

Farm Machinery and Processes Management in Sustainable Agriculture, 7th International Scientific Symposium

Intensity and labour consumption of integrated production in horticultural farms

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Abstract

The paper presents economic efficiency of work in the horticultural production in the selected farms which carry out the integrated production. At the average, one man-hour was paid 0.09 PLNk-man-hour-1. Taking into consideration the use structure in the investigated objects, the intensity of production organization was determined. The production was varied (it was within the intensity range of 213-393 points) and the differences resulted directly from the participation of the grain cultivation area and currant plantation in particular farms. A field work mechanization degree is, inter alia, a factor that influences the labour inputs level. Thus, an annual use of farm tractors was also determined. It was 400 hours. The paper covers farms associated in the formalized producer's group.

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Peer-review under responsibility of the Centre wallon de Recherches agronomiques (CRA-W)

Keywords: machinery park; sustainable agriculture; optimisation; agricultural technology; agricultural software.

1. Introduction

Labour, as one of the production factors, is an essential element which influences effectiveness and competitiveness of agricultural farms which produce under any system, also in the sustainable one. A relation in the

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Polish agriculture between land and capital is assessed as a sufficient, whereas a relation between work and capital as well as work and land, due to too high work resources, is negatively evaluated (Pepliński et al. 2002; Tabor and Prusak 2008). The research studies, which have been carried out so far (Szeląg-Sikora 2013; Sikora 2014) show that there is no clear substitution dependency between live and objectified labour in the crop production. It results from the fact that at an irrational organization of production processes, technical and technological innovations do not release high labour surpluses.

The integrated agriculture is defined as a farming method, which enables realization of economic and ecological aims through a conscious use of modern production techniques, systematic facilitation of management and introduction of various forms of biological progress in a manner which favours realization of these purposes (Perini and Susi 2004; Die Lage der Landwirtschaft in der Europäischen Union). In the Polish conditions, which should be emphasised, agriculture is integrated in the initial stage of development. Presently, approximately 2 million of individual farms existing in our country, with varied levels of farming: from primitive, extensive farms to modern, well-equipped with machines with a reduced labour consumption (Sawa, 2009). The integrated farming has the biggest number of properties of the sustainable production, at the same time it is a form of alternative farming, it consists in harmonious combination of the conventional and ecological farming (Figuski and Lorencowicz, 2008; Cupiał and Szeląg-Sikora, 2014). A rational mechanization of production processes is an essential element of efficient functioning of integrated farms (Alvarez and Arias, 2004). The state of the research studies on implementation of the integrated farming systems is advanced in many countries of Western Europe. For example, according to Dutch scientists, an integrated farm may obtain a 94% income of the income of a conventional farm (Helander and Delin, 2005). In Germany, introduction of the integrated system is carried out by, inter alia, the Crop Protection Institute in Stuttgart. Average surface of such an integrated farm is 17 ha (Mushoff and Hirschauer, 2008). The nature, size and production results of the German integrated farms may be an example for the Polish agricultural objects. The integrated agriculture research system similar to the German one, is carried out in Switzerland, however, implementation takes place in a considerably bigger number of farms, which form a network of farms with the controlled production system. Also in Great Britain, France, Denmark and Norway, macro-field experiments concerning the selected technological elements (e.g. crop rotation, reduction of agri-chemical products use, labour inputs, etc.) of the integrated agriculture are carried out (Mézière et al., 2013).

According to Woś (2001), efficiency is a factor determining the position of the Polish agriculture on account of economy sectors. He lists economic weakness of farming as one of the reasons of the current agriculture depreciation in the system of inter-branch flows, and consequently low ability of accumulation and investing. Disadvantageous agrarian structure of the Polish farms (especially in the Southern Poland) translates not only into their low competitiveness but also determines their efficiency of farming by too slow modernization process of the technical back and by this to also low labour efficiency and high production costs. Also, according to Kożuch (2000) relatively low efficiency of the Polish agriculture is in a considerable degree a result of fragmented agrarian structure, which makes fast increase of the labour efficiency, production efficiency and farmers' abilities to absorb technical and technological progress impossible. Moreover, full mechanization is in small farms the most frequently economically unjustified. The only way for its introduction is a common purchase of specialist equipment at a considerable participation of the EU funds in its funding.

The labour inputs often determine a production orientation and intensity in agricultural farms and the investment activity of farms is mainly oriented at the reduction of difficult working conditions and improvement of production profitability. Knowing labour resources, assets and production potential of a farm, they may be rationally modernized and developed, according to the sustainable development of principles (Kocira and Parafiniuk, 2010).

2. Objective, data and methodology

Research in the form of a guided survey was carried out in 2015 in 9 farms associated in the horticultural group. These are initial research studies with respect to the integrated farming. Detailed tests are going to be carried out in all member farms of the group.

The objective of the paper was to assess the economic efficiency of work and intensity of horticultural integrated production. To fully perform the assumed objective of the paper, firstly the land use structure, labour consumption of particular cultivation treatments were determined (harvesting, cultivation and treatments in orchards). Then, the

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