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# THE FARM STEPA, COUNTY CONSTANZA ROMANIA A PIONEER OF ORGANIC AGRICULTURE

ALIM INDIRA DENIZ<sup>1</sup>, DRĂGHICI MANEA<sup>2</sup>

**Abstract:** *The paper describes the ecology farm STEPA Constanta which practice an original system in the driest zone of Romania, Northern plateau of Dobrogea. The main innovations of this system are associated crops and medicinal plants. The soils are medium fertile. On it grows cereals, pulses, oilseeds as pure culture or associated. The seeds are exported and farm activity is profitable.*

**Keywords:** *Agriculture, ecological, technological system, profitability.*

**Classification JEL:** *Q55, Q57*

## INTRODUCTION

Essences of organic farming in vegetal production in version without chemically synthesized fertilizers as source of food for Plant and pesticides to fight a weeds, pests and diseases they were replaced with organic fertilizers and cultural techniques. The declared purpose is obtaining healthier consumer products, a soil fertility restoration clean version of sustainability conditions.

Organic agriculture/farming, until recently a niche version, tends to become if not now dominant, at least competitive, the historical circumstances that have led to this phase are numerous. They come from two directions – the consumer is increasingly unhappy with what is given to him as food, starting from vegetables that have not seen the soil, with cheese that have not see the milk. The consumer is concerned not only with the quality lack of taste, appearance) but also with the fact that the intensive, productive agriculture uses a lot of toxic substances that endanger his health. On the other hand, the farmer perceiving the “demand” is increasing the “offer” of ecological/organic products, taking care to raise the price, the additional costs and to earn more as the market economy is prone to maximizing the profit.

This material present an original system of ecologic agriculture practiced by Agricultural Society, “STEPA” located in North Dobrogea Plateau, without irrigation. It cultivates cereals pulses, oil and medicinal species in pure culture or associated in particular sequence.

## MATERIALS AND METHODS

The material presents the ecological farm of STEPA from Constanta County, one of the first of its kind in Romania. The farm is not just a pioneer in the field in the ecological regard. The assortments of plants, the culture system, the equipment used are original, some even unique and can build a model of organic farming. The method is descriptive, the authors are proposing themselves to present the original case to the specialists and the interested public.

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## RESULTS AND DISCUSSIONS

### *The method of construction and management of the STEPA farm*

The farm is located in the middle of the most arid province of Romania, Dobrogea, which belongs to agro climatic zone I warm-arid, characterized by two sub-continental accented with a high variability amplitude in thermal values and precipitation during growing season.

The average annual temperature range is between 11.0-11.2 °C with a brightness period 2180-2260 sun hours/year, amount a sum of positive temperatures (over 0°) of 4100-4200°C and an active temperature over 10°C, about 1600°C.

Rainfalls are the lowest in the county around 400 mm annually unevenly distributed especially in the growing season. In the late spring and early summer they are too complicated pair of averse causing land erosion and surface slop version.

High degree of aridity of the are motivated irrigation on more than 90% of arable land, Constanta County.

Greater heights pumping water and the light costs expelled from irrigation rehabilitation and is believed that it is unlikely that the area will continue to be irrigated.

STEPA farm was built in 1991, on the basis of the Law no.36 /1991, by associating a number of former cooperative families, which were appropriated according to the Law no.18 /1991.

As an organic farm, the unit operates an area of 300 ha of arable land.. Agricultural Society “STEPA”, a version of the Organic Agriculture system adopted during 1998-2000, found one of the top holdings of this kind in Romania. He is a member of the Romanian Association for Sustainable Agriculture – ARAD.

In 2000 it obtained necessary certification. Top Organic Products obtained in 2000 Former OA version was wheat, coriander, mustard, exported in Netherlands, witch carried out a certification as to that data in Romania there are not specialized companies authorized to provide such services. Since 2003, LACON company, BMD in Germany, Management is provided by the Board of Directors, led by a technician (Nicolae Alexe) with a ling activity in an agricultural research station.

**Technological system.** Constanta County is specialized in drought control through irrigation. Is characterized by succession of species in pure culture, or not, followed by successive crops as green manure.

Winter wheat. Regularly is sown after vetch. In wheat stubble is sown a leguminous plant (Lucerne, for example) which is incorporated into soil as green manure with winter plowing.

