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## **Bonusz Agro Cooperative: loan options**

### **CASE STUDY**

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### **Abstract**

Cooperation of producers is essential in agricultural production. The producer group is the official organization of the European arable sector. The Bonusz Agro producer group was established in 2015, and its legal form is cooperative. They use cooperative principles such as the democratic decision-making process ‘one member – one vote’ principle for both significant and insignificant decisions, unlike some other cooperatives. The management of the cooperative is considering investing in a new industrial site. This new site will be for cleaning/drying the produce, and storing it in a new storage facility, among other things. The company currently lacks sufficient financial resources to make this investment possible. One of the obstacles to obtaining the necessary finances is the lack of collateral the organization has control over. This case study examines the investment decision. The main focus is on how the organization can enlist the contribution of all members. The most delicate part of the decision-making dilemma is that all members would have to offer some of their own assets as collateral. These assets would be part of their agricultural land, which is necessary to obtain the required external financial resources from banks.

**Keywords:** cooperative, case study, finance, investment, collateral

**JEL code:** Q13, Q14

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# 1. Introduction

The rise of globalization, increasing market competition and the expansion of multinational companies are also taking place in the agri-food sector. There is a relatively large number of agricultural producers on one side, while on the opposite side there is a small number of food processors and retailers. As a result, cooperation between producers is essential to make them less vulnerable to upstream (different input suppliers, such as seed, fertilizer and agricultural machinery manufacturers) and downstream (potential buyers like processors, retailers) actors of the vertical chain. That is the reason why cooperation of producers is extremely important. According to many studies, cooperation positively effects members' production and results in efficiency gains (Mathijs and Swinnen, 2001; Sabates-Wheeler, 2002). According to a recent survey, most of the producer groups carry out activities that enhance efficiency (Cronin *et al.*, 2018). From this point of view, it is irrelevant whether this is a formal (legally regulated) or informal cooperation (not legally regulated, for example, based on reciprocity).

The European Union (EU) recognized the importance of producer cooperation a long time ago. In order to increase the countervailing power of the producers, various financial means are available for establishing and sustaining producers' organizations. Moreover, producer organizations became the major tool for market regulations in the fruit and vegetable sector. Under the current legislation, in the other agricultural sectors, producer groups can be established. According to a recent study, the majority of producer groups legal forms in the EU are cooperatives (Cronin *et al.*, 2018). In Hungary it can be established only a cooperative form by law. This provides both advantages (e.g. democracy in the decision-making process) and disadvantages (e.g. traditional roles such as owner, manager and worker can be mixed, which is the case at Bonusz Agro cooperative).

Regulation No. 42/2015 (VII 22) of the Hungarian Ministry of Agriculture regulates the founding of producer groups and Annex 1 contains the list of recognizable products and product groups (Hungarian Government, 2015). According to Article 2 of this Regulation, producer groups must achieve the following objectives:

- adapting the production and performance of producer group members to market requirements;
- the joint marketing of goods, including preparation for sale, centralization of sales, and supply of bulk buyers;
- establishing common rules for the provision of information on production, and in particular on harvesting and availability, or;
- other activities that can be carried out by the producer group, in particular improving entrepreneurial and marketing skills, and organizing and promoting innovation processes.

Recognition as a producer group is subject to strict conditions, so is a general rule there should be at least fifteen producer members, the annual net revenue from the sale of the member must reach a certain minimum level<sup>1</sup>, the production of the members must reach 50% of the total sales revenue of the cooperative and the registered capital may not be less than € 5,000 (Hungarian Government, 2015: Article 3).

Despite considerable EU support, the willingness to cooperate in Hungary is on a low level. The main reason behind it is that most of the producers want to keep their independence. In the survey conducted by Szabó and Baranyai (2017) in Hungary, 6,573 questionnaires were completed and collected. Based on their results, more than half of the surveyed farmers did not participate in any cooperation. Answers within the 'keeping independence' category included responses such as rejection of commitment-dependence, lack of information on opportunities for collaborative forms, or previous bad experiences (Szabó and Baranyai, 2017). According to the study of the Hungarian Chamber of Agriculture, the combined market share of the producer organizations and the producer groups in 2015 was only 10% (Orbán and Székely, 2017).

