

## TECHNOLOGY IN PLANT NUTRITION

Several authors are and also many journals related to agriculture already use the term technology in plant nutrition as a kind of new scientific phenomenon. And indeed, it is, although it has always existed. It happens that in the present times, this concept is being taken more and more into account in the production of agricultural and in general agricultural intake, precisely because, as we have said several times in this book, it is this "Technology" that will seek, together (or rather, allied) the protection of plants (pesticides, pesticides, phytosanitary) the best performance of agricultural production.

As for the above parenthesis, the definitions of agricultural pesticides, or pesticides or even phytosanitary products, here, in this chapter, in a way does not matter. In the current Law are still defined as "pesticides" in the wrong way, because this is not the current term. And the Law, as we know, should reflect the progress coming from agronomic research and, in a correct way, at least call such products as "pesticides", which for Agrichemlogy would also not be the correct term. We align ourselves more with the agricultural defensive term.

We comment all this above in this chapter intentionally, that is, we talk a little defensive because, with regard to Plant Nutrition Technology, the defense of plants is one of the mottos, if not the most important of them with regard to productivity. Quite simply (for now), a well-nourished plant is obviously more resistant to diseases.

Therefore, due to this reasoning, it is extremely desirable that plant nutrition develops increasingly faster, more efficient and more balanced techniques from nutritional sources for plants. Fast, because they must achieve, within the natural rules of metabolism of each species of agricultural crop, their objective and, therefore, the correct time of mobility and assimilation of a given nutrient.

Efficient, therefore, once assimilated a certain nutrient, this was certainly accompanied by some chemical compound that helped him in his metabolic route, causing the nutritional destination of any elements to be traversed by a shorter path, thus avoiding energy expenditure by the plant. Balanced, in view of the costs of nutritional sources are high and, with the competitive demand for cheaper and more quality foods, require that nutrients be taken to the field accurately in quantity and volume.

Agrichemlogy here makes a caveat that high levels of nutrients encased in a formulation do not always represent high productivity, unless supplied in low doses and that such doses are allied to chemical components that facilitate the speed and efficiency described above.

The three plant nutrition techniques described above are also linked to precision agriculture, without which the nutritional supply would not achieve the maximum objectives developed by TPN. to achieve the perfect relationship between cost and benefit of sustainable and environmentally viable agricultural production both in the field and at the end of the agriculture value chain, that is, the final consumer's table.

But the concept of **TPN (Technology in Plant Nutrition)** is much more comprehensive than the brief introduction above. According to **ABISOLO – Brazilian Association of Technology Industries In Plant Nutrition** (2019, p.12), the technology industry in plant nutrition comprises as an initial definition as follows: *"Technology in Plant Nutrition complements the traditional fertilizer industry by adding value with differentiated raw materials and increasing technologies in production processes"*.

Technology in Plant Nutrition is the agribusiness branch that aims to study, through qualitative and quantitative statistical results the implications that fertilizer industries provide through interactions involved in agricultural production, especially the climate/soil/plant relationship, formulating effective products through research and techniques that promote greater productivity, within the appropriate management, including the principles of sustainability, generating value for the agri-food chain, culminating in the rapid development of global agriculture.

As can be seen, the above definition is closely related to the concept of Agrichemlogy, its Six-dimension Vision and its Three Fundamental Laws. But for a given agricultural product to reach its maximum efficiency depending on its function within the general classification not only of agrochemicals but also of fertilizers, not only the nutritional supply is simply applied, but also chemical compounds allowed by legislation that provide chemical physical stability, compatibility with other products and especially effectiveness in application and final result. Such compounds can be chelate, complexing and other additives allowed for an agrochemical (not only fertilizer, be it mineral, organic, mineral-organic, or any other types of plant stimulants) to possess the above characteristics. And it is from now on that we can explain some of them.