Mustard and Lucerne, culture combined. Sow is with the same girl, but on separate rows of straw with drill SUP 29, adapted. A total of 15 tubes distribute the seed from the main crop, alfalfa seed is distributed by 14 tubes from a box second further adapted, Sowing distance is 25 cm for both species (fig. 2).

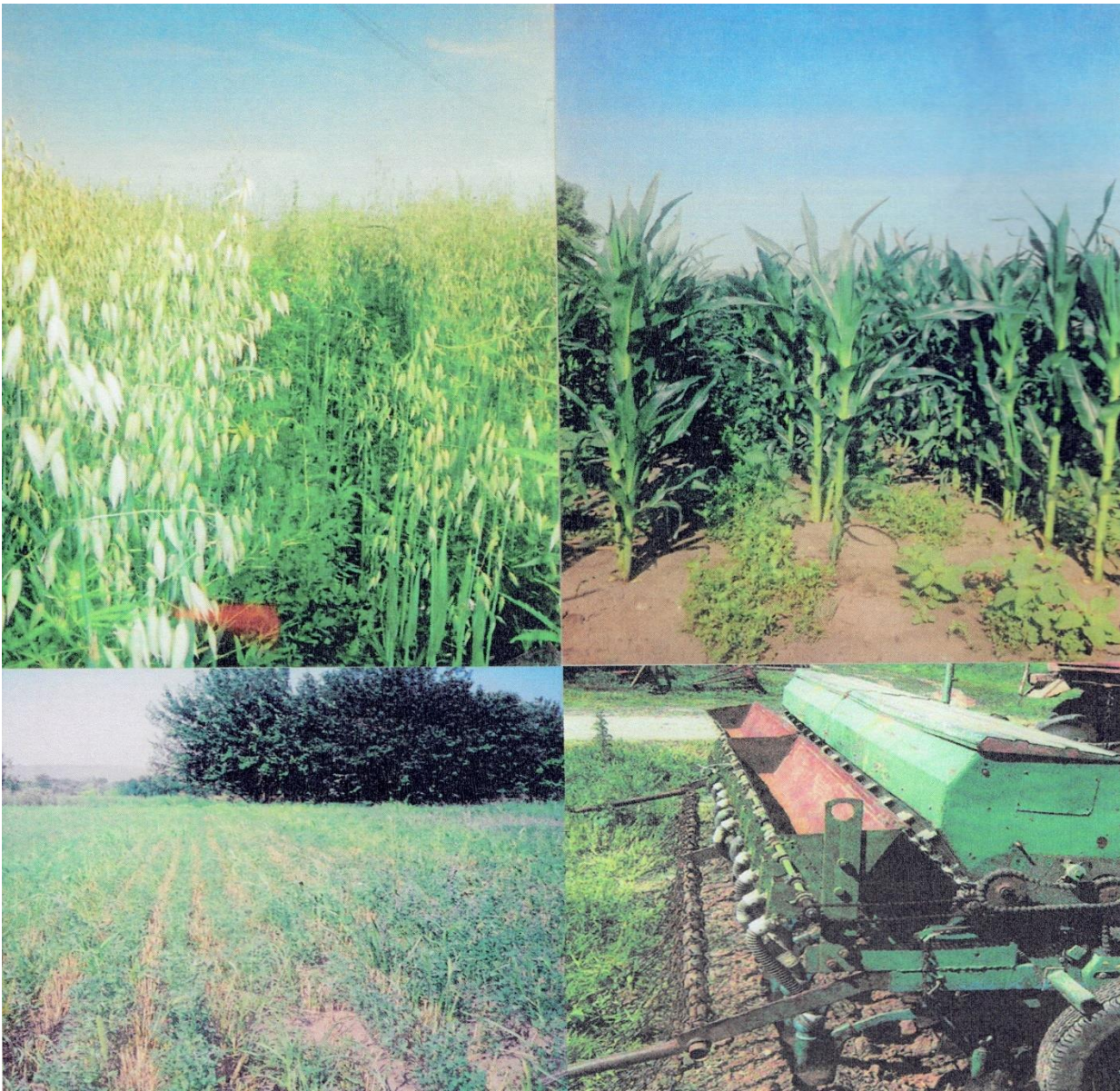


Fig.1 Associated crops oath + Alexandria clover (above left), maïse + Alexandria clover (above right), Lucerne in wheat stubble (below left) and the cereal drill adapted for sowing associated crops (below right).(Source 4).

