ABSTRACT

of the PhD thesis with the title:

RESEARCHES REGARDING THE MANAGEMENT OF SEABUCKTHORN CULTIVATION (*HIPPOPHAË RHAMNOIDES L.*) IN SOIL RECONSTRUCTION AND HUMAN HEALTH

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The PhD thesis titled **„Researches regarding the management of seabuckthorn cultivation (*Hippophaë rhamnoides L.*) in soil reconstruction and human health"** includes a series of studies through several complementary methods for making the most complex research into both soil reconstruction in different ways and the benefits to people's health of this exceptional plant.

The choice of theme has started from the many uses of seabuckthorn in our everyday life. In addition to the positive effect of seabuckthorn on the environment, especially by soil fixation, almost all parts of this miraculous shrub have a therapeutic effect (fruits, leaves, shoots, bark, etc.) and can be consumed in different forms and from desire in the principal to become aware of the specialists and then the population on the reconstructive value of the environment and health through use due to the fact that the important ecological and therapeutic effects of this plant have been proved and confirmed by scientific research and its use in practice.

This paper aims to present and analyze the results of its own observations on the use of seabuckthorn soil in the ecological reconstruction of soils by addressing a theme of real importance, namely the influence of the seabuckthorn on the areas affected by erosion. We consider this particular effect especially due to its highly developed root system and the formation of root nodules.

The study also shows the nutritional value of seabuckthorn, the most commonly used recipes, but also the effects they have on humans, therapeutic effects on health.

The established goal of the research was to carry out a series of studies in order to measure the value and intensity of the reconstruction capacities of the seabuckthorn (*Hippophaë*

rhamnoides L.) on a variety of soils and erosion models, as well as the evaluation of the therapeutic features of the fruit of this valuable plant. Through this thesis, we also proposed to raise the awareness of the authorities in promoting the eco-reconstructive and therapeutic properties of the seabuckthorn in the rural development area – through management models that can be easily retrieved and put into practice.

For this, the study material was divided into two directions, namely:

a. finding ways to improve the ecological state of the land, aiming at the development of the root system, as well as the formation of nodosites, with a direct effect on the improvement of the soil condition;
b. natural products obtained from white seabuckthorn (*Hippophaë rhamnoides L.*), known as the fruits of this plant have a rich content of vitamin E (alpha-tocopherol), vitamin A (β-carotene), vitamin C (ascorbic acid) B2 (riboflavin), vitamin B3 (nicotinamide), vitamin H (biotin), and alpha, beta and gamma carotenes, flavonoids, polyphenols, potassium (K), zinc (Zn), selenium oleic, linoleic, palmitic, palmitoleic, lauric) and so on, which are introduced into the diet through diet, can restore and maintain the balance of the organism.

For the first research direction, the study was carried out in two areas with erosion-degraded soil and landslides, located in the counties of Prahova and Dâmboviţa, where plants were harvested in rehearsals. By calculating the plant height averages, but also the number of drayons and nodosites, it is easy to deduce the role of these plants in soil fixation, hence its ecoreconstructive value. In dynamics, the number of dragons and nodosities increased (from 4.1 to 7.3 for dragons and from 2.5 to 4.8 for nodosites), which means they almost double in only three years. Synthesizing the information obtained in the field, it became clear that the age of the seabuckthorn plants is essential for the level of dragon training. Taking a 5-year age, the first year of plant evaluation, there is a slight increase in the second year (age 7), because at 8 years we already have a very significant increase on the average of all plants under study. Regarding the existence of nodosites in the seabuckthorn roots studied, we have found that the associative assimilation of their nitrogen at ground level does not have an exact recipe, as there is no increase or decrease that can be known in advance. Under the influence of several factors, including the weather conditions, plant health, poor soil in nutrients and micro-organisms, and many others, the number of nodos can vary from one year to another, sometimes even minus. A convincing example is what we encountered, in which year 5 returns to the same number of nodos in year 3 since replanting.

The area set for research has been positioned in such a way that monitoring and measurement of the various parameters is achieved as efficiently and easily as possible. In this respect, issues concerning the cultivation of the seabuckthorn in the areas with environmental problems and the effects of the establishment of the seabuckthorn plantations on the environment were addressed in turn. Concerning the environment, the results were focused on several areas: erosion control, soil stability, restoration of soil structure, as well as the development of agriculture in the study areas, especially through the protection provided by the curtains made of seabuckthorn.

