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EXPENDITURES ON CURRENT ASSETS AND PRODUCTION DIRECTION FARM

NAKŁADY NA ŚRODKI OBROTOWE A KIERUNEK PRODUKCJI GOSPODARSTWA ROLNEGO

Key words: current assets, expenditures, production direction, farm

Słowa kluczowe: środki obrotowe, nakłady, kierunek produkcji, gospodarstwo rolne

Abstract. The paper presents an analysis of the financial expenses incurred by farms on the purchase of current assets in 46 farms in 2009. Determined the direction of production on the farms. Calculated efficiency of expenditures for current assets. There was a high variation in expenditures incurred on agricultural production in the analyzed group of farms. There is a strong positive correlation between the expenditure incurred on current assets and the income from agricultural production. It was observed that the farms targeted at breeding pigs obtain the highest income from agricultural production per 1 ha and the highest value of the expenditures efficiency ratio obtain farms targeted at breeding cattle and the lowest farms targeted at breeding pigs.

Introduction

Farms as well as companies to bear expenditures on current assets. The size of these expenditures depends on the quantity of production. Current assets in agricultural production have a direct effect on the obtained yields or livestock production results. Expenditures on current assets are denominated in PLN and their use is often determined by the possession of technical means of work [Sawa 1998]. The subject of the strategy for current assets depending on the type of farm dealt with, among others Felczak [2011] and Sadowski [2011] analyzing the relationship between the structure of the farm costs and the productivity and efficiency of use of expenditures of production factors. Sawa [2008] analyzed the effect of material and energy expenditures to balance the production process in family farms. Farms, a family are a combination of production from the household where there is often no distinction between owned financial resources for the operation of the farm, and the resources allocated to the household expenses. In the farm there are three main streams of cash expenditures as follows: production activity, investment activity and expenditures on household [Wójcicki 2009]. In the short term it is important to finance current activity farm so it is important to know the scale of financial expenses incurred for current assets depending on the direction and size of farm.

Aim of this study is to analyze the financial expenses incurred by farm on the purchase of current assets used in agricultural production, depending on the direction of agricultural production on the farm. The scope of work includes the determination of cash expenditures on current assets used in crop and livestock production, determine the direction of farm production on the basis of income from production.

Materials and methods

Material are data obtained in the development project NCBiR 12 00 43 06/2009 on 'Technological and ecological modernization of selected family farms'. 46 farms were divided according to type of production on plant and livestock production. Livestock production were divided additionally on farm targeted at breeding cattle and pigs. Calculated for each group of farms expenditures incurred on current assets. To analyze the obtained results were used tabulate-descriptive methods and basic statistical analysis (correlation, variance, standard deviation). For expenditures on current assets include expenditures on: the purchase of means of agricultural origin and agrochemicals.

The means of agricultural origin included the costs of purchase of seed, feed, young animals (piglets and calves). For agrochemicals include fertilizers, foliar fertilizers, pesticides and other preparations for foliar application. In addition, livestock production include preparations of macro-and microelements and vitamins. Also calculated the expenditures efficiency ratio on current assets as a ratio of income from production to expenditures on current assets purchased for the farm.

$$E_{no} = P_{pro}/N_{so}$$

where:
E_{no} – the expenditures efficiency ratio,
P_{pro} – income from agricultural production in general [PLN/farm],
N_{soo} – expenditures on current assets [PLN/farm].

Also calculated the efficiency partial expenditures ratios on current assets purchased for crop production and livestock production by the formula.

$$E_{npr} = P_{prr}/N_{sor}$$

where:
E_{npr} – the expenditures efficiency ratio in crop production,
P_{prr} – income from crop production [PLN/farm],
N_{sor} – expenditures on current assets in plant production [PLN/farm].

$$E_{npz} = P_{prz}/N_{soz}$$

where:
E_{npz} –the expenditures efficiency ratio in livestock production,
P_{prz} – income from livestock production [PLN/farm],
N_{soz} – expenditures on current assets in livestock production [PLN/farm].

Results

The total area of the analyzed farms contain from 8.80 to 152 ha. Average area of agricultural land was 45.63 ha (Tab. 1). In the study population were farms who almost didn't used arable land and those who didn't had permanent pasture. Stocking density determined by means of Livestock Units (LU) was very varied and in some cases exceeded the value permitted by the Code of Good Agricultural Practice (1.5 LU/ha). Average income from agricultural production amounted to 6.73 thousand PLN/ha.