The two plants are not impeded whereas Lucerne is the first part of vegetation growth rate is much lower than is harvested during the month of June without the performance drop significantly.

Lucerne is mown once or twice, depending on rainfall. Lack of them, Lucerne is incorporated into soil in autumn as grass manure. In terms of non irrigated agriculture is preferably that. Lucerne is maintained in a second year when it accumulates more nitrogen obtaining at the same time a seed crop as raw material required in version pharmaceutical industry.

Lucerne cultivated in combination with spring rape, mustard or other spring crop some years cross the entire area, enriching the soil in nitrogen while being a good precursory.



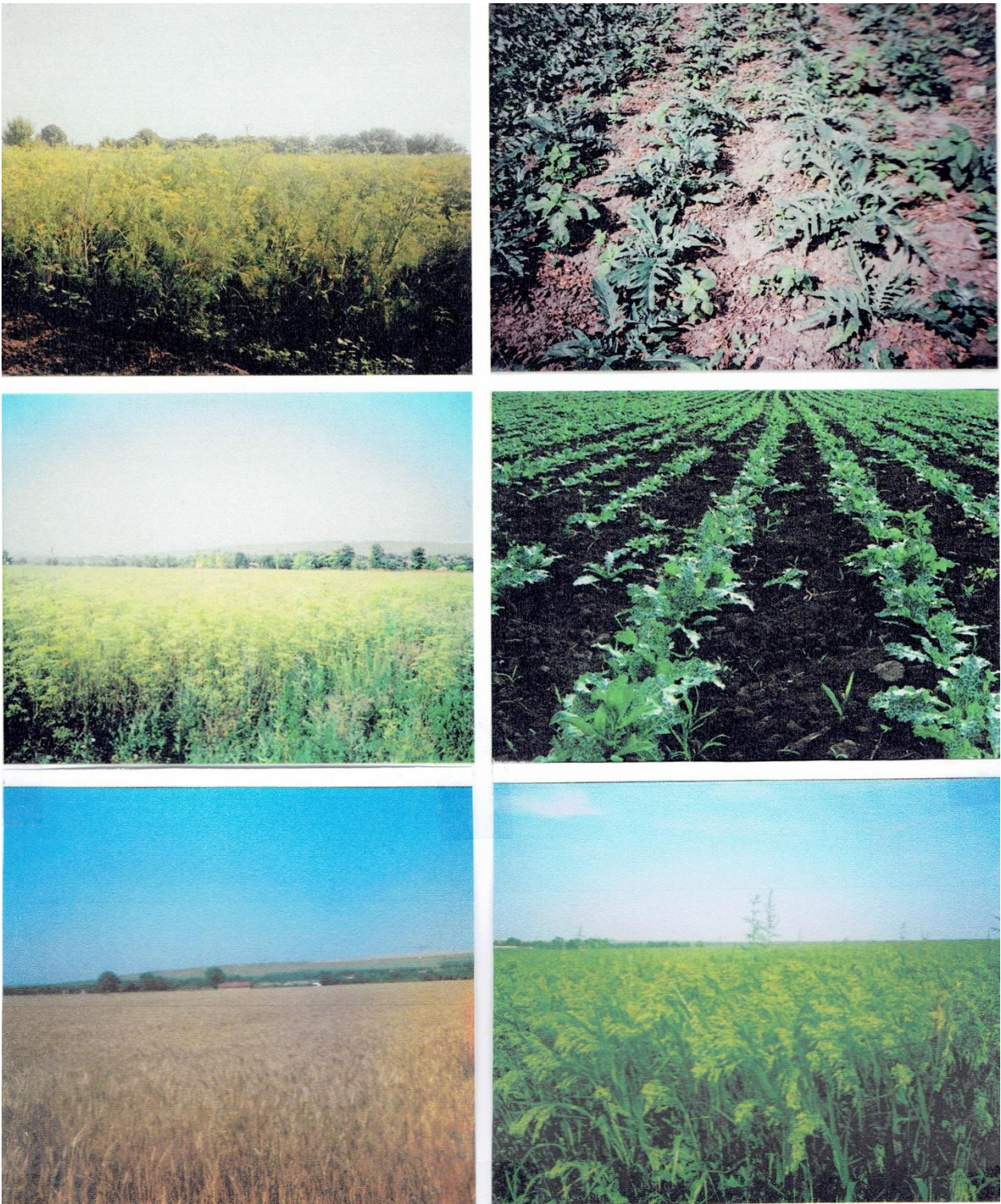


Fig.2 Some species of medicinal plants or associated: *foeniculum vulgare* (above left), *silybum marianum* (middle right), *coriandrum sativum* (middle left), *camelina sativa*, *trigonrlla procumbens*, *cynara scorymus* (above right), *ecologic wheat* (below left) and *panicum milliaceum* (below right). (Source 4).





