DESIGN OF A SPECIALIZED AGRICULTURAL SYSTEM IN BELINȚ, TIMIȘ COUNTY, ROMANIA

Maria Manuela CRISTA, D. LAICHICI, A. OKROS, V. D. MIRCOV, D. MANEA

***University of Agricultural Sciences and Veterinary Medicine"King Michel I of Romania" of Banat from Timisoara* 119, Aradului Avenue, Timișoara 30064, Romania**
Corresponding author: adalbertokros@yahoo.com

Abstract. *Agriculture has been ensured human food, being practiced differently, depending on the climate, environment, soil, and the requirements of crops or the need of animals for feed. In this work, we encourage the involvement of as many people as possible in this field, both for profit and a healthy life. The only way to improve our life and live healthier is agriculture, both for the producer and for the consumer. Implementation of the system is to take place in the municipality of Belinț, a city representative for the cultivation of vegetables (potato, cabbage, seedlings, etc.). The agricultural system is a complex of economic and social elements interconnected, designed and made by man in order to obtain vegetable and/or animal products to meet the human needs. Specialized agricultural systems are characterized by the fact that their activity aims to obtain a single produc, or the making of certain agricultural services. (*ARDELEAN V., 1979, BORCEAN I., 1996*). The region has always been agriculturally rich (especially for gardening), due to the wind from the NW, which brings to the earth a loess rich in salts. Deep down, the soil is limestone and sandy. This work includes the implementation of a specialized agricultural system. This system deals with the cultivation of vegetables with all technological links and economic aspect. The total area cultivated is 3 ha and it is a familiar business. (*COSTE I., 1986., IANOȘ G., 1997*). On the 3 ha, there grow salad, radishes, spinach, onions, garlic, cucumber, dill, parsley, carrot, parsnips, peas, beans, beets, cauliflower, cabbage, potatoes, maize, strawberries, pumpkin, and melon. In addition to growing in the open field, the farmer also has 4 solaria. The land area is divided into two plots. One of the plots has a surface of 1 ha, where the 4 solariums are found, which have a lenght of 20m and a width of 6m. In this plot are cultivated plants that require more manual labor for both their care and planting. In the second plot of 2 ha are cultivated plants that are cared for tehnologically, these being sweet corn, potato, beets, strawberries, melons, pumpkin and cabbage. Most of the work and sowing will be done with a tractor and the rest of the equipment depending on the requirements of the platns we want to grow. Both sowing and care work, will be mechanized, partially mechanized or manul. The treatments will be done with special machines. In addition to this, there will future plans for small businesses. (*IOAN OANCEA 2005*)*

Keywords*: agriculture, systems, vegetables, farmer, soil*

INTRODUCTION

Agriculture is an important for human existence, without which we could not survive. Thus, by practicing agriculture, billions of people are provided with daily food, the one that we all find in the morning for breakfast, in the afternoon for lunch and in the evening for dinner.

Therefore, in the context of this work, there is a part of the agriculture, namely the one involved in the cultivation of vegetables. *(*MUGUR BOGDAN, 2008*)*

By growing vegetables, one can also make a profit for a family of 3-4 people. Thus, by implementing a system of agriculture based on the cultivation of a mix of vegetables, which provide customers (consumers) with the necessary quantities and products in the house, the customer obtains healthy produce with a taste of superior quality compared to those in the supermarkets, the farmer being able to ensure a decent living through the cultivation and distribution of his produce. So, in addition to providing food, it also provides jobs. *(*MANEA D.N. 2013, MANEA DAN, 2015)

The work consists in a system in which the cultivation of vegetables is done on a familiar farm. All technological links, costs, profit, and plans for the future are presented. *(DAN MANEA /2016,)*

MATERIAL AND METHODS

For the elaboration of the present paper, the data retrived is taken from different sources of specialty literature and public institution.

The specialized system chosen is a vegetable one, intended for daily consumption. Such a system requires a certain technology and a strategy well developed by the farmer. The farmer must choose an efficient cultivation method and quality materials (seeds, machinery, etc.) in order to obtain a harvest at maximum capacity and quality.

The varieties and hybrids used are varied, from very early to late, depending on the preceding plants, the market demand, etc. The varieties or hybrids chosen for a single species will be of at least two types, as we know some varieties or hybrids have a certain tolerance, resistance, sowing season, harvest, etc. This fact is taken into account by the farmer to have safe, varied and diversified crops

The cultivated land areas were chosen and divided in such a way that a mechanized cultivation technology can be applied to certain species, due to the fact that they are cultivated vegetables, not everything can be done 100% mechanized, but it will be done manually. Thus, on the plot of 1 ha, being cultivated plants that are suitable for less than 50% mechanization (miss the soil preparation works, herbicide and fertilization) is separated from the other plot of 2 ha where everything can be done mechanically (soil preparation, planted, herbicide, fertilization and harvesting). Thus the applied technology system is a semi-mechanized one.