<sup>1</sup> Regarding the type of farming, the Bonusz Agro cooperative can be classified as specialist field crops where this minimum level is 300 million HUF (Hungarian Government, 2015: Annex 1). It is approximately € 0.93 million.

The Bonusz Agro cooperative is a producer group for arable crop production in the central part of Europe, in the north-eastern part of Hungary. The headquarter of this cooperative can be found in Borsod-Abaúj-Zemplén County, in a small village called Boldva. It is easily accessible by road, the M3 motorway goes to the county capital, Miskolc, from where highway No. 26 leads to Boldva. The distance between Miskolc and Boldva is roughly 15 kilometers. This region is crop oriented, most of the farmers produce, in order of importance, are wheat, maize, sunflower seed and barley, while the livestock sector is based on extensive grazing (HCSO, 2016).

## 2. The history of the Bonusz Agro cooperative<sup>2</sup>

The legal form of the Bonusz Agro producer group is cooperative. It was established on July 1, 2015 with sixteen members and was officially acknowledged on May 10, 2016.

There were many reasons for the establishment of the cooperative, including financial and non-financial ones. In the first category, the most important is operating cost contribution, which was itemized in the data sheet attached to the producer group's business plan.<sup>3</sup> Producer groups are eligible for state support for a maximum of five years after the official acknowledgement, with a ceiling of € 100,000 per year from the European Agricultural Fund for Rural Development – the specific call for proposals in Hungary is the VP3-9.1.1-17 'Establishment of Producer Groups and Organizations' (Orbán and Székely, 2017). The Bonusz Agro cooperative has prepared its business plan in accordance with this, in which approximately € 100,000 (30 million HUF) a year was planned as state support. But this support has not been disbursed so far, so the cooperative finances the operational costs from member's contributions.

'The major reason for the establishment was fundamentally the pure economic rationality' the chairman of the producer group pointed out. Practical experiences showed that producer group members can reach better conditions on the markets with higher volumes. At first, it was experienced throughout the selling process, but later on in the purchase of inputs (e.g. in the case of seed purchase, not only the price was lower, but at the end of the year, up to 2-3% refund could be earned from the variety owner). In addition, the founders of Bonusz Agro knew each other well, their long-standing friendship provided good business opportunities, plus they were geographically close to each other. One of the major determinants of a successful cooperation is a friendly business acquaintance between the members (Banaszak, 2008).

There were various non-financial reasons for establishing the producer groups. Members trusted in the alliance and believed that they can get farther together. The major expectations of the acknowledgement were market advantages and increased market credibility. 'Based on the past years, forming this cooperative was more beneficial for the members than without the producer group. However, without that promise for the state support, it may be possible that the producer group would have been established later or in a different form, e.g. as a lobby group with the same goals, but less costs' the chairman said. During the establishment process, there were no serious difficulties, for example, they needed a lawyer to write the deed of association, so it was relatively an easy process.

About the headquarter, different places could have been equally beneficial for the cooperative. The justification for choosing Boldva was its classification as it is located in the least developed geographical area. This resulted in extra points over other possible locations, which helped in the application process. The Edelenyi micro-region is in the Annex 3 of the 290/2014. (XI. 26.) Hungarian Government Decree on the classification of beneficiary areas, which means they are to be developed with complex programs (Hungarian Government, 2014). As such, the maximum ten points were awarded for their application.

<sup>2</sup> The case study, especially data on the producer group, is based on an in-person interview with the chairman of the producer group. Its has been conducted by the author in compliance with the ethical requirements of the Corvinus University of Budapest.

<sup>3</sup> Point 4.8 of the data sheet (Hungarian Government, 2015: Annex 3).

The application process itself is neither difficult nor time-consuming. However, the producer group has not received the promised state support, therefore the establishment has not received the greatest financial benefits yet. It is expected to be transferred in due time. In the meantime, there were other applications where only members of producer groups could apply to. This positive effect took place at the member level already, as being a member of a producer group resulted in extra points on applications. Membership of the producer group is one of the reasons why some of the producer group members won on different applications.

