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Greenhouse and Shade House Production to Continue Increasing

Report Categories:

Tomatoes and Products

Food Security

Vegetables

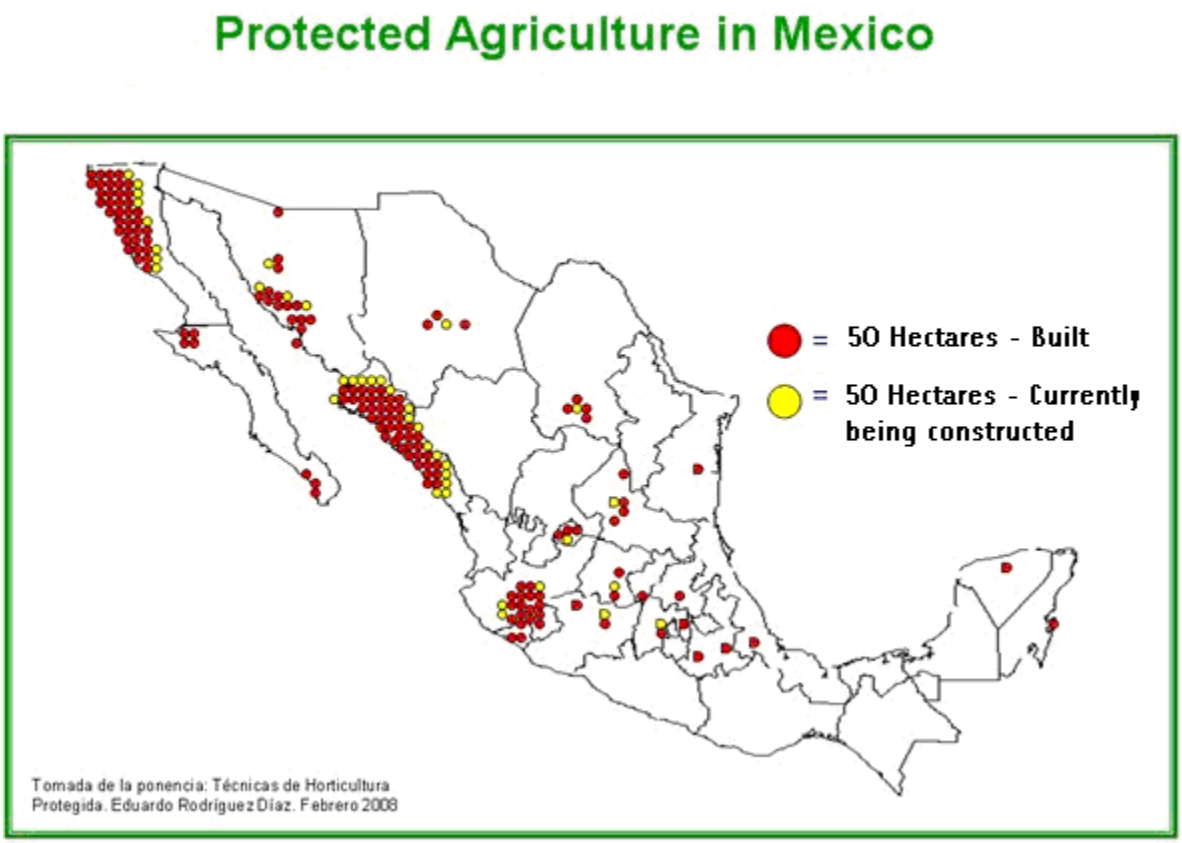
Approved By:
Allan Mustard
Prepared By:
Dulce Flores, Mark Ford

Report Highlights:
Horticultural production in Mexico continues to be transformed by greenhouse/shade house technology throughout the northern and central parts of Mexico. Due to the advantages of protected agriculture, producers started using greenhouses/shade houses nearly 10 years ago, and it grew from 750 hectares in 1999 to approximately 15,000 hectares in 2010. While there are slight differences between greenhouses and shade houses, many producers throughout Mexico believe that both technologies can provide similar production and thus refer to this technique as protected agriculture for marketing purposes. The percentage of area planted using protected agriculture has increased nearly 40 percent over the past three years, and this trend to produce under protected agriculture is expected to continue for the next several years, especially for producers of tomatoes, bell peppers,

and cucumbers.