In the structure of crops were dominated by cereal with 52% of agricultural land. On the farms, targeted at breeding cattle grains accounted for only 31.5%. The largest area in this group of farms had meadows and pastures. In the farms targeted at the crop production, grain along with corn accounted for 69.1% and oilseeds more than 10%.

Statistical analysis showed a positive linear correlation between expenditures incurred on current assets used in agricultural production and income from agricultural production (Fig. 2). The R-Squared statistic indicates that the model as fitted explains 79.772% of the variability in Income per PLN/ha. The correlation coefficient equals 0.893152, indicating a strong relationship between the variables.

The largest average area of agricultural land occurred on farms targeted at the crop production and was larger than the average of the entire analyzed population (Tab. 2). In the farms targeted at breeding pigs occurred the highest average livestock density DJP/100 130 ha. In the same group of farms the highest income obtained from agricultural production and were more than 2-fold higher than income generated on farms targeted at the crop production.

Table 1. General characteristics of the analyzed farms
Tabela 1. Ogólna charakterystyka badanych gospodarstw

Specification/*Wyszczególnienie*	Minimum value/ *Wartość minimalna*	Maximum Value/ *Wartość maksymalna*	Average/ *Średnia*	Standard deviation/ *Odchylenie standardowe*
Total acreage/*Powierzchnia ogólna gospodarstwa [ha]*	8.80	152.00	45.63	30.10
Area of agricultural land/*Powierzchnia użytków rolnych [ha]*	8.58	150.00	43.05	29.66
Arable land/*Grunty orne [ha]*	0.1	147.4	32.1	29.2
Permanent grassland/*Trwałe użytki zielone [ha]*	0.0	47.6	8.8	10.1
Livestock density [LU/ha]/*Obsada zwierząt [DJP/ha UR]*	0.00	2.96	0.91	0.65
Income from agricultural production [thous. PLN/ha]/ *Przychody z produkcji rolniczej [tys. zł/ha UR]*	1.65	26.99	6.73	5.44

Source: own study
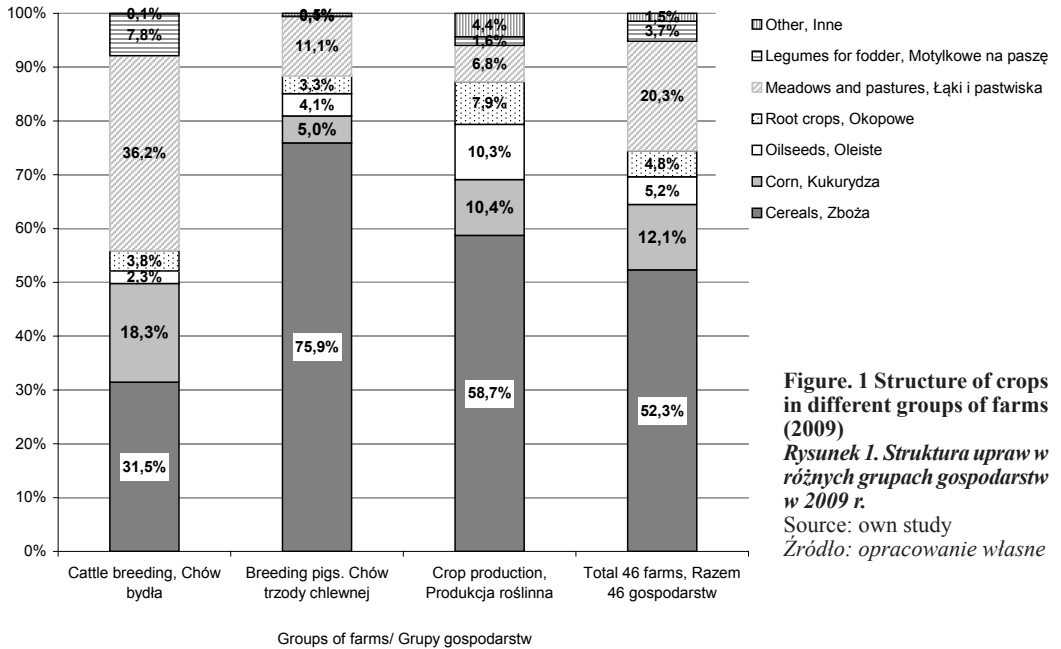*Źródło: opracowanie własne*