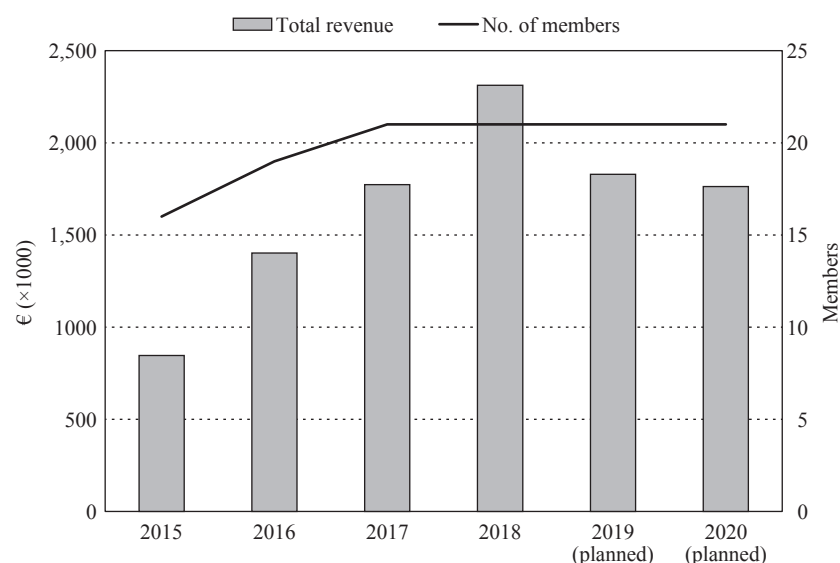
The managers' responsibility increased when the producer group was officially acknowledged, as the cooperative has a larger number of commodities compared to its individual members. Different registrations were required during the process, such as registering with the Hungarian Chamber of Agriculture (besides the members, the organization should become a member too) or the National Food Chain Safety Office. The cooperative will now pay a local business tax. These changes resulted in extra costs and a greater need for administration. Therefore, there is a high need for a full-time manager and an administrator who would be able to deal with operational issues, but the cooperative cannot afford it at this moment. Hiring them would allow the chairmanship to deal better with their core competencies, e.g. production issues.

At this moment, the membership structure of the 21 members is as follows: eighteen individual enterprises, two limited partnerships and one limited company. Regarding land size, the smallest one has 60 hectares, while the largest one uses 300 hectares. E.g. in 2017, Bonusz Agro organized the production on 2,931 hectares and produced 9,009 tons of commodities with a revenue of € 1.8 million. 74% of the members' total production was organized by the cooperative, which is considered to be a high share. The total revenue increased dynamically and peaked at over € 2 million in 2018. Based on the historical data and predictions of the chairman, Figure 1 shows the total revenue and the number of members between 2015 and 2020.

The dynamic growth of total revenue is expected to be stopped after 2018. This is because of two major factors:

- the number of members is expected to be the same in the following years, therefore the total area organized by the cooperative will not significantly change;
- due to various reasons, such as crop rotation, the composition of commodity procurement will change which results in lower average commodity prices. It will be analyzed in the third section.

As there is no comparable producer group nearby, the future of Bonusz Agro seems to be promising.

