Abstract. Demographic explosion of the early modern society, which constituted the basic material for the Malthusian theory, is a major problem of mankind. Population growth remains high in absolute terms (in 1950 lived on earth only 2.5 million inhabitants in 1970 were 3.2 billion and in 2006 were 6.68 billion people).

As a result of population growth, agriculture, the main segment which provides food resources, can significantly restrict the activities currently being allotted to each man 0.56 ha farm, of which the 0.26 ha arable.

Because scenarios predict a growing population it is required the increasing of current levels of food production more than proportionally with population growth, so as to provide a proper diet for many people.

Keywords: population, food, evolution, production, agriculture.

INTRODUCTION

Through the role that work have overall resources and production factors, population is the primary component of any society, and therefore in any economy. Population is an indispensable condition of the existence of the society itself, and the satisfaction of human needs, constitutes the ultimate goal of general socio-economic activities, while the production and distribution of goods is only the middle step guaranteeing the necessary aim of the show (Trebici, 1996).

CONTENT

World population grows, currently with an amazing rate (211,000 people per day, 2006). In the year 1300 lived on Earth 250 million people in the year 1492, 500 million people in the year 1804, 1 billion people, in 1959, 1.9 billion people, an increase by 1.0 billion people in 37 years. Thus, you can see an increase on average by about 74,000 people per day, so that in 2006 its population is 6.68 billion people.

On the basis of the submitted data, it is estimated that up to the year 2039 world population could reach values between 5.0-13.0 billion inhabitants.

According to FAO yearbooks, the agriculture, main segment which ensures our food supply, can restrict considerably it’s activities as a result of demographic growth, Currently, for every human is allocated 0.56 ha, of which the arable 0.26 ha (Tab. 1).

From the total land surface of the world, 150 million km2 (16 times larger than the surface of SUA), only 11% are represented by arable land, meadows and pastures 24%, 31% forest. The remaining of 34% are represented by the area of the Antarctic, deserts, and urban areas (Fig. 1).
Global land resources which exist are considerably higher than those we use in present, even if the areas under cultivation, overall world, had involved from 1.274 million hectares in 1950 to about 1.538 million hectares, existing at present.

<table>
<thead>
<tr>
<th>Year</th>
<th>Arable land (1000 ha)</th>
<th>Ha/pers</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1961</td>
<td>0.46</td>
<td></td>
<td>1278693,2</td>
</tr>
<tr>
<td>1980</td>
<td>0.33</td>
<td></td>
<td>1349227,2</td>
</tr>
<tr>
<td>1990</td>
<td>0.35</td>
<td></td>
<td>1401260,4</td>
</tr>
<tr>
<td>2008</td>
<td>0.20</td>
<td></td>
<td>1380515,2</td>
</tr>
</tbody>
</table>

Source: FAO Statistics Division 2011

From the total agricultural area of the world, Asia holds the largest percent of 39.2%, 36.9% is represented by arable land (Kindall si colab., 1994).

As we have seen in which has been presented so far, the scenarios provide a continuing increase in the population of the world. The question arising is: Can the global food production be increased in order to ensure the expansion of the population? Because nowadays many people are suffering of hunger, it will be necessary to increase the current levels of food production higher than the proportion to population growth, so as to provide a suitable diet for more people. Whether food supply can keep up with an expanding human population, is an old question. In 1798, Thomas R. Malthus predicted that population growth would outstrip food supply, causing great human suffering.

In "Essay on the Principle of Population" Malthus tried to see the "genesis and development of economic phenomena, biological factors."

He tried to emphasize that "nature has an instinct in man that if he left voluntarily, he bestows hunger, death and vice." In this context he pointed the immediate danger of fast population growth, along with the relative slowness of the amount of subsistence goods, the latter being reflected in the dimensioning of the power production of a given land. Therefore,
it is a geometric progression in population growth and an increase in the arithmetic progression of subsistence and food supply.

In the early 1960s, most nations had extra-production for food, but were alarmed about a rapidly growing population (~2% annually) caused by Malthus' prediction. Then, the Green Revolution (high-yield crops and energy intensive agriculture) brought some remarkable increases in crop production. World grain output expanded by a factor of 2.6 from the 1950s to the 1980s. Today, per capita production has now slowed and appears to be declining.