Figure. 1 Structure of crops in different groups of farms (2009)
Rysunek 1. Struktura upraw w różnych grupach gospodarstw w 2009 r.
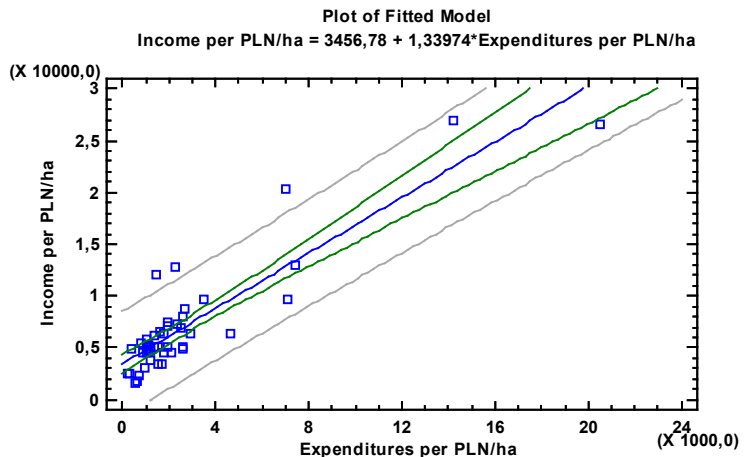Source: own study
Źródło: opracowanie własne

Groups of farms/ Grupy gospodarstw

Plot of Fitted Model
Income per PLN/ha = 3456,78 + 1,33974*Expenditures per PLN/ha

Figure 2. Impact of expenditure on income from production (2009)
Rysunek 2. Wpływ nakładów na przychody z produkcji w 2009 r.
Source: own study
Źródło: opracowanie własne

On average in the study population the expenditures of current assets on agricultural production amounted to 2850.24 PLN/ha (Tab. 3). The farms targeted at breeding pigs the expenditures were more than 2-fold higher than the average. Such high expenditures were generated through the purchase of fodder for animals. The highest expenditures for seed were borne the farms targeted at crop production. Also the mineral fertilization generated the highest expenditures in this group of farms. The analysis of the results of calculations can be seen that the highest expenditures borne by the farms targeted at breeding pigs through the purchase of fodder and young animals. The analysis of the results of calculations can be seen that the highest expenditures were borne by the farms targeted at breeding pigs through the purchase of fodder and young animals.

As a result, a high share of permanent grassland (Fig. 1) on farms targeted at breeding cattle the expenditures for plant protection products and foliar fertilizers were the smallest of the analyzed groups. While the costs of purchase of medicines and vitamins in this case was the highest in this group.

The expenditures efficiency ratio for current assets calculated based on the ratio of income from agricultural production to expenditures on current assets for the production amounted to an average 2.36 (Tab. 4). In the group of farms targeted at breeding pigs the expenditures efficiency ratio was lower than

Table 2 Characteristics of farms by type of production
Tabela 2. Charakterystyka gospodarstw według kierunku produkcji

Specification/*Wyszczególnienie*	Farms targeted at/*Gospodarstwa ukierunkowane na:*			Average sum/*Średnia suma*
	breeding cattle/*chów bydła*	breeding pigs/*chów trzody chlewnej*	crop production/*produkcję roślinną*	
Number of farms/*Liczba gospodarstw*	23	13	10	46
Area of agricultural land [ha/farm]/*Powierzchnia użytków rolnych [ha/gosp.]*	36.0	44.4	57.4	43.1
Livestock density [LU/farm]/*Obsada zwierząt [DJP/gosp.]*	40.3	57.8	12.7	39.3
Livestock density [LU/ 100 ha]/*Obsada zwierząt DJP/100 ha UR*	111.8	130.2	22.2	91.2
Income from agricultural production [thous. PLN/ha]/*Przychody z produkcji rolniczej [tys. zł/ha UR]*	5,816	10,339	4,406	6,726

Source: own study
Źródło: opracowanie własne

Table 3. Expenditures on current assets in the various groups of farms
Tabela 3. Nakłady na środki obrotowe w poszczególnych grupach gospodarstw