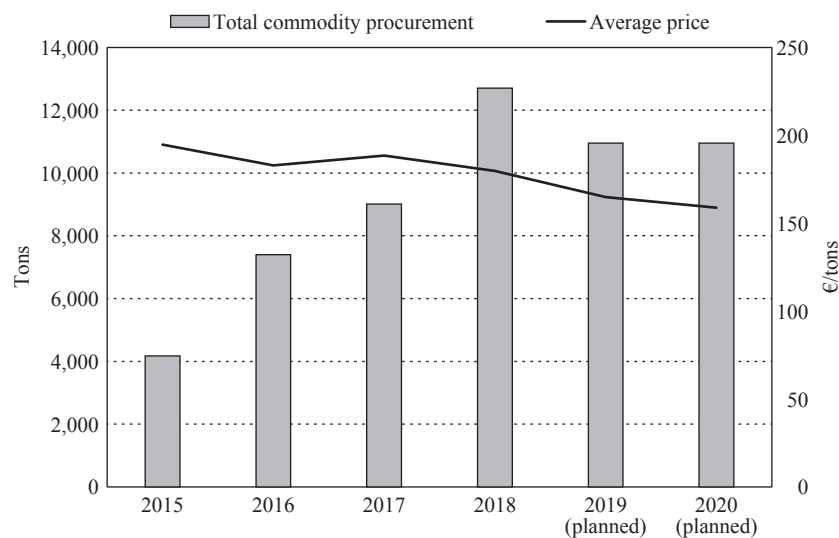


**Figure 1.** Evolution of the number of members and total revenue of the Bonusz Agro cooperative.

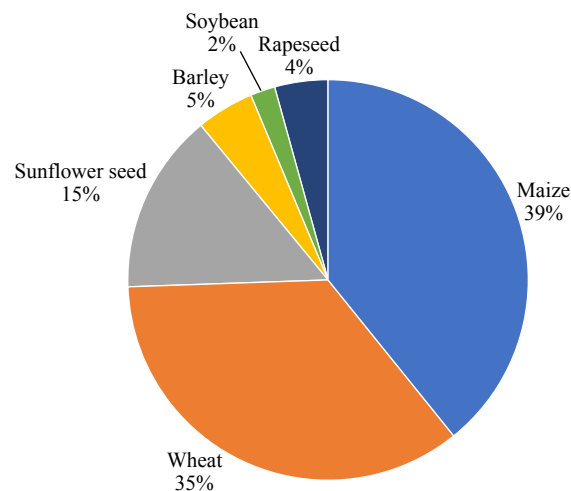
### 3. Activities of the Bonusz Agro cooperative

The cooperative has specialized on arable crops, wheat, maize, sunflower seed, rapeseed, barley, durum wheat, soybean and, to a small extent, oat. Commodity procurement increased remarkably from 2015 to 2018, it tripled during this period. This is shown in Figure 2 together with the average yearly price.

A substantial increase in commodity procurement with a steady decline in average prices can be seen in Figure 2. This can be traced back to the composition of production. Although members choose crops and plan their production volume on their own, the available varieties are limited by the cooperative in order to get more predictable quantity and homogeneous quality. This limitation also considers the marketability of the commodities. Figure 3 gives an overview of the composition of commodity procurement in order of importance at Bonusz Agro cooperative in 2018. It can be seen that the three major crops do not differ from



**Figure 2.** Evolution of commodity procurement and average price at Bonusz Agro cooperative.



**Figure 3.** Composition of commodity procurement at Bonusz Agro cooperative in 2018.



the national average as maize, wheat and sunflower seed are the most important Hungarian agricultural products.<sup>4</sup>

However, the share of sunflower seed in the near future will drop by half, mainly in favor of corn and wheat, according to the management of the cooperative. This is likely to continue for several consecutive years, as sunflower seed has a lot of pathogens and therefore crop rotation of four years or less is not recommended due to the high risk of *Sclerotinia* (Myers, 2002). This significant change within the production, as well as the procurement, results in a notable change of the average price due to the large differences in the prices of individual crops. Table 1, based on the Hungarian Central Statistical Office 3.6.13 data table (HCSO, 2019), shows the evolution of the average procurement price of the four main commodities. On this basis, it can be clearly seen that the average price of sunflower in each of the analyzed years was more than twice that of wheat and maize, while this difference was even greater for barley.

The high price of sunflower seed is antithetical to its small share within total procurement. This resulted in a lower turnover for the forthcoming years, despite the expected increase of total procurement. As the land sizes as well as yields of the members are different, the share of members within the total procurement varies each year. This is the same for the share of commodities marketed via the cooperative. The average revenue from selling commodities by way of the cooperative seems to be stabilized around € 100,000 in 2016 and 2017. However, there are huge differences on member levels, for example in 2017 the smallest amount delivered by a member was € 23,932 while the highest amount was € 405,744 (Table 2, based on dataset provided by Bonusz Agro).

Another important issue is the concentration of procurement. Table 2 shows the share of the three largest contributing members to the total commodities. It fluctuates around 50%, meaning these three members deliver half of the total procurement, while the other half is provided by the other eighteen members. Commodities are marketed mostly on the regional level in order to minimize transportation costs. Only waxy maize is sold internationally to an Italian starch factory.<sup>5</sup> This accounts for 16% of the sales.

<sup>4</sup> Soil and climatic conditions as well as crop rotation make this order of importance different in each year and area.

<sup>5</sup> Waxy corn can be characterized by high amylopectin (minimum 98%) and low amylose (maximum 2%) content, therefore, it is more valuable for the starch and feed industries (Owens, 2005).

