

RESISTANCE INDUCERS AND PHOSPHITES

Plants have several defense systems against pathogens, because they are surrounded by a large number of natural enemies, and all ecological systems or biomass have a large amount of fungi, bacteria, viruses, nematodes, mites, insects and other herbivores.

When a certain plant proliferates in larger quantities, the abundance of "food" for certain natural enemies causes them to proliferate as well, requiring the plants to be protected. The cuticle (outer waxy layer of the leaf) and the epidermis (secondary protective tissue), have several functions such as reducing water loss by transpiration, but also as the first barrier of entry of fungi and bacteria (TAIZ et al, 2004). But the cutin, the waxy layer and the suberin are not the only barriers we know of. In plants there are so-called secondary metabolites.

Secondary metabolites are not directly involved in the growth and development of plants, such as amino acids for example. These secondary metabolites are products of plant evolution over millions of years and are produced for the defense of plants against pathogens. These metabolites are divided into three major groups: terpenes, phenolic compounds, and nitrogen compounds. In these three major groups there is an immense variety of secondary metabolites, some of which will be of greatest interest to Agrochemistry. Many of these metabolites release volatile toxins whose basic function is to intoxicate pathogens so that they reduce their action, or even stop the pathogen action. In addition, for the production of these metabolites, as we know, there is an energy expenditure by the plant, so that it may not supply its self-defense mechanisms efficiently. This is where exogenous sources of certain chemical compounds that supply or stimulate the production of these metabolites, without excessive expenditure of energy by the plant, come in.

But the external (exogenous) supplementation of compounds capable of inducing plant resistance must be applied in a balanced manner, at the right time (usually before or at the beginning of the infestation) so that there is no toxicity in the plant (the difference between medicine and poison is in the dose).

There is a complex system of plant defense, but it can be explained in two primary schemes (and which may differ from one infestation or pathogen to another). However, both schemes serve to explain both the defense mechanism of herbivores (insects and mites for example), and to explain the defense mechanism of an infection caused by a fungus or bacteria.