

## THE DISEASES AND PESTS CONTROL IN THE FARMING CULTURES, USING BIOPRODUCTS

**CRISTEA L.<sup>1)</sup>, NEAGOE V.<sup>1)</sup>, RADU O.<sup>1)</sup>, NEAGOE M.<sup>1)</sup>, GRIGORE I.A.<sup>1)</sup>, CONSTANTINESCU M.<sup>2)</sup>**

<sup>1)</sup>INMA Bucharest / Romania; <sup>2)</sup> Intermanagement Consulting Bucharest  
E-mail: [larisacristeaclc@gmail.com](mailto:larisacristeaclc@gmail.com)

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### ABSTRACT

*The making of a performant agriculture is influenced among other things by the applicative working technologies, the phyto-sanitary protection having an important role within these technologies.*

*The current research and studies concerning the methods and equipments of applying of phyto-sanitary treatments, are enrolled in the new trends for applying a long lasting agriculture; the phyto-sanitary protection represents one of the main sources of the environment pollution resources.*

*In the first part of the work is presented a syntesis of the aspects concerning the impact of the phytosanitary treatments used in agriculture upon environment, the methods used these days for diseases and pests control and the future trends with reference to the technologies and products used in the agricultural ecological practice and at the end are presented products already used or being at the begining using phase.*

### INTRODUCTION

The agriculture is a basic economic branch by its impact on the social media and the environment.

We cannot talk about the practice of agriculture without referring to its consequences upon the environment.

The achievement of a performant agriculture is influenced, among other things by the level of the working applied technologies, the phyto-sanitary protection occupying a very important place within these technologies.

Current studies and research on methods and equipment for the application of phytosanitary treatments are part of the new trends in the practice of sustainable agriculture, phyto-sanitary protection being one of the main sources of pollution reduction.

It is accepted by everyone that the practice of an intensive farming is also based on the use of synthetic products, especially fertilizers, herbicides, pesticides and other substances, products of the

chemical industry, which have led to a considerable increase of the crops.

But excessive use of chemicals has shown its harmful parts as well. So, chemical fertilizers, used without knowing and when necessary, have caused the destruction of microorganisms, which contribute to the transformation of organic matter into humus, the change in the ratio of the chemical components of the soil, its acidification and other phenomena, all of which generally lead to soil and water pollution. [5]

On the other hand, the uncontrolled or excessive use of insect and fungicides and herbicides in combating diseases, pests and weeds has led to their assimilation by plants and implicitly into fruit, in dangerous concentrations for the health of the population.

An important aspect of achieving effective phytosanitary treatments on the one hand and with a high ecological degree, on the other hand, is the use of adequate

technological equipment, done and equipped to serve the agrotechnical requests for an ecological agriculture. [1, 4].

Diseases and pests control in organic farming is done through several methods: biological (through the use of antagonist

organisms and natural control products), genetical (by improving the resistance of plants to harmful organisms), agrotechnical (through soil works, including weedblowing) and physico-mechanical (thermal disinfection of seeds, seed degreasing, etc.). [5]

## MATERIAL AND METHOD

### ***Organic-based solutions for bioproducts***

Bioproducts are generally biological products made from microorganisms useful in crop plants or from natural compounds (plant extracts).

Because of their biological nature, bioproducts have a complex action on crop plants, the most notable term not being the one of bioproducts used in plant protection, but bioproducts for agricultural use. Their quality is that they are not dangerous for humans, plants, soil, the environment in general. They can be made of handy substances and therefore have no exorbitant prices.

They can be used when the process has occurred or can be applied preventively.

Insects react to odors, vapors, gases, smoke, heat, oils, soap, etc., and ecological insecticides take this into account. For example, strong smell of garlic, tobacco, rhubarb and other plants is repellent for some insects. Sweet peppers, alcohol, salt and other substances can burn or destroy the pests. Oils suffocate for certain insects, and the soap or detergents added to the preparation are designed to make suspensions of the solution stick to leaves and stems. [2].

## RESULTS AND DISCUSSIONS

### **Constructive types of spraying machines**

Considering the field of use and the characteristics of the crops, the machines and equipment to be sprayed are divided into two large groups:

- field sprayers (Figure 1, 2) used for the treatment of small crops (cereals, technical plants, forage crops, vegetables, etc.), which are self-propelled, trailed or worn;
- three-dimensional space sprayers (Figure 3) used for spray application of phytosanitary treatments in vineyards, fruit trees and shrubs, forest nurseries, forests and large-scale leguminous crops, generally of the type worn.

