



 **bascotecnia MINERALES**

“The necessary increase in the agricultural production should be achieved with the same existing resources”



AGRICULTURE

| INDUSTRIAL AGRICULTURAL PROJECTS

| BIOFACTORIES: TISSUE CULTURE PLANTS

Food production is one of the major problems that the world's population will face in the short term. The world has about 6,700 million people and the production of food will have to increase at the same rate as population growth. The increase is so drastic that the amount of food that needs to be produced over the next 50 years will equal the total food production in the history of mankind.

Human being must face the problem of the reduction of soil and water resources as well as the fundamental task of preserving the environment so that future generations have a world capable of sustaining life as we know it today. This is an immense challenge, as we do not have new reserve areas to set up more agricultural fields. So, the necessary production increase must be achieved with the resources we have now.

Developing countries must be provided with food security in order to ensure the supply for future generations.

Our projects provide solutions to the problems arising from the volatility of prices in agricultural commodities by enabling our clients to save on foreign currency and generating jobs in the production, processing, distribution and marketing processes of agricultural products.

INDUSTRIAL AGRICULTURAL PROJECTS

How do we achieve maximum agricultural production through the development of sustainable agriculture without damaging the ecosystem and the environment?

STUDIES IN AGRICULTURE / AGROMANAGEMENT

The technical and practical knowledge of the development of biochemistry in the last 20 years has enabled us to conduct feasibility and diagnosis studies on the agricultural production for any farming type in any continent.

The use of bioactivators for seeds, bio-fertilizers for cultivation, organic fertilizers, soil fertility activators, and minimal or zero application of pesticides, allows us to guarantee an improved agricultural production in many parts of our planet.

Our scientific and technical know-how and its application on the products developed with these principles, is complemented with constant supervision and technical assistance on the crop, in every phenological stage.

An analysis of the equilibrium at molecular level of the nutrients (scanning the leaves), the transmission of the data obtained via satellite to our Database (giving a real time image of the crop's nutritional status and stress levels), with the support of qualified technicians, allows us the immediate control of possible deviations in production.

The application of this know-how to the farming, allows us to obtain the maximum profitability:

- Analysis of soil and water.
- Determination of cultivation.
- Fertilisation strategies.
- Crops preparation and growing.
- Monitoring and control.
- Staff training.
- Technical assistance.
- Establishment of timelines.
- Establishment of target yields.

In **Bascotecnia Minerales** we are aware of the importance of a comprehensive service. Therefore, we assume the responsibility of the management. We also offer the possibility of local staff training as an additional service.

AGRICULTURAL EQUIPMENT

Our experience allows us to analyse the needs of each project from the soil preparation, through the processing plants until the product reaches the end user. Tools are required for improved agricultural production. We can advise on the necessary equipment that best suits your needs and supply them:

Earthmoving machinery: Bulldozers, graders, backhoes, hydraulic hammers, rollers, telescopic handlers, etc.

Agricultural machinery: Tractors, cultivators, fertiliser applicators, etc.

Soil Preparation: Disc plow, disc harrow, subsoiler, roller compactors, graders, etc.

Sowing machinery: Coarse grain seeders, augers, vibro-cultivators, etc.

Harvesting equipment: Combine harvesters for specific crops, forage choppers, trailers, etc.

Spraying Systems: Automatic equipment, manual backpack sprays, drip irrigation systems, etc.

Storage: Silos, warehouses, cold rooms, freezers, etc.

Sorting, grading and packing: Sorters by volume and by weight, scales, square balers, distribution trucks, etc.



| BIOFACTORIES: TISSUE CULTURE PLANTS

The raw materials of any agricultural project are the seeds, cuttings or the so-called vitro or micro-plants. The latter are those plants hardened in trays that can be moved directly to the greenhouse or to the field. The quality of the raw materials must be taken into account and it must be given the importance it deserves.

| BENEFITS

Biotechnological techniques and in particular those concerning the in vitro regeneration of whole plants, are alternative ways of propagation that can successfully complement conventional methods of vegetative propagation used in various species.

Additionally, they allow dealing more effectively with programmes of improving, conservation and safe exchange of germoplasma. In vitro propagation has exclusive advantages such as:

- Achieving fast and large-scale propagation of the selected plants in a relatively small area.
- The propagation is carried out under highly controlled aseptic conditions and the plants produced are free of virus and pathogens, such as bacteria and fungus.
- It makes possible the production of clones in species where plant propagation is slow and difficult, even impossible.
- In some species in vitro cultivation gives plants new temporary characteristics that improve them.
- Propagation is made continuously throughout the year regardless of the season.
- The vegetative material produced can be stored for long periods of time.

Our experience has enabled us to develop one of the most complete and novel design projects: the construction of a Commercial Laboratory for Plant Micropropagation, also known as a Biofactory or Tissue Culture Plant. It consists of a Germplasma Bank, a Tissue Culture Laboratory and Greenhouses and its design stands out for:

- Its architectural structure, that physically separates the two main production areas (sterile and non sterile) with the appropriate distribution of the premises to ensure a rational flow of operations and reducing the risk of contamination, all with maximum use of sunlight.
- Its ability to collect the most important technological results on in vitro plant propagation. Among these, we highlight the use of simple and economical cultivation means, the chemical sterilisation, and the use of liquid culture means in all the species and stages of micropropagation that permit it.
- The successful combination of conventional micropropagation methods with the most advanced cultivation systems such as Temporary Immersion Bioreactors and somatic embryogenesis.



GENERATING A SOCIAL GOOD

The starting up of a production plant permits the increase of the number of jobs with varying levels of specialisation. It also guarantees the stability of propagation materials for the agricultural development, by creating a controlled product (vitroplants of species with a high impact on the agricultural development in any region).

The controlled and marketable product generates incomes that allow the involved parties to obtain profits and thus, a direct growth of their economies.

As additional services in the future, a biofactory can provide technical advice or other scientific and technical service on plant production and laboratory management.

Reduction in expenses. The development of a biofactory or a tissue culture plant in one of the so-called “develop-

ing countries” also means to produce vitroplants at much lower costs compared to the imports from other countries, due to several factors, among which we highlight the following:

- Sunlight in the in vitro cultivation chambers.
- Low concentration of hormones in cultivation means.
- Temporary Immersion Bioreactors.
- Highly qualified technicians that constitute a highly skilled and cheap workforce compared with those of the developed countries that produce through the in vitro cultivation techniques.





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