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Tasquillo, Managing Water Scarcity and Adapting Farming Practices to Reduced Water Supplies with Improved Irrigation Technologies and Conservation Practices

Tasquillo is a municipality located in Valle del Mezquital in the state of Hidalgo. According to Instituto Nacional de Estadística, Geografía e Informática (INEGI, 2004) latest statistics, Tasquillo has a total of 16,648 inhabitants.

In this municipality, an average of 4.5 people lives in each house. In Tasquillo, 24.1% of the people have finished the elementary school, 23.5% have an unfinished primary education, and 13.2% of the people never attended school (INEGI 2004).

Access to health care is really low. A total of 1,882 people have access to health care, 475 are affiliated to IMSS (Instituto Mexicano del Seguro Social) and 1,407 are affiliated to ISSSTE (Instituto de Seguridad y Servicios Sociales de los Trabajadores del Estado) (INEGI 2004).

To get an idea of how much money an average person in Tasquillo earns, we have to take in consideration in the year of 2004, 776 farmers made a total of \$20,410,750.40 pesos (approximately 1,855,522.73 U.S. Dollars) per year. That is an average of 3,106.64 pesos (approximately 282.42 U.S. dollars) per producer per year (INEGI 2004).

The most common farming methods used in Tasquillo are traditional irrigation and reprieve. (INEGI, 2005)

Inhabitants of Tasquillo, as the inhabitants of the entire Valle del Mezquital region, face a serious problem which is that due to the lack of clean water, the smallholders in this region use contaminated water, like the water from the Tula river. (INEGI, 2004)

Another problem faced by the people who inhabit this region, is the fact of having higher costs by not having a sufficient production.

Tasquillo, by being such a small community has problems when offering their products to intermediaries. Their production is low and their costs are high. That's something unattractive to customers and unpractical for them. To solve this problem, we would have to think in the solutions of two huge problems:

- a) How can it be possible to reduce costs?
- b) How can a bigger productivity be achieved having in mind the conditions of this place?

These questions have led this investigation to select factor number 2. (Managing water scarcity and adapting farming practices to reduced water supplies with improved irrigation technologies and conservation practices.)

To solve this problem, we have to consider the circumstances of Tasquillo. Tasquillo is a small municipality which represents the 1.08% of the state's territory, (INEGI, 2004). Agriculture is a very important economical activity. Due to the small size of this municipality, many inhabitants who work as farmers produce a really small amount of food.

The most common farming products in Tasquillo are lucerne and maguey. Corn, oats, pomegranate and chili are also grown. The problem is that as corn, oats, pomegranate and chili are produced in really small amounts; the price of its production becomes higher leaving 2 options to the farmer. One option is to sell the crop at a higher price so that the smallholder gets a higher profit from it taking the risk of not selling it. Or second, selling it at a

lower price so that they can get rid of the whole production, and it could be sold with a lower profit, causing the smallholder, as he has less money, to be unable to make the proper investments to get a higher economical benefit next time he gets to harvest.

Deeply acknowledging the problem, we may ask ourselves, what could be the solution to this main problem?

The proposal is to create a farming cooperative system. In this system, smallholders can put their resources together in benefit of the others. What are the benefits of this system?

There are several benefits. The first benefit is having a higher number of people investing resources. The second benefit is that, as more people will invest time and care into their cultivations, this will translate into a collective effort that will lead farmers to higher productivity. Finally, a bigger production will translate into lower costs in the production and a higher amount of product to be sold.

After solving the cost reduction problem, we get to the second problem. How could bigger productivity be achieved keeping in mind the conditions of this place? We've described two factors that don't allow agricultural development in Tasquillo which are the lack of resources and the scarcity of clean water. Now we know how it's possible to get the necessary economical resources but, what can be done about water?

There is plenty of water in Tasquillo. The Tula River flows next to this municipality, but this river is contaminated. As it would be dangerous to irrigate with this water, it's impossible to cultivate anything. So, what can be a solution for this problem? According to INEGI, there are 2 springs in Tasquillo. These could be used to irrigate small cultivations. Still, to produce large amounts of food, large amounts of water are needed. This creates a need for a system which will require minimal amounts of water without losing its effectiveness.

What would the solution be? Genetically Modified Organisms (GMO) have shown to reduce the amount of water needed. Argentina is an excellent example of this because farmers have been very responsive to this agriculture method. During the 2007-2008 season 78% of the total soy and 90% of the corn produced were GMO (ArgenBio 2003-2005). If this kind of cultivation can be reproduced in this context, farmers could improve significantly Tasquillo's life style production.

So, to make this possible, a cooperative system must be created by the smallholders in this community. This would reduce costs in the production. After that, GMO production could use less water solving Tasquillo's main problems.

Works cited

Argenbio, Initials. (2003-2005). Cultivos aprobados y adopción. Retrieved from <http://www.argenbio.org/h/biotecnologia/11.php>

CUATEPOTZO DURÁN, M.A. © 2005. Instituto Nacional para el Federalismo y el Desarrollo Municipal, Gobierno del Estado de Hidalgo

Rodrigo, H. (2009) Denuncian muerte de 50 niños por agua contaminada del D.F., Milenio.

Sistema para la Consulta de Cuadernos Estadísticos Municipales de Hidalgo, Edición 2004, September, 18, 2010, c13058_03.xls, recovered from INEGI: http://www.inegi.org.mx/est/contenidos/espanol/sistemas/Cuadernos_04/estatal/hgo/index.htm

Sistema para la Consulta de Cuadernos Estadísticos Municipales de Hidalgo, Edición 2004, September, 18, 2010, c13058_04.xls, recovered from INEGI: http://www.inegi.org.mx/est/contenidos/espanol/sistemas/Cuadernos_04/estatal/hgo/index.htm

Sistema para la Consulta de Cuadernos Estadísticos Municipales de Hidalgo, Edición 2004, September, 18, 2010, c13058_05.xls, recovered from INEGI: http://www.inegi.org.mx/est/contenidos/espanol/sistemas/Cuadernos_04/estatal/hgo/index.htm

Sistema para la Consulta de Cuadernos Estadísticos Municipales de Hidalgo, Edición 2004, September, 18, 2010, c13058_09.xls, recovered from INEGI: http://www.inegi.org.mx/est/contenidos/espanol/sistemas/Cuadernos_04/estatal/hgo/index.htm