**Table 1.** Average procurement price of main crop products 2015-2018 (€/tons).<sup>1</sup>

Year/Commodity	Wheat	Maize	Sunflower seed	Barley
2015	157	135	363	135
2016	128	131	339	118
2017	14	138	323	117
2018	154	142	301	135

<sup>1</sup> Average yearly exchange rates were used.

**Table 2.** Major characteristics of the procurement on member level (€).<sup>1</sup>

	2015	2016	2017
Average	56,405	87,010	91,232
Minimum	4,259	20,869	23,932
Maximum	167,764	349,355	405,744
Standard deviation	47,725	90,959	91,038
Share of TOP3 members	49%	54%	44%

<sup>1</sup> Average yearly exchange rates were used.

The chairman articulates: 'The aim of the cooperative is to grow the most profitable varieties of produce, such as waxy maize, high oleic sunflower, wheat and durum wheat and malting barley.' Producing higher value-added raw materials allows the cooperative to achieve higher revenues and, with comparatively similar production costs, higher profits.

The main goal of the producer organization is joint selling and distribution. This occurs in a non-profit way, meaning no revenues are raised on cooperative level. The producer organization makes standardized contracts with its members and its customers as well. They buy the commodities from the members and sell them at the same price, giving the full gains from wholesaling to the members. There are some promising future ventures, like buying commodities from nearby non-members and selling for higher prices via the producer group. The producer group may earn a profit on these transactions. Besides the higher output prices, it is favorable for the members to buy inputs at a lower price. However, there is no profit to be made from that, as the full discount is given to the members. Input purchases take place in annual tenders where all inputs (fertilizers, pesticides, seeds) are bought from the lowest selling company. One of the domestic companies has already made the lowest offer several times, especially concerning the purchase of unused inputs, which many competitors do not deal with. This is also important, as the aggregate amount of purchased inputs at the cooperative level may differ significantly from actual usage in some years. This uncertainty increases in proportion to the number of members and/or the production area.

The major consumers of the commodities are local branches of large, mostly international companies such as GoodMills or Cargill. Bonusz Agro provides up-to-date information about prices to their members and hopes to make sales at a fixed price during, or sometimes before, the production process. As the chairman highlighted: 'Based on the historical data, fixed-priced contracts result in higher prices compared to the daily prices.' Thus, only a few tons of commodities are left for sale at market prices after the harvest. However, not every commodity is suitable for this purpose, e.g. this can hardly be applied to wheat or durum wheat.

Non-commercial activities also take place between members, for example, members may share equipment and transportation for commodities<sup>6</sup>, joint quality control<sup>7</sup> and/or advisory services. Members with warehouses and storage capability provide services at cost. This only covers their expenses for drying and storage, with no additional fees such as the cost of moving commodities in and out of the warehouse. The price for this system is lower than the market price, reducing the expenditures of members by around 30%. In addition to those benefits, members organize business trips together and take part in exhibitions in their field of expertise, not only in Hungary, but also in foreign countries. To sum up, the major activities of the Bonusz Agro cooperative are the following:

- joint distribution (common procurement), including selling platform and transportation;
- joint organizing of quality control;
- joint use of equipment and storage facilities;
- joint input purchase;
- free advisory services to the members.

The key benefits for the members are the cheaper purchase of inputs, higher output prices<sup>8</sup>, smooth and effective collaboration, and being more efficient with members' resources. These benefits coincide with the literature, as lower input costs, higher prices and/or access to new markets (e.g. the Italian starch factory) are frequently acknowledged (e.g. Barton, 1989). The ultimate goal of Agro Bonusz is to reach higher production efficiency and to keep up with the latest technologies. E.g. a modern seeding machine was tried alongside their own one to reveal the difference in output between the two. It was easy to recognize that this inequality in yield and quality could not be recuperated later in the production process. Therefore, actions have been taken to equip the cooperative with up-to-date machinery.

<sup>6</sup> It includes sharing machinery, workforce or equipment.

<sup>7</sup> By providing a larger number of samples, producers can get discounts at the laboratory.

<sup>8</sup> Altogether, this results in a higher negotiating power.



The chairman emphasizes that: 'Timing is crucial in the whole production process.' The members must prepare in advance for key decisions, for example with pre-orders, a large amount of money can be saved because of discounted, out of season prices. Previously the members ordered their seeds in May, now these purchases are organized in December.

