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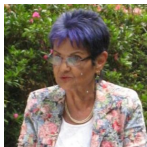
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## ***Ignorance of the Economy of Nature and its relationship with the capitalist development economy system***

When human beings manage to eat according to the hunger felt, in a healthy way and in peace with nature, only on that day will the world be able to be just and can be called "civilize".



*The ignorance of the economy of nature and agroecology, carried out by the system of capitalist development economy and then strengthened by the so-called Green Revolution carried out through conventional agriculture, have been the cause of the rupture with the agroecosystem and the modified systems.*



### *Introduction*

The rupture of the ecosystem began with agroecological management, from the beginnings of agriculture, then with the agricultural revolution and is strengthened later with the industrial monoculture of the so-called *Green Revolution*, at the point where the relations of biocenotics disappear, especially in undeveloped countries, where malnutrition due to protein deficiencies is important, thus losing a genetic "*pool*" of vital importance, if we consider that these deficiencies can only be filled by plant protein sources from legumes. In other words we can say that the situation is too serious, since the irrational industry of agriculture has made 75% of tropical legumes disappear, thus narrowing their range to a few improved varieties and the remaining 25% is in serious danger of extinction due to the introduction of transgenic seeds. The modification of the agroecosystem carried out in California is not the same as the transformations that would be carried out by a group of indigenous people of the Amazon. While the FAO estimates that 25% of the poor population receive a lower than normal protein ration.

There is a great imbalance between the real needs of human beings, the production of food and the economic capacity to obtain it. This imbalance is further aggravated by catastrophes, market wars and economic differences between rich producing peoples, who impoverish poor ecosystems and poor and under-populated consumer peoples with these productions. The ecological crisis of modern agriculture, which involved in the world 265 million hectares in 50 years, under the false premise of the "*Green Revolution*", whose purpose was to produce more to feed the world population, in less time and at lower costs. Unfortunately, no ecological basis was taken into account and the monoculture of two

species predominated: Cereals and 23 other monocultures, transforming forests to the detriment of biodiversity.

Added to this is land tenure that is increasingly concentrated in the hands of large businessmen and private corporations that control the best land, soil and water resources for the production of crops of high commercial value. The lack of economic opportunities in rural areas that force the migration of thousands of people, especially young people, contribute to feminization and the character of elderly people who remain to work in agriculture.

Developed countries absorb 50% of the world's consumption of agricultural production. People who have money to buy more food do not need to do so, since that money is used to pay for the ever-increasing margins: marketing and processing, packaging, taxes and other services.

The painful fact is that while this happens in developed countries, in the rest of the world at the same time, a considerable part of the population continues to have low levels of consumption and access to food, with the consequent persistence of levels of malnutrition.

The dawn of the *Green Revolution* dates back to the post-war period of World War II, but it was only in 1968 that Webster's college dictionary defined "*The Green Revolution*" as "The Great Increase in Cereal Production: Rice, Wheat and Grains such as Corn, due to the introduction of high yield of genetic material and the use of pesticides, as well as the best cultural practices."

Secondly, Blaak states that *the introduced high-yielding varieties* were reproduced on a scale with a very small genetic base, compared to the base of traditional corn and wheat plants. This is how this substitution produced the loss of a diversity that is irreplaceable for humanity. The destruction of diversity and the simultaneous creation of uniformity requires the destruction of stability and introduces vulnerability. In other words, as Labeyrie states, "It is the simplification of the ecosystem, the cause of its fragility and thus allowing the increase of exogenous and endogenous pests."

Today the new miracle is the seeds modified in their genome, transgenic, or the O.G.M., accompanied by the package of specific inputs, which include hybrid and modified seeds, which create a dependency; These seeds that the farmer must buy or import are already produced by the large transnationals, as well as specific chemical fertilizers.

The technicians see it as "a single pain of large-scale growth" and an urgent need for positive change and at the same time add that "these types of pains were suffered by *the Green Revolution* in its origins."

Enough mistakes have already been made, why repeat them a second time? Mistakes are for learning and not for repetition.

