

Mexico: A system to grow more tomatoes with less water

Scientists from the Universidad Autónoma Agraria Antonio Narro (UAAAN) Horticulture Department have developed a sustainable system of low cost water recirculation for tomato production in areas with water scarcity.

The objective of this system is to produce tomatoes, at a low cost, through the sustainable use of water in the agricultural cycle, to promote food security, particularly of isolated rural populations with limited water availability.

"We are using less water, although the roots are floating in water, we use 150 liters in each of the modules (also known as treatments), with 16 plants each. We will spend 600 liters of water per module during the cycle, in this water we'll change the concentration of mineral elements for each plant according to their stage in life," said Dr. Marcelino Cabrera de la Fuente, research professor of the Department of Horticulture the UAAAN and a candidate for the National System of Investigators (SNI).

In Mexico to produce one kilogram of tomatoes requires 215 liters of water in an open field, or 36 liters in a greenhouse, with a water footprint of 13 liters per tomato - approximately 70 grams.

The water that is no longer used in the system is not wasted, since it is then added to an open field crop with drip irrigation.

A Virtuous and Low Cost Cycle

The scientist explained that the system is based on polyvinyl chloride (PVC) pipes. These tubes are connected to a pump, similar to the one used in the fish tanks, and requires minimal electrical energy. The water falls into a container and from there it is pumped into the flow tube where the roots are located. The tube has a slight 10 percent slope so that, at its opening, the solution falls into the receiving container where the pump that re-enters the point of entry is located. The water wear is minimal, approximately, per week, only one liter of water is lost, in a greenhouse cycle with a duration of 150 to 180 days with an approximate cost of 800 pesos per module.

"We reduce the use of water and pesticides, we also give a product friendly for human consumption. The project tries to make a more sustainable use of resources, we know that there is a strong problem

called climate change and we have always instilled in the training of professionals the care of resources: soil, water, atmosphere. In this case, we added another important factor: to take care of the nutraceutical quality during the production", detailed the researcher Cabrera de la Fuente.

The specialist added that they want to make the whole system profitable and involve all family members in the generation of income, although, initially, the production should be destined for home self-consumption.

"We want to create an awareness that they are generating healthy food among the population and in the producer. The idea is to involve people from communities so that they learn the techniques, learn how to implement them, and make a sustainable use of resources as well as producing their own food according to their possibilities."

Dr. Cabrera de la Fuente emphasized that the system can be applied in rural areas that have a resource shortages but with a potential to develop such projects. The scientist wants to bring his innovation to producers and people with the intention of them being able to produce healthy food on their own, in isolated areas, and where water is scarce.

"I would like to handle it in the open fields, we want producers to adopt it, some of them have limited resources and cannot do it in a greenhouse or do not have tomato growing experience. We seek to first inculcate the method of an productive system of tomato grown in an open field with varieties and economic costs. Later they'll manage it to perfection and won't depend on a technical advisor for production ".

This project aims to train farmers, who have technical independence and can take the necessary steps to generate a bigger and profitable company for the benefit of their family and community.

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