Fig.3 Exhibition of STEPA farm (above) and the visit of the resort minister (below, second from the left). (Source 4)

Annual forages. Winter fodder. Regularly is sown oats + vetch, which is harvested in May. It prepares the soil by not deep plowing, and harrows discs and is sown with mustard as green manure.

Food miller or coriander. Both crops are harvested in summer time allowing an autumn and fertilization with 12-15 t/ha compost. We can use also another association, oats with clover .

Vetch with camelina mixed as plant support. It harvested in early July. Seeds are separated slightly owing to different size. Camelina is an oily plant, a seed of witch are used as raw material for vegetable oil extraction. Associated crops contribute to increase profitability utilization of the Earth. To exemplify a joint technology and economic efficiency: of Mustard and Lucerne. Lucerne and mustard I year and Lucerne year II.

Technology. Mustard was sown (March 10 to 20), a little later for a permit to cruciferous weeds rises and be destroyed by shame before sowing mustard, Mustard and Lucerne seed was 10 kh/ha.

After sowing a work of a soil cylinder cold crusher and fertilized by certified organic foliar fertilizer.

At harvest mustard, Lucerne is 10-15 cm high so that mustard harvest can do in good condition. The yields of mustard were around 600-1000 kg/ha and by autumn version was obtained two Lucerne yield.

Another technological innovation practiced by the STEPA farm is that apart from pure or associated organic products, it has commonly cultivated medicinal plants such as: *foeniculum vulgare*, *silybum marianum*, *coriandrum sativum*, *camelina sativa*, *trigonrlla procumbens*, *cynara scolynus* and others (fig. 2).

STEPA farm participated in demonstrational exhibitions and due to the pioneer status in the field and innovator it was honored by the visit of the resort minister (4), (fig.3).

At farm level organic agriculture was profitable too.

Table 1. Calculation of profitability at farm level 23456

<i>Crop</i>	<i>Total expenditure lei/ha</i>	<i>Profit lei/ha</i>	<i>Profit rate%</i>
Wheat	1318	1182	89.7
Mustard and Lucerne	1168	772	39.8
Winter fodder	997	253	25.4
Millet	1240	410	33.1
Sunflower	1059	141	13.3
Vetch and camelina	1132	468	41.3

Source: 2

As it can be seen in the table no.1, the wheat has the highest expenditure per ha, i.e 1318 lei/ha but also the highest profit 1182 lei/ha, with a profit rate of 89.7%. The second crop as profitability is vetch and camelina, with a rate of profit of 41.3%, in lei meaning 468 lei/ha, followed close s rate profit by mustard and Lucerne, 39.8%, even if at this crops the profit in lei is higher 772 lei/ha. Millet has a profit rate of 33.1% (410 lei/ha), winter fodder 25.4% (253 lei/ha) and the lowest rate of profit it can be seen at the sunflower, 13.3%, 141 lei/ha.

## CONCLUSIONS

1. Organic agriculture is expanded rapidly in the last decades due to the conjuncture factors such as: the need to built a sustainable agriculture, the emergence of consumers able to pay for more healthy food and not least as a profitable business.
2. After calculating the expenditures and profit on each crop, it can be seen that the most profitable crop is the wheat crop with a profit of 1182 lei/ha, comparing with the expenditures that are of 1318 lei/ha, it results a profit rate very high, 89.7%, meanwhile the sunflower has the smallest profit, of 141 lei/ha, the expenditures being of 1059 lei/ha, it results a low rate of profit, 13.3%.
3. In 2008, for example, the profit obtained on unit area was 1142 lei/ha much higher compared with the conventional system in this part of the country. On the complete cycle production of 6-7 in non irrigated conditions in Dobrogea can obtain a net profit of 530-540 lei/ha/year. With a profit rate of over 45%.
4. Expansion of organic agriculture in Romania will depend both on the growth of export opportunities and demand trends of the Interior for organic production.

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