For the description of the various types of spraying machines, they were classified, regardless of the field of use, by the coupling or mounting method in the tractor-sprayer unit in: self-propelled, self-propelled (with chassis and tread) own).

Another classification can be made according to the type of sprinkler ramp, namely: sprinklers with hydraulic, mechanical, pneumatic or hydropneumatic

spraying sprinklers, all of which are designed for spraying machines with a number of common features. [4 ]

Plants have properties to protect themselves against certain pests, so application of insecticides should not be done day by day, but only when appropriate.

### **Requirements for equipment used in phytosanitary treatments**

The technical equipment must be designed in such a way as to ensure the functional parameters in accordance with the requirements of the European Union regulations.

The use of these equipment must be done in accordance with the recommendations of the construction of the equipment, the requirements of the insect-fungicide manufacturer and the provisions of the application technologies.

In order to ensure proper operation, the equipment used in phytosanitary treatments will be regularly tested and certified to meet the following requirements:

- the dispensing devices (spraying nozzles, rotary sprinklers, etc.) must distribute similar amounts of solution / suspension in a constant and reproducible manner.
- the gripping system of the spraying devices must allow strict adjustment of the distance to the treated plants.
- Worn parts must be replaced immediately by new parts.
- spraying systems must ensure a strictly located distribution on the plant row rather than the entire field.

- observing the dose of insect fungicide applied per hectare.

Application of insecticides is not done in sunny weather, as it can cause plant burns, and it is good to sprinkle a single plant before spraying all the crops to see if there are any undesirable effects. [3]

Early or evening in the morning is the right time for spraying. It should also be borne in mind that not only insect pests can be killed but also beneficial insects.

Table 1 lists the main bioproducts and pests.

**Table 1**

Nr. crt.	Pests	Biopreparate used
1	Aphids	Rhubarb tea, soap and oil solutions, alcoholic solution, tobacco tea, tobacco smoke, horseradish, orange peel spray, pork hair spray, tawny tea, coriander tea, shock tea, wormwood tea, peppercorn, garlic spray
2	Thrips	Garlic Spray
3	Mites	Garlic spray, horseradish, lime spray, rubarbar tea, soap spray, coriander tea, salt solution, oil solution
4	Spiders	Coriander tea, peppercorn
5	Harmful caterpillars	Wormwood tea, horseradish tea, garlic spray, rubarbar tea, tobacco tea
6	Ants	Wormwood tea, Tea made of citrus fruit, Garlic spray
7	Leaf lice	Nettle Plate, Tobacco Tea
8	The wool beetle	Tea from citrus peel, garlic spray, tomato or potato tea.
9	Insecte care rod sau sug seva plantelor	Marigold tea, mint spray, garlic spray and hot pepper, alcoholic solution, quiche tea
10	Colorado beetle	Horseradish tea, garlic spray, tomato leaf tea
11	The cabbage worm.	Salt solution, tea from tomato or potato leaves
12	Pests of carrots, peppers, eggplants, cucumbers	Oil solution
13	Fungi	Cream of horseradish, crushed garlic tea, nettle tea, tea from leaves of shock



**Fig. 1. Self-propelled sprayer, manufacturer Maschio Gaspardo [6]**



**Fig. 2. Machine worn by spraying field crops, producer Kverneland-Rau-Vicon [7]**



**Fig. 3. Sprayer in space in vineyards and orchards, Holder manufacturer [8]**

## CONCLUSIONS

Excessive use of chemical products in phyto-sanitary treatments in agricultural crops has determined in time the destruction of microorganisms, which contribute to the transformation of organic matter into humus, the change in the ratio of chemical components of the soil, its acidification and other phenomena, generic, to soil and water pollution.

The uncontrolled or excessive use of chemical insect fungicides in combating diseases and pests has led to their assimilation by plants and implicitly into

fruits in dangerous concentrations for the health of the population.

An alternative to phytosanitary treatments in agricultural crops with chemicals is the use of biopreparations, organic products obtained from plant extracts.

The technical equipment used in phytosanitary treatments must ensure functional parameters and application rules in accordance with the culture technologies and for this purpose they will be regularly tested and certified in order to comply with the requirements of the European Union regulations.

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