Other activities besides joint distribution, cannot be undertaken because of the lack of proper conditions, such as human and financial resources. The management system of the organization should be changed as well.

#### 4. The decision-making process

The producer group utilizes the democratic decision-making process. According to the International Co-operative Alliance, one of its important elements is the 'one member – one vote' principle (International Co-operative Alliance, 1995). This democratic process has advantages and disadvantages. While this ensures fair treatment of all members, as every members' interest is always represented, it may lead to an inefficient outcome (Hart and Moore, 1996). As such, the decision-making process is biased towards smaller members, in terms of business activity with the cooperative. Therefore, it is very common to use a voting system proportional to the size of patronage or transactions (Szabó, 2006). Although the decision-making process is based on 'one member – one vote' principles, financing operational costs is proportional to the revenue earned via the cooperative.

The board of the organization consists of the chairman and two vice-chairmen. They were elected for an indefinite period by the general assembly. Each of them was well-known and respected. They divide tasks between each other, but for sensitive issues<sup>9</sup> the general assembly has the final word. There are usually no disputes and the decisions are unanimous. There have been no internal disputes so far, mainly because the members and the cooperation have shared goals.

The greatest difficulty with the operation of the cooperative is the members' need for independence and the creation of trust between them. The chairman explained the importance of trust as such: 'Common thinking is a serious challenge, as the members have bad memories. We need to convince them that the cooperative works in their favor. For example, there are members who stick to their old trading partners, though they would be better off through the cooperative.' Another major challenge is the lack of financial resources. This challenge is compounded by the difficulties associated with accessing loans. Although the cooperative's sales revenue is high, banks require more in the way of collaterals, e.g. land mortgages. The members' most important asset is their land which is the reason why they are hesitant to take up mortgages. Increased costs (accounting, account management, etc.) are also causing problems. This could be covered by the state support and then it would be possible to employ an independent professional manager.

#### 5. The loan decision

When the business plan of Bonusz Agro was first developed, buying a common site and constructing different buildings, such as a weigh bridge scale, cleaner, dryer and warehouse, were of high priority.<sup>10</sup> According to the business plan, the costs would be approximately € 600,000. It was planned to be financed equally from the state support (five-year support for establishing and operating a producer group from the date of acknowledgement) and the members' contributions. Consequently, the board members started to look for a proper site right after the cooperative was formed. The major problems with the neighboring spots were unsolvable, as they were floodplains, where construction bans are applied. The Bonusz Agro's next site idea was to construct as a green-field or brown-field investment, e.g. on an old site of a formerly socialist cooperative or on uncultivated land. Finally, the board members were able to find a suitable plot which was

<sup>9</sup> E.g. the decision on the new members could be made only by the board, but it is discussed in the general assembly. Since everyone knows the newcomers most of the times, usually there is an unanimous decision.

<sup>10</sup> The four-year business plan for the acknowledgement should contain the activities of the producer group, actions to fulfil the aims laid down in Article 2, as well as the way of contribution to the priorities of the regulation No. 1305/2013/EU, Article 5 (Hungarian Government, 2015: Article 5/1).

a former industrial site. Its size was 2.5 hectares with good infrastructural facilities. The maximum land to building ratio is 50%. This site costs 30 €/m<sup>2</sup>, so the whole plot could be bought for € 75,000.

Although the state support has not been transferred yet (5×€ 90,000 partly for operational costs), this site investment would highly contribute to the members' business activities. The chairman stressed: 'The board would like to start this project even without the state support.' However, due to the challenges mentioned earlier, the cooperative would only be able to implement this with the involvement of an external financial source. The bank requires that the loan application is accompanied by all documents that give the bank a realistic picture of the business, the purpose of the loan (necessity, feasibility, etc.) and the appropriate repayment plan. This means that the balance sheet, the profit and loss statement, the cash flow statement and the members' tax returns must be submitted. As the economic performance of the cooperative is good and shows a steady growth, the management would like to begin the loan application process even without the state's support. The settlement process has been modified for this purpose, for example, all revenues are shown on the account of the cooperative and are transferred to the members.

