System Dynamics in research processes about Sustainable Human Development of the Colombian agricultural sector

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ABSTRACT

The present paper intents to make up a development proposal compressive approach of the horticultural sector, it lets integrate different research effort and technological intervention by CORPOICA, in the frame of long time program which promotes the sustainability of this sector. The approach is built over System Dynamics attempting make synthesis with the Sustainable Human Development conception and inquiring the System Dynamics models use in agricultural planning and the organizational learning role in the social web built. In the frame of the sustainability, alimentary security become more important as research subject, technological intervention and social strategy. In the context of our country, it is support in the agriculture, beginning with local alimentary security proposal and actually as rural space rebuilt alternative, employment generation space and competitively strategy. In this context, the social capital is seen as an strategy for Organizational Learning, in other words, Communitarian Learning.

Key words: Systems Thinking, System Dynamics, greens, agriculture, human sustainability development.

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INTRODUCTION

Problematic of the horticultural sector

The agriculture have been in the history of our country as a important sector in the economy, since it is a cultural space of good part of the population and as the food and nutritional support par excellence in families, but today one sees this is one of the most economically affected sector, for the high costs of the production, the low profitability and a high sensibility to plagues and diseases and in the social aspect for the problems of violence, generators of displacements, decrease of the employment occupied in this sector, high risk in the production and disintegration of the communities that before were devoted to agriculture.

In the evaluation of the technological intervention for the horticultural production, they find big efforts for the control of plagues, innovations in the managing of soil and treatment of inputs, but a lack of appropriation of these practices for the communities, a scanty interest in the systematizing of these practices and in the consolidation of conditions to return to produce that allow to support the sector and to generate well-being to the above mentioned communities. Why is this phenomenon?, What is need to gain major participation of the communities to the technological support?.

To this question, one adds a history of fragmentation of the sector, with socio-economic conformations of small farmers. It could be find, in the middle of industrialized crops which need big extensions of land (as the coffee, the sugar, the soy bean, the rice and the cotton), plots, farms, indigenous accessions that support the economy and the way of life in the horticulture, implying an important restriction for the producers to affect the chain of production - distribution and consumption in which the intermediary receives the bigger utility. Why they could not have joined around an association?, Why they do not improve their living conditions?.

From the ecological point of view, they have found high indexes of pollution in the production process of vegetables, presenting the paradox of a highly nourishing production that generates big environmental damages caused by the erroneous handle of soils and of systems of irrigation and the excessive use of agrochemical. These indexes are increasing, marking the high environmental degradation. Why not to care the resources for today and tomorrow?, How the resources might be guaranteed in the long term?

In relation with the economic aspects, one finds an inequality in the distribution of utilities of this company, the profitability for the merchant is excellent and the profitability of the producer is high dependent of the intermediaries. Why have not been created communitarian organizations which look for the best economic benefit of the producers?, What needs the producer community to assume this challenge?

Systems Thinking Contributions

The search for integration, comprehensive look of the phenomena that orientates the

Systems Thinking, comes to be the first exercise to developing for the group in the study of the horticultural sector, in the social, cultural, political, economic and environmental context, with a structure of relations between producers, distributors and consumers.

In a synthesis look, there are looked other aspects that they affect or are seen affected by the existence of the horticultural sector to regional, national and international level.

The strategic role identification of every element participation in the attainment of a major intention, Systems Thinking fundamental orientation, is assumed in the study of the horticultural sector trying to construct felt to the participation of entities as CORPOICA with its research and technological transference in the frame of five-year programs.

System Dynamics Contributions

The System dynamics appears as a methodology based on the feedback, principal element of the sustainable processes, for the case of the horticultural sector, supporting relations of circular causality it is guaranteed to be able to return to cultivate, return to harvest, to return to sell, to return to commercialize and to return to consume.

The search of the different elements interdependencies and the system actors to its interior and in its context, leads us to construct a system, comprehensive look and horticultural sector dynamics.

The projection that orientates the System Dynamics by means of the simulation of possible scenes leans the visualization and reflection of the growth speeds of the diagnosed problematic and its limit conditions, as well as the possible system answers to intervention decisions.

In agreement with the restlessness increasingly felt by the System Dynamics community, because skills develop, besides the skills for the modeling and simulation, to intervene by means of the effective work with individuals and groups that makes the knowledge explicit, System Dynamics promotes the learning and the consensus creation. The System dynamics appears as an alternative for the social fabric construction about the horticultural sector, calling for the dialogue and for the organization of the community in a learning community that constructs development meaning about the horticultural activity.

In search of the horticultural research meaning

It is as well as, from the technological intervention that comes offering CORPOICA to communities and of the evaluation of their response and of the conditions accession to continue supporting the farm development, the questions have been illuminating of this investigation previously exposed and in better definition better and possible solutions, other offers are started relating to shared worries and between them the offer of Human Sustainable Development.

Defining sustainability in the horticultural sector

From the point of view of the Human Sustainable Development, is recognized the need to create "social capital", as the capacity to the community be organized to create processes of permanent management of well-being conditions that make possible the economic continuity, social and environmental activities. This capacity of social capital construction is based on "the human capital", supported in the autonomous actors formation of their development.

CONCLUSIONS

Before the exposed problematic and the limits search to assume the study and intervention from the academy and the technology management in horticultural sector, there is demonstrated the urgent integration need of other sector actors, since they would be the way distributing, consuming, state and privately and the producting communities with their cultural history about the horticulture meaning.

In the first idea construction of sustainability for the horticultural sector, the research can start creating a more critical dialogue with offers as that of Human Sustainable Development. The System dynamics appears as suitable environment for this dialogue. To define how doing it, is the exploration in learning communities. It is the next step.

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