

# The Effect of Cooperative Eugenics through Sustainable Agriculture in Preserving the Environment

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## ABSTRACT

In recent years, with increasing population, more food supplies are required to be produced. This has unfortunately caused the overuse of agricultural lands and chemical fertilizers, which, in turn, has caused the pollution of environment and ground waters, loss of agricultural lands, and endangering the human health. That is why researchers have turned to organic agriculture to minimize the use of chemical substances in agriculture. They have found that one of the most effective ways is increasing genetic diversity in agricultural types, by which they can identify different types that are normally resistant to pests and weeds and have better productivity. With regard to the presence of different sub-climates, it is not possible to identify resistant and superior types in every region, considering the limited facilities of agricultural research centers that are responsible for introducing new types.

**KEYWORDS:** sustainable agriculture, organic agriculture, genetic diversity, evolutionary eugenics, environmental pollution

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## 1. INTRODUCTION

The global population is rapidly increasing. Population growth in the third world countries such as Iran is more intense than developed countries. This has made human being overuse the environment and natural resources as well as require more food supplies which, in turn, has caused extreme use of agricultural lands, chemical fertilizers, and bioenvironmental concerns. At present, around three billion tons of soil is lost due to erosion and the sediments, nutrients and chemical substances used in agriculture enter running and underground waters, annually. Every year, with the aim of short-term benefit as well as mismanagement in farming like overuse of herbicides and chemical fertilizers, overuse of lands, extreme irrigation, etc., there is natural and bioenvironmental imbalance in a noticeable section of fertile lands that consequently turn them into infertile and salty lands. These factors have recently established agriculture as sustainable agriculture. In this type of agriculture, global resources are considered as a fact and supporting the organic farming to protect the resources is for the benefit of human in the present time and future. In organic farming, environment protection is taken into account as a deposit to be saved for the future generation (Shams, 2010) [1].

Using chemical fertilizers and herbicides, that makes environment and underground waters polluted, is minimized in organic agriculture. In recent years, due to extreme use of herbicides, chemical fertilizers, and preservatives, cancer has become prevalent. Scientists believe that if nothing is done to reduce the consumption of these substances, cancer tsunami will occur in the upcoming years and the number of the cancer victims will increase remarkably. To reduce or eliminate the consumption of chemical fertilizers and herbicides in sustainable agriculture, genetic diversity is required in which there are different types of seeds that are compatible with every region and are resistant to tensions and weeds of the given region, and chemical fertilizers and herbicides are not needed anymore (Rezaei, 2012) [3].

In order to decrease the use of chemical substances we should increase the variation of agricultural crops. The best method of creating required genetic variation is administering eugenic plan in target areas, the farmers' farmlands.

It should be pointed out that in this method a mixture of the seeds of different crops are provided to the farmers to identify the types compatible with that region. This eugenic method is called evolutionary cooperative eugenics. Administration of this plan prevents the growth of weeds and consequently minimizes the consumption of chemical herbicides to a great extent, due to the compatibility of crops with cultivation environment and allelopathy quality of agricultural types.

## 2. MATERIALS AND METHODS

Evolutionary eugenic is a simple and inexpensive method for rapid increase of genetic diversity in Iran and the world. It reduces the consumption of chemical substances and protects and preserves the environment for the future generation as a result of less pollution.

Having administered this plan, the presence of eugenicists in farmlands increases and farming experts inform the farmers of the environmental problems caused by chemical fertilizers and herbicides. Dr. Sune Son proposed the evolutionary cooperative eugenics in 1965 and then, it was administered in Iran in 2008. In this plan, a mixture of various types of seed is planted in the farmlands during several years and every year the resistant crops selected normally yield more produce and after six years the farmers would be able to identify the type of crop in his farmland which is resistant to the tensions and weeds of that region and requires no herbicide.

### 3. RESULTS

This plan, due to enhancing productivity and reducing the consumption of chemical substances increases the farmers' income, in one hand, and keeps the environment and people healthy, on the other hand. The evolutionary cooperative eugenics was performed in Iran for the first time at the suggestion of Dr. Salvatore Ceccarelli in 2008-2009. In this year, a mixture of different types of barley was given to farmers by Ikarda, which had a desirable performance. In 2009-2010, Dr. Haghparast thought of wheat eugenics and provided the pioneer farmers with a specific amount of mixed seeds from pure differentiating lines to cultivate in a specific area of their farmland along with a control seed which had been planted for several years.

In the first year of cultivation, the evolutionary eugenic farm had a much higher productivity compared to control one and was not afflicted with disease. With regard to the very good performance of the evolutionary eugenic farm, it was decided that more farmers in different regions be selected for this plan in 2010-2011 to compare the productivity of evolutionary eugenic farms and control farms by t-test. The evolutionary eugenic farm had more productivity than the control farm. In general, the mean of eugenic farms was 30% more than that of control farms and the farmers in the very first years accepted the seed of evolutionary eugenic plan as their main seed and used it in larger areas (Haghparast *et al.*, 2011) [4].

### 4. DISCUSSION AND CONCLUSION

Taking the normal selection and the phenomenon of evolution in plants into account, different types of seeds with maximum productivity and no use of chemical fertilizers and herbicides can be acquired. During several years of cultivation of mixed types of seeds in the target area, the types which are more compatible with the environment and more resistant to the tensions in the given region have more productivity. The remaining seeds in the target region in the past few years, owing to having a root compatible with the soil of that region, in addition to preventing the growth of weeds, eliminating the use of herbicides and consequently protecting the environment, need less irrigation which, in turn, prevents soil erosion.

One of the methods of protecting the environment is increasing genetic diversity in various types of seeds and decreasing chemical inputs. This aim, however, has been fulfilled in evolutionary eugenics. Based on the findings obtained in this study, evolutionary eugenics enhances productivity and resistance to pests and diseases and consequently reduces herbicides' consumption.

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