### *The management of the Agroecosystem*

It is called Ecosystem Management, the development given by the conception of the economy of nature that must include sustainable development and is the one that respects the interrelations of nature, satisfying the needs of present generations, without compromising the ability of future generations to meet their own needs.

If on a Cartesian plane we give definitions to X, Y, Z and in the case of capitalist or neoliberal economic development, we will call: X = Economic Development, Y = Nature, Z = The human species.

We have then that: *capitalist and neoliberal economic development* and the human species depend entirely on nature, until a time is reached when nature is not able to sustain that dependence and is exhausted. If this dependence continues, exhaustion will be total and then when nature disappears, the economic system and the human species also disappear.

Whereas if there is *a sustainable development*, the parameters change and we have then: X = Nature, Y = Sustainable development, Z = The human species.

Here nature occupies the X axis and not the Y axis as it does in *capitalist development*, where the premise is decision-making. Always remembering that the human species and its continuity on earth depend on nature and not on the *economic system of development*.

The soil is the only factor that can be modified and managed by man, the deliberate action of man and his agriculture as a modifier of the soil in its two qualities: Pantry of humanity and regulator of flows.

That is why *the Green Revolution* gives a management where productivity costs increase, compared to peasant forms of cultivation and breeding, so apparently the yield per unit of surface is improved, the key source that makes it ecologically unsustainable is the damage to the potential of the soil.

The agriculture of *the Green Revolution* constitutes a threat in the deterioration of the soil and in terms of productivity. Therefore this agriculture of *the green revolution* was not, is not, and never will be *sustainable agriculture*.



Can future food needs then be met using more of the same types of agricultural investments promoted over the past three decades – based on research, extension, infrastructure and policy? Or are producers and decision-makers the ones who should seek other environmentally sustainable, economically efficient and socially equitable ways to increase the world's food supply? Are there such alternatives? What is the potential of production strategies that depend more on agroecological management than on capital investments? more from local resources than from external inputs, and more from biological processes than from chemical applications?

There is no doubt that in the future there will be a need to increase food production. Increasing public and private investment in agricultural research and extension is certainly critical and well justified, considering how long it will take before new practices are widely accepted and fully exploited.

Alternative Agroecology for the management of Agroecosystems

Taking into consideration innovative programs in Africa, Asia and Latin America, a growing exchange of agricultural research and extension efforts more focused on strategies based on agroecological concepts is considered desirable.

This approach offers opportunities to increase food production, not only in quantities but in multiples. As seen in case studies, a better combination of culture, soil, water and nutrient management, integrating livestock or fish into agricultural systems, in addition to ecological pest management processes, often achieves an increase in production of 50 to 100% or more in a wide range of circumstances, even in some quite adverse from the agricultural point of view. Governments, researchers, donor agencies and farmers – should know that there are numerous alternatives in agricultural research and development that deserve to be researched and supported.



There is no doubt that if these alternatives are taken seriously – and refined, adapted and disseminated – it will be possible to determine whether the world's population will successfully meet their nutrition needs and, at the same time, maintain a natural and social environment appropriate to life in the twenty-first century.

Projection is needed on when exactly, in this century, producers around the world will need to double the current level of agricultural production to meet the requirements of a

larger and, as everyone hopes, more prosperous population. At present there are large unmet food needs.

Few doubt that sooner or later production will have to be substantially increased. However, whether the deadline is 2030 or 2050, the most important thing is how to find a way to meet this gigantic challenge of doubling the world's food supply.

*The conversion of agricultural production systems*

One of the reasons why many farmers make a conversion from a conventional monoculture agricultural production system, managed with agrochemical inputs, to a more diversified system with shade trees, or with the introduction of polycultures, is to achieve a quality production that is stable, little dependent on extreme inputs, that at the same time allows them to lower production costs and at the same time conserve the natural resources of the farm, such as soil, water and Agro biodiversity (Altieri 1995)



The ultimate goal of researchers who develop and promote organic management techniques is to design agroecosystems that have a high resistance to pests and diseases, a high capacity for recycling and retention of nutrients and energy from the agroecosystem, as well as high levels of biodiversity (Gliessman 1998). A more diversified system, with a soil rich in organic matter and biologically active, is considered a non-degraded, robust and productive system. In other words, it is considered to be *sustainable or healthy*, to a coffee agroecosystem, rich in biodiversity that from a series of synergisms subsidizes soil fertility, photoprotection and productivity of the system. (Fernández and Muschler 1999).