RESULTS AND DISCUSSIONS

The area of land used is almost all combined. It is divided into two plots. Plot 1 has 1 ha and plot 2 has 2 ha. Thus, the family that has this area will find it easy to divide the crops into soles. On plot 1, there are 4 solaria 20 m long and 6 wide totalling 480 m^2.

The plants grown are salad, radishes, spinach, onions, garlic, cucumber, dill, parsley, carrot, parsnip, peas, beans, beetroot, cauliflower, cabbage, potatoes, maize, strawberries, pumpkin, and melon. *(*NIȚĂ S., 2014. , NITA S., NITA L., PANAITESCU L. 2015*)*

Table 1

Plants grown on plot 1:

solarium 1 salad+ cucumber	solarium 2 spinach	solarium 3 onion + garlic + radish	solarium 4 dill + parsley + seedling	Sole 1 tomato + pepper + onion + cucumber + roots

Table 2

Plot 2 (2 ha)

Crop	m^2	Total m^2
Salad + cucumber	1000 m^2 + 200 m^2	1200 m^2
Spinach	1200 m^2	1200 m^2
Onion + garlic + radish	600 m^2 + 400 m^2 + 200 m^2	1200 m^2
Dill + parsley + seedling	200 m^2 + 200 m^2 + 800 m^2	1200 m^2
Seedling + roots + onion + beans + peas	2500 m^2 + 1000 m^2 + 800 m^2 + 460 m^2 + 440 m^2	5200 m^2

Table 3

Crops on plot 2:

Crop	m^2	Total m^2
melon + pumpkin + cabbage + cauliflower	2000 m^2 + 2000 m^2 + 500 m^2 + 500 m^2	5000 m^2
strawberry	5000 m^2	5000 m^2
Maize	5000 m^2	5000 m^2
potato + beets	4000 m^2 + 1000 m^2	5000 m^2

Soil work and maintenance work of cultivated plants

Preparation of land for sowing or planting:

- In the solaria, preparation of the soil is done with a mower and it is ploughed every 2 years with a small tractor;

The rest of the soil is ploughed every autumn, and before sowing it is disced or harrowed.

Most of the work and sowing is done with the tractor and the rest of the machinery according to the plant requirements (disc, cutters, sowers, etc.). Both sowing and maintenance work are mechanized, semi-mechanized or done by hand. Treatments are done with special machines depending on which sprinklers or atomizers are used. *(HETEA DENISA, 2017., IENCIU ANISOARA AURELIA, 2017.)*

Tabel 4

Plot 1:

Crop	Area (m^2)	Total lei
Salad + cucumber	1000 m^2 + 200 m^2	4000
Spinach	1200 m^2	1000
Onion+ garlic +radish	600 m^2 + 400 m^2 + 200 m^2	3500
Dill+ parsley+ seedling	200 m^2 + 200 m^2 + 800 m^2	1300
Seedling + roots + onion + beans + peas	2500 m^2 + 1000 m^2 + 800 m^2 + 460 m^2 + 440 m^2	8000
Total plot		17,800

Tabel 5.

Plot 2:

Crop	Area (m^2)	Total lei
Melon + pumpkin + cabbage + cauliflower	2000 m^2 +2000 m^2+500 m^2+50 m^2	1500
Strawberry (20.000 stolons)	5000 m^2	90000
Maize	5000 m^2	3500
Potato + beets	4000 m^2 +1000 m^2	2500
Total plot		97,500

Table 6.

Incomes, expenditures and profile of both plots

Crops	Incomes	Expenditures	Profit
Salad + cucumber	6,000 lei	4,000 lei	2000 lei
Spinach	1,800 lei	1,000 lei	800 lei
Onion + garlic + radish	4,800 lei	3,500 lei	1,300 lei
Dill + parsley + seedling	4,000 lei	1,300 lei	2,700 lei
Seedling + roots + onion + beans + peas	10,000 lei	8,000 lei	2,000 lei
Melon + pumpkin + cabbage + cauliflower	4,500 lei	1,500 lei	3,000 lei
Strawberry (20,000 stolons)	100,000 lei	90,000 lei	10,000 lei
Maize	15,000 lei	3,500 lei	11,500 lei
Potato+ beets	8,000 lei	2,500 lei	5,500 lei
Yearly income	150,500 lei	99,280 lei	38,800 lei
Other expenditures + losses (equipment repair, day labour, etc.)		10,000 lei	2,200 lei
Monthly income			36,600 lei