Thus, many valuable features of *Hippophaë rhamnoides L.* (seabuckthorn) fruit shrub have been highlighted, of which:

- → the high drainage capacity, which has the effect of fixing and consolidating heavily degraded land, the phenomenon of ecosystem restoration being quite rapid;
- → improving soil properties due to the plant's ability to assimilate atmospheric nitrogen directly through symbiotic bacteria located in the roots;
- → erosion control and stability of slopes by rehabilitation of seabuckthorn ecosystems (*Hippophaë rhamnoides L*).

By processing the experimental data, it has been found that planting seabuckthorn in both research areas is an environmentally friendly means of soil rehabilitation and can be a viable option for solving land degradation and environmental problems.

On the basis of our own results and observations, our concrete proposal on a possible modeling of the reconstruction system, accompanied by the managerial scheme related to it, could be realized.

For the second mentioned direction, observations have been made about the health status of persons who have accepted to follow, in addition to the medication prescribed by the physician (where appropriate), and homeopathic treatment, determined period of time. Specifically, it is about introducing classical foods (syrup, juice, seabuckthorn, honey with seabuckthorn), traditional dishes known and widely used by the population, without any risk of using them.

Besides the quality recognized by the best natural fortification of the immune system, white seabuckthorn has the quality to treat and help in alleviating many symptoms and even diseases. With this belief and personal observation gained over time, we have implemented this first experiment we thought.

And in this case, research has also been divided into several phases. It began with a study that looked at a few characteristics felt by people who decided to introduce seabuckthorn,

satiety in their usual diet, in various forms. We refer here to immunity, to night vision, to the fatigue normally experienced by each of us. The study lasted for 9 months, after which it was replaced by a much more complex one, considering that the one already performed is affected by a high degree of subjectivism on the part of the respondents. We note that the results obtained can't be calculated by any other assessment test, based solely on the observations and opinions of the 50 questioned persons.

A further 50 people were also co-opted in the research aimed at improving the health status by introducing seabuckthorn, into the daily diet This time we consider the study to be more conclusive and absolutely necessary for those proposed when choosing the theme. In addition to the selection of a wide range of vitamins and trace elements to be monitored, periodic medical analyzes were performed to highlight the fluctuations recorded for each subject.

In this context, the paper presents a number of curative features of se buckthorn fruits This is very useful in human health due to active substances that give it true virtues in various diseases:

- → by the high amount of vitamins, seabuckthorn has a beneficial role in stimulating the body's immunity;
- → the active substances it contains have an important role in regulating metabolism.

All this proves that we have to put more seabuckthorn our daily diet as it improves human health.

As a result of the results obtained from the benefit of seabuckthorn human health, demonstrated by periodical medical analyzes, it was considered necessary to develop a management scheme for the health of cats.

Seabuckthorn is considered as a true green pharmacy because of the bioactive substances presented in the paper and present in the plant, which are considered remedies, important solutions for human health. The products obtained from the seabuckthorn come in real competition with many pharmaceutical synthesis products such as vitamins, stimulants, antioxidants, oils, hormones, immunostimulants, astringents, antibiotics and others. In addition, they benefit from the attribute of "natural", which makes them more tolerable and has no side effects for human organisms and possibly animals.

The results obtained during the research are expressed as informative and justifying indicators, providing the basis for demonstrating that, unlike other plants, seabuckthorn is a valuable plant and can be fully harvested by fruit, leaves and roots.

Conclusions and own recommendations are presented at the end of the paper and are based on the entire research elaborated for this doctoral thesis. Perhaps many of these have

already been mentioned by other authors, perhaps some of the studies have been carried out, but I consider that the theme is complex and managerial schemes are being developed that aim both at protecting the environment and improving the state of health people through a single herb plant – the seabuckthorn.

The doctoral thesis includes a total number of 183 pages with 63 figures and 20 tables. Of these, 47 graphs (figures, photos) and 15 tables are original, and the rest are adapted by processing. The bibliographic references consist of the 114 titles, most of them articles and scientific books.

A small part of the researches undertaken was presented in specialized scientific papers, which were supported at symposiums and subsequently published in their volumes. Three papers have been published in journals indexed in international databases, listed in B+, and are quoted in the paper and have been duly highlighted in the bibliography.

As a last recommendation, at the end of all the studies presented, we can say about seabuckthorn that it is a plant that we can rely on in the future, provided the decision makers in our country understand their usefulness and support their development over time.