One of the challenges faced by farmers, extension workers and researchers is to know when an agroecosystem is healthy, or rather in what state of health it is after the conversion to agroecological management has begun. Researchers working in sustainable agriculture have devised a series of *sustainability indicators* to assess the state of agroecosystems (Gómez et al. 1996, Masera et al. 1999). Some indicators developed consist of making a series of observations or measurements at the farm level, to see if the soil is fertile and conserved and if the plants are healthy, vigorous and productive; in other words, the indicators serve to *take the pulse* of the agroecosystem. For this it is necessary that these indicators are:

- relatively accurate and easy to interpret
- sufficiently sensitive, possess complex knowledge, to reflect environmental changes and the impact of management practices on soil and cultivation
- able to integrate physical, chemical and biological properties of the soil to be able to relate to ecosystem processes, such as capturing the relationship between plant diversity and stability of pest and disease populations (Altieri 1994)

For the conversion to an agroecosystem, we need to have a mastery in the management and reconstruction of soils, for which it is essential to know: what a soil is and what tropical soils are; knowledge of the physical properties of soil naturally depends on the relative proportions of the elements of that soil and the way in which these elements are associated with each other, to form structural units. Texture is the elemental composition of a sample defined by the relative proportion of the constituent elements, grouped into classes or dimensions after being individualized.

The soil is a living element, since it houses many microorganisms that are part of the evolution of that soil and that make it fertile, very healthy and that its elements are usable for plants.

For the soil to preserve its life, it is necessary to know how to treat it; then he will allow healthy and strong plants that resist diseases and insect attacks. The fertility of a soil is the attitude of the same to produce crops according to their intrinsic qualities, which are closely linked to the cultural techniques used for planting. In a soil there is: the current fertility, which is the attitude or ability to produce in the current conditions of the crop, and which is measured by the yield obtained; potential fertility, which is the ability to produce under optimal nutritional conditions. It is at this point that the hand of man enters



to influence with the improvement of the modifiable factors, which are measured by a maximum yield, also come to play the limit factors, such as the elements that are in weaker quantity in the horizons of the soil that reaches the roots relative to the needs of the plants

It should not be forgotten that in a soil it is necessary to take into account the restitution of the elements that are taken in the harvest to said soil, namely:

- Losses from soil washing
- Correction for eventual deficiencies

As well as the use of contributions of fertilizing elements by fertilizers that allow us to rebuild. It is also necessary to take into account the slopes of the land, where polycultures are established and pay in crown; the applications of a SUPERABONO will be made every six months, during the first year of establishing the polycultures in the agroecosystem; then according to the type of crop, if it is perennial every year, if they are transient crops only one application will be made after three months; one kilogram per plant will be applied, in the form of a crown, this process will be done after the plateau of each plant, since the streets will not be weeded and only the site where the plant is planted will be plated, one meter in diameter around; if they are crops in pending sites it will be done in a semicircle and applied at the top. To all these different types of composting results from the mixtures of compost, humus, gallinaza, or otherwise Baiyodo and Bocashi plus 10% sand, and mycorrhizae we can obtain a SUPERABONO, rich in NPK and minor elements. At the time of flowering and before fruiting to this fertilizer you can add bocashis, londrinaza and gallinaza.

Phytosanitary problems are the result of the mismatch of the ecosystem, which leads to skyrocketing populations of insects, fungi, bacteria and viruses that cause diseases in crops; it is the insects that attack them that most often open the gateways to diseases.

It is the biological control exercised over this agroecosystem, which gives the natural regulation of insect populations whose populations are in abundance causing damage. This control is exercised by other Parasitoid insects, such as: the Braconidae; by predators, such as: Formicidae, as well as interspecific competitors such as Nematodes, protozoa and mites; by pathogens such as: Fungi, bacteria and viruses; as well as cultural

methodologies. Without falling into the serious error of the management of these phytosanitary problems through the call: *CLEANER PRODUCTION*.



