CRIMSON PUBLISHERS
Wings to the Research

Environmental
Analysis & Ecology Studies

ISSN 2578-0336

Editorial

Three Main Directions for Environmental Protection and Food Security: Plant Breeding, Efficient using of Agricultural Waste, and Intelligent Keeping of Water Resources

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Submission: May 28, 2018; **Published:** August 13, 2018

Editorial

The world population has grown exponentially in the modern era, from about 2 billion in 1960 to over 7.6 billion today and the trend is still rising. An estimated 2050 world population will be 9 billion, and in 2100 over 11.2 billion [1]. The statistics showed that the world population increased by 1.7% annually in 1970-2000 and is projected to grow by about 0.8% year 2050 (1% between 2000-2030 and 0.5% between 2030-2050). World population growth is not homogeneous, population growth is concentrated in countries from the developing world, and the biggest growth is in Asia and Africa. Everyone complains about the oil crisis, but this is not the most important because all bodies die turns biodegradation in oil and billions of animals die annually. The main issue for our planet is humanity and most species of animals multiply beyond measure, which increases demand for agricultural products, given that the planet's natural resources remain the same. Meanwhile, statistics show increasing preference of people to eat meat, which implies the need to increase agricultural production too.

Therefore, humanity is today in an unprecedented situation: population growth, climate change, increasing demand for food and natural resources the same, or even decrease natural resources. What we have to do in these circumstances? The answer is one: to adapt and think global. What are the next steps to save the world population from hunger and ensure food safety? First, natural resources economy - ecological economy. A big problem is that take from one quarter to one third of what we produce [2]. Superior recovery of agricultural waste is by turning them into bio fertilizers by rapid biodegradation with microorganisms. Use organic waste as a resource for obtaining bio fertilizers would solve two problems at the same time, the waste problem and the problem needs fertilizer for crops, which would increase production in a natural way.

The process of degradation is simple to carry out, through the addition of microorganisms of the species Aspergillus niger, Saccharomyces cerevisie, Trichoderma viridae, Bacillus licheniformis, Bacillus globigii [3], after which it will start soon aerobic fermentation process the time depending on the temperature, between one to two weeks. After biodegradation, for stopping the fermentation, one can add hot water and/or extracts of medicinal plants with antibiotic effect, and after another week, the compost can be squeezed to give a bio fertilizers liquid for foliar application and a bio-fertilizers solid, which can be used by applying to the soil or crops or in the greenhouse as organic substrate. These bio-fertilizers promotes plant growth and development, along cycle the growing crop from seed germination to maturity, with the following effects on plants: improving germination; they can be applied together with other fungicide or insecticide treatments, while not enhancing their effect; improving the efficiency of plant metabolism in order to increase production and quality of agricultural products; facilitate nutrients uptake, translocation and use them effectively; increasing more efficiently the extraction of ground water; increasing soil fertility, particularly by stimulating the development of soil microorganisms (when are applied on the ground).

The second method to increase the agricultural production worldwide is to improve the plant productivity, by acclimatization of tropical and subtropical species in the temperate zones and vice versa, using these species in crops or as sources of genes for breeding of local species to increase production and increase resistance pests and diseases, especially for maintaining and even increasing biodiversity.

The FAO Agri-environmental dataset currently includes 24 indicators under eight domains:

A. Air & Climate Change;

B. Energy (use in agriculture and bio-energy production);

C. Fertilizers Consumption;

D. Land (area, use-change, irrigation, conservation, cropping patterns, organic, protection);

E. Livestock density;

F. Pesticide use;

G. Soil (erosion, degradation and carbon);

H. Water use [2].

It knows from statistics that the total world water withdrawal used for agriculture is 95%. That means we must to use water efficiently in agriculture, we must to thinking about reutilization of water by decontamination and to breeding plants in term of develop bigger roots for using the ground water from greater depths. The root system is frequently exposed to a multitude of environmental constraints (such as drought, extreme temperature, lack of essential nutrients, exposure to toxic minerals, and soil compaction) and it is one remarkable feature of roots that they are able to adjust their growth to such changing environments [4].

Protein crops can solve the problem of food safety in the world, but also the problem of environment pollution, by reducing the emission of nitrogen oxides and by enrichment of soil due to the nitrogen-fixing nodule roots. The acclimatization of African legume species in South-Eastern areas of Europe, and also breeding local legume species by genetic cross with African legumes, can increase significantly the productivity and the drought resistance. Life is Science, and if we know how to combine these three directions: intelligent using of genetic resources, saving water and reusing waste, we will can ensure the food security in the future. Everything depends on our actions.

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