Executive Summary:
During the week of April 13, 2010, FAS/Mexico visited protected agricultural facilities in the states of Jalisco and Sinaloa. Production under these houses has transformed Mexican agriculture and continues to adapt unique technologies depending on weather conditions and economic factors. Protected agricultural production uses installations of low to medium technology and ranges from hard plastic to anti-aphid netting (depending on the definition of greenhouse or shade house). A few use hydroponic systems, but most use drip irrigation without heating systems or CO_2. Half of the area devoted to protected agriculture uses shade houses since this type of technology can adapt to the weather more efficiently. Most of the growers agreed that due to the latitude of Mexico and warmer climates in producing areas, shade houses adapt better (especially considering shade houses are typically cheaper).

According to producers, weather conditions dictate what kind of technology is needed to guarantee optimal conditions of growth and quality production while following food safety production regulations and therefore, more producers are moving to shade houses. Whether through greenhouses or shade houses, production under protected agriculture continues to grow rapidly. The percentage of area planted using protected agriculture has increased nearly 40 percent over the past three years. The United States is the primary market for products grown under protected agriculture, but growers continue to export larger quantities each year to other markets.



Source: The Mexican Association of Protected Horticulture (AMHPAC)

General Information:

Overview of Protected Agricultural Production

According to private sources, the area devoted to protected agricultural production continues to increase significantly. Due to the advantages of "protected agriculture" over open field production, producers started using greenhouses/shade houses nearly 10 years ago. This type of production grew from about 750 hectares in 1999 to approximately 15,000 hectares in 2010. Protection technology differs depending on the crop and the geographical region. Technology also differs between small producer associations (12 - 13 associates working with 5-12 hectares) and large owners with extensive experience in the horticultural business, who own more than 15 hectares of production. Typically, most large business owners use better technology compared to smaller producers, but this also depends on the climatic conditions throughout the region.

Specifically, greenhouse technology in Mexico ranges from low to medium and from medium to high technology. Since climatic conditions dictate what kind of technology is needed, most producers use shade houses or basic plastic greenhouses. Medium to higher technology can be found in northern states like Sinaloa, Baja California and Sonora or in the central states like Queretaro and the state of Mexico. The central states have the advantage of producing year-round, whereas northern states produce mainly during the winter season.

According to private sources, over 51 percent of the producers using protection agriculture prefer shade houses over greenhouses. The majority of the infrastructures have drip irrigation systems, insect/anti-aphid protection, and systems to control light and air. Other higher technology installations such as glass structures with heating, illumination systems and CO_2 usage are seldom found. While there is a slight margin of shade house use compared to greenhouse use, shade houses are becoming more popular due to lower costs and the use of equivalent technology.

Sources indicated that there is almost no need for glass houses or warming systems since the ambient temperature in most producing regions is sufficient. The very first producers experimented with high glass greenhouse technology, only to find out that it was too expensive and provided little additional production. Most producers switched to shade house technology due to lower costs and equal production, but there remain a few producers who have benefitted from high glass technology.

Producers indicated that the goal of using protected agriculture is to guarantee optimal growth while assuring importers of a safe quality product. Protected agriculture technology is being adapted and brought in from different countries, depending on the technological and financial packages available. The main countries include Israel, France, the Netherlands and the United States.

However, sources pointed out that protected agriculture remains a mystery to new producers without agricultural know-how (i.e., the lack of market channels, insufficient capital, and weather events - hurricanes) leaving greenhouses abandoned. The Mexican Association of Protected Horticulture (AMHPAC) found in a recent study/survey that of approximately 9,000 hectares of greenhouses in the northern states (Sinaloa, Sonora, Baja California Norte and Baja California Sur) 30 percent are not operating. According to its web page, www.amhpac.org, in 2008, 4,305 hectares used greenhouses while 4,529 hectares used shade houses.

Table 1. Mexican States Using Protected Agriculture, all crops, 2008

States (hectares)	**Green-house area**	**Shade house area**	**Protected area**	**%**
Sinaloa	850	1650	2500	28.3
Baja California	120	1100	1220	13.8
Baja California Sur	400	600	1000	11.3
Sonora	250	740	990	11.2
Jalisco	900	0	900	10.2
San Luis Potosi	160	200	360	4.1
Puebla	250	50	300	3.4