<table>
<thead>
<tr>
<th>Year</th>
<th>Grain production evolution over time</th>
<th>Ensured diet kcal/pers/day</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>kg/pers/year cereals</td>
<td>kal/pers/day from cereals</td>
</tr>
<tr>
<td>1961</td>
<td>128.07</td>
<td>1079.29</td>
</tr>
<tr>
<td>1970</td>
<td>138.22</td>
<td>1186.22</td>
</tr>
<tr>
<td>1980</td>
<td>143.49</td>
<td>1246.16</td>
</tr>
<tr>
<td>1990</td>
<td>150.34</td>
<td>1317.61</td>
</tr>
<tr>
<td>2000</td>
<td>148.03</td>
<td>1302.12</td>
</tr>
<tr>
<td>2007</td>
<td>146.7</td>
<td>1289.75</td>
</tr>
</tbody>
</table>

Source: FAO Statistics Division 2011

* daily consumption necessary for an adult person is 2200-2700 kcal.

Although there is a sufficient global food production to ensure each inhabitant the cca. of 2700 calories/day (Tab. 3), according to FAO over 850 million per capita in the world suffer from hunger, while in certain areas of the world (for example, in developed countries in the EU) there is an overproduction which creates special problems, impairing the markets of agricultural products and the demand/supply ratio and paradoxical affect the farmers economy.

There is an inequity for ensuring food production around the globe due to the different productions of plants of high culture in different geo-political zones, productions that are determined by the performance of the production technologies used. Therefore, in the U.S.A. are produced over 3500 calories/capita/day, while in many countries in Africa are producing under 2100 calorie/capita/day.

The cereals are the most important group of plants and they occupy the largest percentage of total arable land in the world. From 500-700 kg of grain per capita/year as it is considered that it would be optimal, most countries produce less than 200 kg of grain per capita/year. Therefore is considered that it is necessary to increase the yields and quality in grain harvest. For a continuous growth population the need of food supply is higher, therefore all groups of plants in high culture should be increased yields by continuous improvement of the biological factor and culture technologies, in parallel with the improvement of the quality of the harvest (Muntean si colab., 2003).

**CONCLUSIONS AND RECOMMENDATIONS**

Currently there are several paradoxes in agriculture, also with reference to cultural plants (phyto-technical plants), namely:

- There is a sufficient global food supply, but a good part of the world's population (more than 850 million people) suffers from hunger;
Although there is a higher volume of information and knowledge that are accessible in various forms, these are less used in general, and they are not so accessible for some agricultural producers;

Agricultural systems become more and more industrialized, but the problems associated with this industrialization become increasingly larger (environmental pollution, pollution of agricultural products, job loss, etc.)

The increasing of large production plants can be achieved by increasing the surface with arable land (extensive system) and by increasing yields per unit of area (intensive). Increasing cultivated area is an extensive growth of yields that man has used it ever, areas under increasing development of human society. Worldwide, the potential areas which might be taken in culture are great (for example, huge areas of the desert), but the real possibilities of making the culture of these areas, in terms of cost and technical efforts, are quite limited. Throughout history, man cultivated important cultural areas, for example with the great conquests such as those that led to the colonization of America and Australia.

Currently, the major areas are taken into cultivation by cutting of forests and cultivation of savannahs in LDCs, but unfortunately this is accompanied by the destruction of natural ecosystems, and often areas that are taken in culture, after a period of exploitation make it unsuitable for agriculture, without being able to return to the original natural ecosystem, turning is finally in desert areas.

In Romania, areas under cultivation grew by taking in the culture of the time course of non-cultivated areas (for example, land in the Bărăgan, Dobrogea) and cutting of forests. Then the Danube impoundment and major water courses has enabled it in important areas of culture. An important way of increasing the surface of cultivated areas, consists in land improvement for soils less favourable to the cultivation of plants, such as sands, degraded soils, those with excess humidity, salt etc. (Madgearu V.N., 1940).

Unfortunately, the real possibilities of raising yields by increasing the areas under cultivation are limited. Changing crop structure represents an extensive growth of non-surreptitious. Increasing the areas cultivated with a particular plant is done by reducing the proportion of suprafelor cultivated with other plants of the crop.

Changing the structure of crops is done according to the needs and circumstances, for example: high demand on the market for a particular agricultural product and the high price offered inflates the surfaces cultivated with crop cultivation (Puia I. si colab., 1998).

Modern production technologies are based on mechanization (the use of machines, equipment and modern farming equipment), chemicalization (the use of chemical fertilizers, the use of pesticides-herbicides, fungicides, insecticides, acaricides, bactericidal, and nematocide, rodenticides etc; the use of growth regulators substance, etc.), automation (computerization, robotizare).

Growth of yields per unit of area is regarded as the most important agricultural production growth, but must be used carefully, because excessive use, unbalanced and in disagreement with the requirements of growing plants are associated with the advent of very serious problems of pollution of the environment (soil, water, air), obtaining agricultural products containing residues of pesticides and nitrates, etc.
REFERENCES