



## **Influence of the used technologies in the water supply for agricultural and human usage in the permanence of the water resource in Pueblo Nuevo, Condega, Yalagüina, and Santa María.**

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### **What happens with water technologies?**

Each time the claim of the rural population of Las Segovias demanding solutions to the lack of water for agricultural and human usage is bigger, this has come to such a level, that conflicts between citizens because of the use of water have increased, causing deaths in some communities.

Aware of that, the Association of townships of the river basin of The Estelí river considered important to carry out, with funds of ADESOS a research process on the used technologies for human and agricultural usage of water in four townships: Condega, Pueblo Nuevo, Yalagüina and Santa María.

The objective of the research was to find out the linkage between the used technologies in 18 communities of the formerly mentioned townships and the permanence of the water resource, aiming to define some alternatives that contribute to face the severe lack of water that the towns of the river basin of Estelí river are experiencing, particularly those sectors located in the dry tropic.

### **Methodology**

We consulted community leaders, farmers (owners of water systems), technicians of Governmental and Nongovernmental Organizations with experience on the topic,

and users of the water systems, in order to obtain different perspectives of the problem. Magazines, books and documents with information on this topic were also consulted, in order to strengthen the theoretical basis of the research, and in order to make good use of some documented experiences for the analysis of the question submitted to research.

The universe was the rural communities of Pueblo Nuevo, Condega, Yalagüina and Santa María. Within this universe, 18 communities of the formerly mentioned towns with different agro-ecological characteristics were selected as a sample.

To select the sample communities, the non-probabilistic sampling procedure with the following criteria was used:

- Existence of water technologies for human and agricultural usages.
- Communities with similar agro-ecological characteristics.
- Communities with problems for the access of water.

Three of the fourth towns belong to the river basin of Estelí river (Pueblo Nuevo, Condega and Yalagüina), and out of this river basin is Santa María, that is a town that experiences a severe lack of water.



Four kinds of techniques were used:

- Documental: Books, documents and magazines with information about water or with experiences in the use of water technologies were consulted.
- Surveys: 194 out of 198 foreseen surveys were filled out by users of water systems, owners of technologies and female producers.
- Interviews with open questions: 49 out of 54 foreseen interviews were applied to producers and community leaders.
- Workshops with focal groups: three workshops were carried out. (Pueblo Nuevo, Condega and Yalagüina), mainly with technicians of NGO and governmental institutions.

### Results:

Nine technologies for human usage of water, and ten systems for agricultural use were identified. 40% out of those for human use have a covering for more than ten families and the gravity mini-aqueducts with public access are present in 50% of the sample communities.

The research revealed that the impact in the use of new water systems is not present in its entire dimension due to two main reasons:

- The poor generalization, in a way that in some communities a minority are the owners of these systems.
- The new technologies regularly belong to small producers, excluding this way, major producers who usually have plantations that require great amounts of water resources.

One of the questions we had during the research was: what factors are contributing to

or obstructing the adoption of technologies, be these producers or users of human usage systems of water?

As a result of the research we were able to identify the following elements that are making possible or that are obstructing the adoption of technologies:

First of all we find the lack of water, as it becomes more severe, the population and producers are more interested in the ways to decrease the use of water for farming, or in technologies that help to face this new reality.

Another key factor is the presence of organizations that promote the implementation of new water systems, funding their installation and carrying out training processes to assure their efficient usage, nevertheless, there are some problems regarding these institutions as for the assistance, since the majority of them include only a reduced number of benefited people, this fact obstructs their generalization due to the difficult economical situation that peasant families are facing.

To achieve that an important number of producers of one community use new water systems it is necessary to create favorable financial conditions that permit to obtain new technologies for them.

The adjustment of the technologies to the characteristics of the zone, play an important roll in their adoption. This way, we can see that in those places, where the water is deeper under the ground, it has been difficult the water pumps EMA to be accepted, since the water extraction means a great effort and sometimes, in the season when the crisis is bigger, it is impossible to obtain water.



The link between the use of the technologies and their implications in the economical life of those who use them is a situation that should be carefully analyzed. In the research we find out that when producers are shown a water system that has major results or at least equal volumes and quality of production with the same physical efforts the possibilities of acceptance are increased.

The cultural pattern in the use of water is an element to be taken in count for the adoption of technologies. There is a perception of some producers that in order to be sure of the success of the farming, big amounts of water must be used, which not necessarily matches with the needs of the plants. Therefore, they do not accept water systems that do not correspond to that perception (dripping irrigation system).

Regarding the systems of water for human use, it is important to capitalize that the decrease of the flows of the water sources, or their extinction, affects the quality of life of the population according to what the research shows us.

On one hand we find that there are water systems, like mini-aqueducts with house ramifications that in some communities (e.g. El Peñasco), are being replaced by others that offer a less quality service (public mini-aqueducts), because those are far from the users and also because of the deterioration in hygiene, in sanitary aspects, and because of the exposition of water to polluting vectors. This situation is a direct consequence of the shortage of water sources; that is a product of an irrational use, or due to the installation of systems not suitable to the water masses.

Even though the research did not pretend to establish a relation between the used technologies and the permanence of the water sources according to interviewed technicians, specialists in the topic of water it is evident that those systems that implicate less use of water (dripping irrigation system) or its percentage of usage is smaller, they definitely affect positively the water masses. But this relation is not absolute, because there are other factors that also have their relative incidence that even technicians and community population do not perceive as a main cause, but they point out other aspects such as the lack of environmental education, deforestation, natural disasters, etc.

As for what is being done to prevent these phenomena, we find out in the selected sample for the research (18 communities), that the 92 % of the installed technologies embrace actions of protection to the water source. Nevertheless, despite of these apparently satisfactory data, the facts tell us that the gradual extinction of the water sources is noticeable. This possibly indicates us two situations: the actions do not correspond with the principal cause of the problem or the magnitudes of the actions are under its dimension.

Finally, to obtain more definitive information about the relation between technologies and permanence of water sources it would be interesting to develop an experimental research process, that establish comparisons between areas where new water systems for human and agricultural use are implemented, and others without them.



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