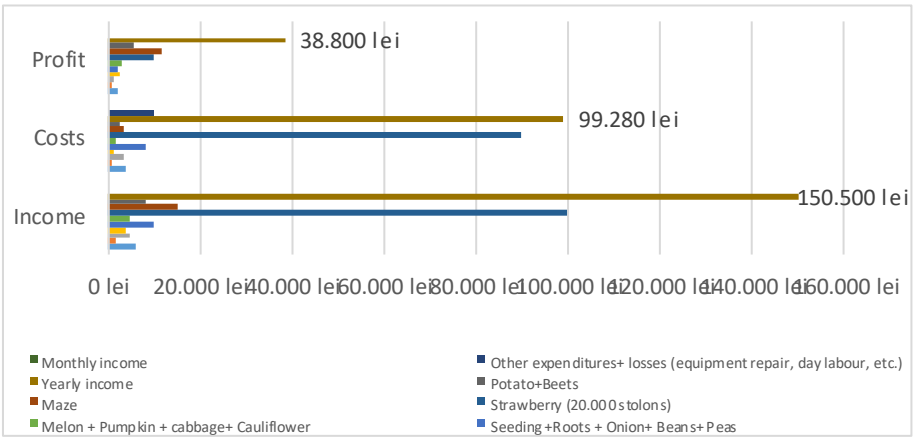

Fig.1. Revenues, expenses and profit of both parcels

CONCLUSIONS

1. Even if the area under cultivation is not large, only 3 ha, as a result of the productions obtained, we have a monthly profit of 49,553.33 lei.
2. Expenses reached a total of 99,250 lei/year.
3. The variety of crops and the quantities obtained ensure that customers produce quality, tasty, and fresh products.
4. The customer can always visit the farm and even pick up his products.
5. Products are sold right on the farm, online, or by orders, the big ad is made through pages of products for sale.
6. As future plans, it is intended to collaborate with farmers who have livestock products for sale and with growers, so that the customer benefits from almost the entire range of produce, as well as the implementation of a vegetable processing network.

BIBLIOGRAPHY

ARDELEAN V., ZĂVOIANU I., 1979 - Judeţele patriei – Judeţul Timiş, Ed. Academiei RSR, Bucureşti;

BORCEAN I., TABĂRĂ V., DAVID G., BORCEAN EUGENIA, ŢĂRĂU D., BORCEAN A., 1996 - Zonarea, cultivarea şi protecţia plantelor de câmp în Banat, Ed. Mirton, Timişoara;

COSTE I., Ecologie agricolă, curs IAT (LITO), Timişoara, 1986.

IANOŞ G., PUŞCĂ I., GOIAN M., 1997 - Solurile Banatului II – Condiţii naturale şi fertilitate, Ed. Mirton, Timişoara;

IOAN OANCEA Tehnologii agricole performate,ed. Ceres 2005

LATO ALINA, NEACSU ALINA, CRISTA FLORIN, LAŢO KAREL IAROSLAV, RADULOV ISIODORA, Chemical properties and soils fertility in the timis county wetlands journal of environmental protection and ecology Volume: 14 Issue: 4 Pages: 1551-1558 Published: 2013

MANEA D.N., IENCIU ANIŞOARA, PEŢ I., ŞTEF RAMONA, CĂRĂBEŢ A. 2013 Research on the influence of weed control on the soybean yield. Annals of the University of Oradea, Fascicola Environemental Protection, 2013, vol.XXI, ISSN 1224-6255

MANEA DAN, PEŢ IOAN, IENCIU ANIŞOARA, ŞTEF RAMONA, 2015, Control of Horse Thistle Cirsium arvense L.Scop, in Winter Wheat Crop Research Journal of Agricultural Science, ISSN 2066-1843, vol 47 (1), 2015 CABI http://www.rjas.ro/volumes 82-89

NIȚĂ S., NIȚĂ L. D., MIHUȚ C., KOCIS E., PANAITESCU L., LUNGU M. (2014). The agricultural system of the Armeniș township, Caraș-Severin county. Review on Agriculture and rural development. Scientific Journal of the University of Szeged, Faculty of Agriculture, No. 1 Vol 3, pp. 344-349

NIȚĂ S., NIȚĂ L., PANAITESCU L. (2015) - Research regarding the introduction of sorghum crops in the Almăj Depression. Analele Universităţii Din Oradea Fascicola: Protecţia Mediului, vol XXI anul 19, editura Universităţii din Oradea, pp.

NIȚĂ S., NIȚĂ L., PANAITESCU L. (2015). Preliminary studies on the production capacity of triticale (Triticosecale Wittmack) grains under the influence of fertilization and varieties. Journal of Horticulture, Forestry and Biotechnology Volume 19(4), pp. 5- 8, www.journal-hfb.usab-tm.ro

NIȚĂ SIMONA, OKROS ADALBERT - Sisteme de agricultură 2012 Eurobit

PUȘCĂ I., 2002 - Câmpia Banatului, Fundaţia Naţională „Satul românesc", Bucureşti

HETEA DENISA, ARDELEAN ABEL, IENCIU ANIȘOARA AURELIA, MANEA DAN NICOLAE, Determining water consumption in sunflower crops with indirect methods in the timisoara area, Reserch Journal Of Agricultural Science, Timisoara, 2017.

IENCIU ANISOARA AURELIA, SMULEAC LAURA IOSEFINA, MIRCOV VLAD DRAGOSLAV, CIOLAC VALERIA, MANEA DAN NICOLAE, - Monitoring hidro-climatic hazards in the western part of the Timiș county, Romania, Analele Universităţii din Oradea, Fascicula Protecţia Mediului, Vol. XXIX, anul 22, Oradea, 2017.