### *Conclusions*

The *pace of growth* in *world agricultural production* is slowing, because there is enough food for consumers with purchasing power, while in third world countries food is needed, but there is no need to buy it. That is why one of the major concerns is how to estimate the sustainability of agroecosystems in these countries, this has become today a priority of many agricultural researchers.

Hence the serious error of assuming the erroneous conception imposed from the high levels of government, and without true self-criticism and constructive criticism; that is why all its programs continue to be developed from this myopic perspective of "*CLEANER PRODUCTION*"; it is necessary that this criticism transcend today to the Ministry of Environment, Housing and Territorial Development. And that of the "*GREEN REVOLUTION*" to the Ministry of Agriculture.

The history of "*Cleaner Production*" is and must be a stage overcome, since it is necessary to assume the integral management of ecosystems in all their components; in this aspect, what has been done so far is to change both at the Ministerial level and at the Corporate level, something bad, for something worse; since it seeks to revalidate or reconvert the ecosystem, which is equivalent to improving with poultices the pain caused by an

infection, instead of proceeding to nip the infection in the bud; it's almost like washing your face without washing your body. It is therefore necessary to assess the damage caused and make the real innovations and substantive changes and not make adaptations and improvements to reverse the damage; because this is not what the intervened and damaged ecosystem requires. This will only be achieved by assuming the conception of the "Economy of Nature", which contemplates sustainable development, without continuing to perpetuate itself in a model of capitalist development, which by its very nature is unsustainable. It is a question of rethinking the system and assuming critical positions; since being critical is the possibility of constructing different opinions in a democracy.

Because otherwise we will be condemned to remain a third world country and consequently the garbage dump of the planet; we will then be the receivers of radioactive waste, the door opened by the opening that will be given by all the signatory countries of Economic Globalization and NAFTA. In our country, for example, the problem of migrant pests in this exchange has not yet been contemplated, which have not been foreseen, nor has the introduction of generic pesticides, nor of others that currently have free entry into the country. In Colombia there are deadly pesticides without any control; such acts deserve pronouncements and the formation of a current of citizen opinion, which affects government decision-making, prioritizing national interests. The problem of the "*Green Revolution*" continues to stand and the order of the day with its transgenic monocultures, with the destruction of the Sovereignty and Food Security of the country, which is on the verge of suffering unprecedented risks.

In order to reach the development of a comprehensive vision of ecosystem management, it is necessary to be able to count on professionals who have a complex thinking, who have training as a biologist, agronomist, forest engineer, forestry technologist, agricultural technologist, sociologists, anthropologists, nutritionists, who also have basic knowledge in: ecology, tropical soils, territorial zoning, basic economic criteria in economic policies, sustainable development, in The Earth Charter, that is, the knowledge of the Economy of Nature.

It is necessary to have true officials who have a holistic vision, complex thinking, open and universal mentality; it will be necessary that they know the management of the environment from an economic approach, that they understand the relationships and dependencies of the human species with respect to the ecosystem. In the personal sphere,

these officials must be humble to be able to discuss, understand criticism and be capable of self-criticism, have a dialectical sense of the world, which will be what will give it the universality of the conception of it, primordial qualities that a true ecologist must possess.

In a word, we are still far from a notion of food sovereignty. This notion is understood as the right of peoples to feed themselves in correspondence with their social, economic, environmental and cultural specificities. Within a concept of holistic perspective of the food system, where food is available and self-sufficient. That is, with possibilities of its purchase in fair markets, with quality and quantity of healthy food and free of all kinds of contaminations.

Food sovereignty presupposes a sustainable care of natural resources.

It could be said, without seeming daring, that food sovereignty will be a reality, the day when the world is freed from the globalizing uniforms of the neoliberal capitalist world. The day on which the political measures are adopted to achieve sustainable agroecosystem management agriculture, which allows undeveloped countries to ensure their food sovereignty. When human beings manage to eat according to the hunger felt, in a healthy way and at peace with nature, only on that day will the world become just and can be called "civilized".

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