However, with regards to the bank loan, the management of the cooperative faced two significant problems. First, the bank's requirements for the loan proved to be too high. They are willing to provide a loan for the planned investment, but they require a total of € 450,000 collateral for the € 300,000 loan. This collateral may be cash, bank deposit, securities (shares or bonds) or land. The second problem is using land as collateral, which is particularly cumbersome for certain members. Several of the members completely refused (ad interim) to mortgage their own land. According to the board's proposal, the necessary land would be proportional to the sales through the cooperative. To clarify, members who have more land and sell more products through the producer group, would take on greater risks when mortgaging land.

At this moment there are three options to be considered by the board:

- if the first year of the state support is disbursed, the bank is willing to pre-finance the rest of the support expected and a significant part of the state support could be used as a resource in the loan application process;
- with the agreement of the members, it would be possible to buy the chosen industrial site first, which could then serve as collateral for a part of the loan. The industrial site can be included in the cooperative's balance sheet;
- by persuading members who are currently reluctant to provide their own land as collateral, financing a part of the investment from a bank loan would be possible. The management of the cooperative would then start the investment project even without state support. By using their own storage facility, members will no longer need to pay a market price for commodity storage and any possible storage vacancies could be provided as a service to other non-member farmers or fertilizer producers. This would generate additional revenue for the cooperative.

In the first case, receiving state support, half of the capital requirement for the investment would be provided for, so no bank loan should be sought out. However, this is not expected to be disbursed in the short term. In the second case, buying the industrial site, the collateral offered by the cooperative would increase substantially. To purchase the site, members would have to contribute with their own financial assets. This would result in less land being mortgaged for the loan application. In the third case, by persuading the currently hesitating members, the investment could be finalized quickly, which would serve the interests of the members and the cooperative. However, a detailed cost-benefit analysis combined with a sensitivity analysis with at least three possible scenarios (pessimistic, realistic, and optimistic) is essential. In the current very low interest rate environment, the chances of the return are much better even with market-based financing. It would be most appropriate for the producer group to combine the second and third option. Then the cooperative would have a substantial increase of tangible assets, which could serve as a collateral for bank credit. This would also result in a proportionately smaller amount of land for mortgage registration.

Due to the uncertainties of the investment, some of the members have already started to build storage facilities on their own land. However, creating a common storage facility is still justifiable as their individual storage capacity is relatively low and vacant storage can be rented out. At the same time, it would be particularly important to strengthen the administration with the recruitment of a professional employee.

## 6. Conclusions

Cooperation of the producers is key in the agricultural sector, especially since the upstream (the various industries producing inputs for production) and the downstream (processors, wholesalers and retailers) actors in the vertical chain are more concentrated. The form of cooperation in crop production is the producer group. Bonusz Agro was established on the 1<sup>st</sup> of July 2015 as a cooperative with sixteen members. It received official state recognition on the 10<sup>th</sup> of May 2016. Although it is a relatively young company, it has developed very rapidly over the past three years, with revenues exceeding € 1.5 million.

The production infrastructure plays an important role in the development. The producer group's business plan already included the purchase of a common site for the construction of different buildings (for example, weigh bridge scale, cleaner, dryer and warehouse). Half of the resources required for this would have been granted by state support, which the cooperative has not received yet. Regardless of the state support status, this investment plan would serve the interests of the organization well. The investment plan would not only satisfy the needs of its members, but also provide the opportunity to rent out vacant storage as a service to others at market price. The members will save money by not being overly reliant on the time between the harvesting and sale of produce, because they would have an easily accessible storage facility. Moreover, the cooperative would generate revenue through wage work. However, the producer group has not yet been able to access the banking resources needed for the investment, as some of the members are reluctant to offer some of their land for mortgage. In this situation, there are three options for the cooperative. Firstly, having the state support would make any external financial resources unnecessary. Secondly, buying an industrial site would make it easier to get a bank loan due to the additional collateral. Finally, convincing the reluctant members would make the investment feasible through market-based loans. In this situation, the first option would be the best, but, unfortunately, there are high levels of uncertainty concerning whether the state will follow through. That makes a combination of the second and the third option optimal, as these options would require less land to be mortgaged from members and increase the assets of the cooperative.

## Supplementary material

Supplementary material can be found online at: <https://doi.org/10.22434/IFAMR2019.0113>

## Teaching Note.

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