Expenditures [PLN/ha AL]/*Nakłady [zł/ha UR]*	Farms targeted at/*Gospodarstwa ukierunkowane na:*			Average/*Średnia*
	breeding cattle/*chów bydła*	breeding pigs/*chów trzody chlewnej*	crop production/*produkcję roślinną*	
Expenditures on current assets total/*Nakłady na środki obrotowe ogółem*	1761.22	5853.94	1401.74	2850.24
Expenditures on seed/*Nakłady na nasiona*	129.74	255.64	286.66	211.92
Expenditures on mineral fertilizers/*Nakłady na nawozy mineralne*	471.88	481.49	654.54	527.62
Expenditures for foliar fertilizers/*Nakłady na nawozy dolistne*	6.37	163.92	10.22	53.42
Expenditures for plant protection products/*Nakłady na środki ochrony roślin*	123.28	241.82	255.82	196.26
Expenditures for feed/*Nakłady na pasze*	892.23	3295.00	147.63	1376.95
Expenditures on young animals/*Nakłady na młode zwierzęta*	13.87	1316.47	31.01	398.61
Expenditures on medicines and vitamins/*Nakłady na leki i witaminy*	123.85	99.59	15.84	85.47

Source: own study
Źródło: opracowanie własne

Tabela 4. Wskaźnik efektywności nakładów w badanych gospodarstwach
Table 4. The expenditures efficiency ratio in the farms

Specification/*Wyszczególnienie*	Farms targeted at/*Gospodarstwa ukierunkowane na:*			Average/*Średnia*
	breeding cattle/*chów bydła*	breeding pigs/*chów trzody chlewnej*	crop production/*produkcję roślinną*	
The expenditures efficiency ratio (E_{no})/*Wskaźnik efektywności nakładów ogółem (E_{no})*	3.30	1.77	3.14	2.36
The expenditures efficiency ratio in crop production (E_{nor})/*Wskaźnik efektywności nakładów na produkcję roślinną (E_{nor})*	0.68	0.78	3.39	1.68
The expenditures efficiency ratio in livestock production (E_{noz})/*Wskaźnik efektywności nakładów na produkcję zwierzęcą (E_{noz})*	5.16	2.00	1.59	2.72

Source: own study
Źródło: opracowanie własne

the mean value of 0.49, while the farms targeted for cattle breeding and crop production was higher and amounted to 3.30 and 3.14 respectively. By analyzing the values of this ratio can be concluded that one PLN spent on the purchase current assets used in crop production generates 1.68 PLN of income, and in livestock production 2.72 PLN of income. The highest efficiency of expenditures for current assets used in livestock production (5.16) was obtained in farms targeted at breeding cattle.

Conclusions

The analyzed group of farms characterized with a high variation expenditures incurred on agricultural production. There is a strong positive correlation between the expenditures incurred on current assets and the income from agricultural production. Farms targeted at breeding pigs obtain the highest income from agricultural production per 1 ha. The highest value of the expenditures efficiency ratio obtain farms targeted at breeding cattle and the lowest farms targeted at breeding pigs. According to the designated the direction of production the farms specializing in breeding cattle obtain the highest value of the expenditures efficiency ratio in livestock production and farms targeted at crop production obtain the highest the expenditures efficiency ratio in crop production.

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Streszczenie

Dokonano analizy nakładów finansowych ponoszonych przez gospodarstwa rolne na zakup środków obrotowych w 46 gospodarstwach rolnych w 2009 r. Określono kierunek produkcji w gospodarstwach. Obliczono efektywność nakładów na środki obrotowe. Zaobserwowano dużą zmienność ponoszonych nakładów na produkcję rolniczą w analizowanej grupie gospodarstw. Stwierdzono silną dodatnią korelację pomiędzy nakładami ponoszonymi na środki obrotowe a przychodami z produkcji rolniczej. Zaobserwowano, że gospodarstwa ukierunkowane na chów trzody chlewnej uzyskują największe przychody z produkcji rolniczej w przeliczeniu na ha UR oraz że największą wartość wskaźnika efektywności nakładów uzyskują gospodarstwa ukierunkowane na chów bydła, a najmniejszą ukierunkowane na chów trzody chlewnej.

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