



## Main diseases of aromatic and medicinal cultures in production batches of Argentine

Marta Madia

Cátedra de Fitopatología, Facultad de Agronomía, Universidad de Buenos Aires, Av. San Martín 4453, C1417 Buenos Aires, Argentina. e-mail: [mmadia@agro.uba.ar](mailto:mmadia@agro.uba.ar)

The purpose of this presentation is first to put within reach of the agricultural producers the knowledge achieved in the area of diseases showed during culture of aromatic and medicinal species. These advances were achieved by successive research plans carried out in Phytopatology of the Faculty of Agronomy of the University of Buenos Aires, having the support of the Secretary of Science and Technique (UBACYT Projects) of Argentine.

In fact, aromatic and medicinal species have acquired diffusion in the productive picture, reaching the category of profitable alternative for regional and national economies. The importance of these species resides in the wide spectrum of applications of the raw material and derivatives, including greenhouse production, since these species are more required as culinary garden herbs. The application of technical advances in order to obtain the best yields - from the selection of geographical area, the appropriate species for this area, time of the year, sow, implantation, fertilization, irrigation, weeds, up to harvest, and inclusive storing - are few the producers, who take into account insectile plagues, and even less, who consider diseases of parasitic origin. Specialized texts usually deal with the topics of culture, chapters devoted to phytosanitary adversities being very few. Therefore, this knowledge will lead to a continuous improvement of the qualitative and quantitative yield in organs and active components of these species.

Often the first phases of disease are usually inadvertent. Then, isolated yellowish plants observed in a first stage become few years later patches of ill and dead plants, which advance in an unstoppable form until finishing with the whole batch before the afflicted eyes of the producer. The case that represents this situation is the one originated by soil fungi that cause rot

of the crown and roots, withering and death of the specimens. When aerial organs are affected, e.g., stems, leaves, flowers and fruits, injuries are produced, which result in a decrease of yield, and the quality alteration of the essential oils or active principles. Tendency continues to solve these problems of aromatic and medicinal cultures, being from the chemical control, but it is necessary to emphasize that this is a limited measure as a quick way to stop or prevent disease. In fact, profit and final characteristics for the best quality require that aromatic and medicinal products should not be altered by the use of agrochemicals.

The appearance of disease in cultures is not a casual fact, it is necessary basically the conjunction of different factors: host plant, pathogen occurrence, and environment. These components interact conforming a dynamic system: the so-called pathosystem, resulting in disease.

The study of the diseases can be approached from different viewpoints:

. Host: botanical features, multiplication type, cycle. The advance achieved in different projects referred to the following families: *Apiaceae*: cumin, coriander, sajonia fennel. *Asteraceae*: tarragon. *Lamiaceae*: mint, balm, thyme, rosemary, sages, basil, oregano. *Brassicaceae*: white mustard. *Poaceae*: Palmarosa ('espartillo'), lemongrass, and *Clusiaceae*: hiperic, and others.

. Affected organs: *Aerial organs*: folial spots, canker, smut, antracnosis. *Underground organs*: basal rot and withering. *Seeds and vegetative propagation organs*: rot, necrosis, smut and abortion of flowers, etc.

. Pathogens: *According to their nutritional behaviour*: biotrophic and necrotrophic.

*According to the etiologic agent's type*: fungi, virus, bacteria, and others.



Dynamics of the disease: Number of disease cycles during the culture period: Monocyclic or polycyclic diseases. Inoculum, inoculum sources. Survival. Dispersion forms. Host-pathogen interaction. Plant physiologic processes affected by pathogens.

Obtained data allow to act on these factors in order to prevent or to diminish the incidence or severity of the diseases. This is a reality that if it were ignored, it would be not a symptom of a disease, but a lack of knowledge in one of the production topics: the phytosanitary viewpoint. This accounts for the right culture selection according to the characteristics of the area, its implantation, development, harvest and postharvest, since microorganisms can act in each stage.

Causal disease agents identified until now in different aromatic and medicinal cultures carried out in our country, as well as the dynamics of these diseases allow to complete the technological package, which not only implies chemical control, but also facilitates to carry out a handling of disease through agricultural measures that offer a yield increase of a product of the required quality.

The producing sector of aromatic and medicinal cultures characterized by different socioeconomic levels, is growing more and more through small, medium and big enterprises not only motivated by diversification of productions, but by the hierarchy that these species have at international level. Thus, it is necessary to obtain a product of recognized quality.

Therefore, the second purpose of this presentation - justified by the experience obtained from the behaviour of producers and advisers observed until now- is that they acquire conscience about the importance of disease knowledge in order to make an appropriate handling, and to achieve a work as a whole, so that the enterprise takes into account the sanitary area just from the very beginning. In other words, to achieve the appropriate space for technology transfer.

Note: This study was presented at the 'I Reunión de Biotecnología aplicada a plantas medicinales y aromáticas' (First Biotechnology Meeting on Medicinal and Aromatic Plants), Córdoba, Argentina, 2006.