences made another important factor influencing farmer's decisions ( $27 \%$ noted that this influence was significant or very strong and $43 \%$ recognized its influence to some extent). Then there were changes in regulations regarding agricultural activity ( $22 \%$ of surveyed farmers thought this influence was significant or very strong while $36 \%$ reported the influence of this factor to some extent), Regarding changes in functioning of the Common Agricultural Policy, - 17\% of respondents thought their influence of farmers' decisions was significant or very strong and $33 \%$ recognized them as influencing farmers' decisions to some extent. For the respondents access to loans was considered to be one of the least important factors in determining farm strategies ( $9 \%$ of respondents recognized its significant or very strong influence while $27 \%$ of them thought of it as having some influence). Access to loans for capital investments was also seen as not very important in determining farm strategies (only $8 \%$ of respondents thought it was a significant or highly important factor while $25 \%$ said it was important to some extent).

Despite the complexity of factors that influence apple growers' decisions on farm development strategies and over $90 \%$ of apple producers wanted to maintain or expand the scale of their farms ( $55 \%$ planned to maintain production and $37 \%$ wanted to expand it). Only $5 \%$ of respondents planned to decrease the scale of their production, and $1 \%$ wanted to quit altogether. Such distribution of answers suggested that despite the large risk stemming from the specifics of agricultural production, apple growers were still interested in continuing their involvement in orchards and even considered further development. They were not discouraged by, or afraid of natural and economic factors (connected with the economic system of the country and global market).

While analysing the plans the respondents had to maintain or increase the scale of operation it might be essential to take a look at activities and endeavours that they wanted to engage in the upcoming 5 years in order to reach their goals. As far as production was concerned, $64 \%$ of respondents planned to invest more in the farm and the same percentage of respondents planned to insure the apple production. These were the most frequently reported future endeavours. Further down were plans to specialize the production, e.g. producing only dessert varieties of apples ( $42 \%$ of respondents planned such activities), externalizing some activities related to apple production ( $10 \%$ of respondents planed such activities), while the same percentage of respondents did not have precise development plans (10\%).

There were also market-oriented plans for farm development that the respondents expressed in the survey. Among the activities that the respondents were planning to take, the most frequently addressed were plans for finding new channels for selling apples ( $45 \%$ planned such endeavours). Farmers also thought about development of new cooperation networks, e.g. with producers, processors, and sellers, and increasing the value of produced merchandise, e.g. through switching to ecological production and/or introduction of new varieties of apples (in both cases, 43\% of respondents planned such activities). In the next 5 years apple growers planned to diversify their agricultural production to include new crops ( $29 \%$ of respondents had such plans), insure themselves against volatile prices and costs to avoid the loss of income ( $19 \%$ of respondents indicated these plans) and $10 \%$ of the respondents did not have plans for market development of their farms.

## Some general remarks (some kinds of policy recommendations)

- Introduction of the national policy concerning apples with emphasis on regional diversification of apple production in Poland.
- Strengthening the role of producers when facing purchasers and processors through the strengthening of local apple processing and more intensive cooperation among individual producers.
- Strengthening the role of credit unions that seem to be more sensitive and flexible in responding for producers` requests unlike the commercial banks.
- Policy focused on reduction of prices and qualities of means of production among EU countries.
- Introduction of the policy focused on an independent (from purchasers or processors) evaluation of the product quality.
- Introduction of the policy focused on upgrading the system that monitors growing apples.


## Russian embargo remarks

- The well-known problem of the Russian embargo and its negative consequences were also addressed collectively during the focus group interview. The respondents declared that the ban on sales of Polish apples in Russia had had a minimal impact on apple growers in Małopolska Province as they sold a rather small quantity of apples in Russia.
- The respondents were rather critical of the implications of current state policy on their economic activities. They reported difficulties with access to production subsidies. It was stressed that the state policy was not supportive of orchard fruit growing due to limited access to subsidies (increased requirements on producers, additional criteria to qualify for subsidies). They also noted that the state response to the Russian embargo included the distribution of free apples in Malopolska Province, favouring producers from the area around Warsaw, where the apples came from. The respondents thought that the state policy was giving advantage to mass production of low quality fruit (production of industrial apples amounts to $60 \%$ of Poland's entire apple production) and there is no tendency to change this situation
- It should be mentioned that orchard fruit growers from this region are concentrated around the local (regional) market. This determined how they perceived apple prices, patterns of distribution, and how they prepared operation strategies, and, in this case, ways of selling their product. Tensions usually appeared when "global" producers were cut off from their usual markets - which were beyond local and regional - and unable to sell their products there. Such a situation occurred with the Russian embargo on Polish apples, which resulted in the presence of apples produced by large scale fruit growers on local or regional market. Consequently, these apples were competing with those produced by the participants of the focus group interview. It was stated that such activities were leading to market disruption, unfair battles for product distribution, price drops, as well as the decline of many farms specializing in orchard fruit production.
- In the context of the Russian embargo on Polish fruit, the focus group participants emphasized their explicitly negative opinion on the state measures taken in response. These measures affected the Małopolska Province as it allowed for free distribution of apples produced in other
areas of Poland. In a way, Małopolska became hostage to other regions. This created a serious problem for numerous producers in Małopolska, where small farms and orchards were predominant. They were experiencing losses as a result of the decision of state authorities to allow apples from central Poland to enter the regional market.
- Producers devoted a lot of attention in their statements to critical evaluation of national regulations, especially those that were made as a reaction to the Russian embargo on apples. They criticised free distribution of apples from Grójec area (the biggest centre of apple production in Poland, near Warsaw) in other regions of Poland. The respondents called for expanding the repertoire of state intervention to increase the production of apple concentrate which could be stored while producers waited for better prices. They also proposed other measures such as providing healthy foods for children in schools, biogas production, alcoholic beverages (cider) or aroma products for the cosmetic industry.


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