Zacatecas	200	30	230	2.6
Guanajuato	200	0	200	2.3
Coahuila	170	25	195	2.2
Michoacan	140	0	140	1.6
Colima	100	0	100	1.1
Edo. De Mexico	100	0	100	1.1
Chihuahua	80	0	80	0.9
Oaxaca	70	1	70	0.8
Aguascalientes	35	30	65	0.7
Queretaro	65	0	65	0.7
Quintana Roo	12	50	62	0.7
Yucatan	35	25	60	0.7
Durango	30	10	40	0.5
Nuevo Leon	33	0	33	0.4
Campeche	15	18	33	0.4
Veracruz	25	0	25	0.3
Tamaulipas	20	0	20	0.2
Hidalgo	20	0	20	0.2
Tlaxcala	15	0	15	0.2
Tabasco	5	0	5	0.1
Guerrero	5	0	5	0.1
Total	4,305	4,529	8,834	100

Source: Castellanos J.Z y Borbon-Morales. INTAGRI-AMHPAC. Panorama de la Horticultura protegida en Mexico. En J.Z. Castellanos (Ed), Manual De Producción de Tomate de Invernadero. INTAGRI. Mexico.
Note: This data is a private effort to gather data of all crops under protected agriculture in Mexico up to June 2008.

According to numerous sources, various state and federal government funds encouraged producers to build protected agricultural facilities in order to increase production and spur employment in rural areas. Most of these funds were geared towards small producers. Sources indicated that a first-time building credit typically paid up to 50 percent of the investment or up to about $53,000 (USD) from non-reimbursable government funds. However, most of the producers initially failed when using this credit due to the lack of a well-established marketing channel, though others used the funding appropriately and continue to grow. Now credit can only be obtained if an excellent marketing program exists and the producer will invest in renewable energy, among other requirements. According to producers, few are granted this type of credit.

The main products being cultivated under protected agriculture are tomato, bell pepper, cucumber, and eggplant. Most of the protected agriculture is geared towards the export market, especially production in the northern states. Some producers in the central states produce for the domestic market, especially when larger producers in the northern states are exporting during the winter season.

However, the use of protected agriculture has not stopped growers from planting in open fields. Some growers combine the use of both technologies to their advantage. In fact, some growers stated that the new Roma tomato seed varieties planted in open fields yield excellent quality tomatoes, almost as if grown in shade houses. One advantage is that open field tomatoes arrive to the market first. Afterwards, producers can use protected agriculture to control temperature and production allowing the producer to extend the growing season.

Industry Standards

AMPHAC indicated that many protected agricultural producers support "social responsibility" (i.e., help the development of the area by hiring in nearby communities) and continue to improve the quality of life for employees while training them to keep high production standards. Many of these producers have built dining areas for workers and continue to promote safer working environments. Many producers are now treating water according to food safety regulations in order to protect the environment. Packing facilities also follow food safety regulations as well as environmental regulations. Many producers are pushing for full compliance from all producers to comply with the minimum requirements and standards by 2012.

Producers indicated that most of the horticultural products exported to the U.S. market go through the Nogales, Arizona port of entry. In order to reach other markets quicker and to facilitate transportation, producers are now moving more volume through southern Texas. Some sources indicated they expect a 30 percent increase in shipments through the Laredo and McAllen ports of entry over the next five years.

Sinaloa has the highest concentration of protected agriculture, about 30 percent, in the country, followed by the states of Baja California Norte and Sonora. From a total of 27,670 hectares in Sinaloa devoted to tomato, bell pepper, cucumber and eggplant, about 10 percent is grown under different types of protected agriculture.

NOTE: The Mexican Association of Protected Horticulture (AMHPAC) provided logistics and information used throughout this report.

Useful Weblinks

Vegetable Commission for Defense Research and Development (CIDH)
(Comision para la Investigacion y Defensa de las Hortalizas)
www.cidh.org.mx.

This Commission is part of the Confederation of Agricultural Associations of the State of Sinaloa CAADES (Confederacion de Asociaciones de Agricolas del Estado de Sinaloa) that specializes in horticulture and has the responsibility of a general defense of the interest of producers, agricultural research promotion, and promotes produce in the international markets. CIDH carries statistical information on protected agriculture from Sinaloa.

Mexican Association of Protected Horticulture (AMHPAC)
(Asociacion Mexicana de Horticultura Protegida)
www.amhpac.org

AMHPAC is a trade association of protected horticultural growers that serves the industry in 22 Mexican states, providing technological and trade information, promote productivity and their membership competitiveness. The Association represents and defends the interest of producers.

Service of Agri-food and Fisheries Information (SIAP)
(Servicio de Informacion Agroalimentaria y Pesquera)
www.siap.gob.mx

This organization from the Secretariat of Agriculture, designs and coordinates all statistical information

from the agricultural sector in Mexico.