

Economic and social impact of *Cactoblastis cactorum* arrival in Mexico



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Cactus moth is a risk for the wild cacti (3 millions of acres) and for the cultivated cacti (350 000 acres)





The nopal is important part of the legacy of pre-Hispanic towns. The evidence of its use dates for more than 9000 years ago. It is present in the language, the art, history, the traditions and in the national symbols of the country



The prickly pear cactus pads (nopalitos) is a very popular food for Mexican people. The annual national consumption by habitant is of 7.35 Kg.



The prickly pear fruit (tuna) is one of the fruits of traditional consumption in Mexico with an annual ingestion by inhabitant of 3.5 kg



There are various products derived from nopal and from the prickly pear fruit



Shampoo for the hair, jams, liquors, tonics, drugs for diabetes

Usually these micro companies are led by women





Many people depend on the marketing of this fruit

The prickly pear was used, during the colonial period in the XVIIIth century, in the manufacture of adobes (soil brick), activity that now is recaptured to make an ultra light and resistant concrete.





Edible cactus pads (nopal) production for 2006 was 800,000 tons, with a commercial value of 140 millions of dollars (SIACON, 2006)

Production for 2006 of prickly pear fruit was 400,000 tons, with a commercial value of 80 millions of dollars (SIACON, 2006)



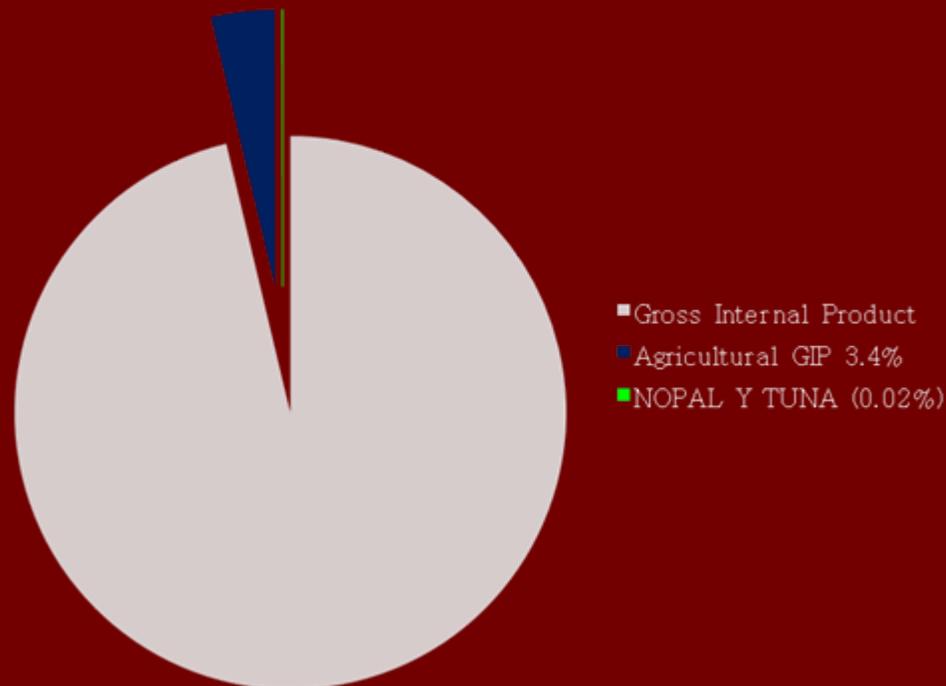


Producer states of cactus pads in Mexico, in blue, the State of Mexico, Morelos and the Federal District as the main producers, in yellow producer states in minor quantity (SIAP 2005).



Producer states of cactus fruit pear in Mexico, in yellow Zacatecas, Puebla and the state of Mexico as principal producers, in green producer states in minor quantity SIAP 2005.

The Gross Internal Product for 2004 was of \$6,964,058 billions of dollars, being for Agriculture, Forestry and Fishing \$26,770,446 millions of dollars which corresponds to a total of 3.84% as a contribution to the agricultural GIP. However, the total of nopal and tuna that was commercialized in 2004 were of \$176 millions of dollars which in terms of contribution to the national GIP corresponds to 0,02%



Nevertheless, the relatively modest contribution of nopal to the GIP many people depend on this cultivated cactus



There are more than 19,000 producers of prickly pear pads and 24,215 producers of prickly pear fruit. These 43,215 producers have in average 5 members for family, so 215,625 persons depend economically on the obtained income of the production of nopal and tuna. Indirectly other 500 thousand persons depend on these products.



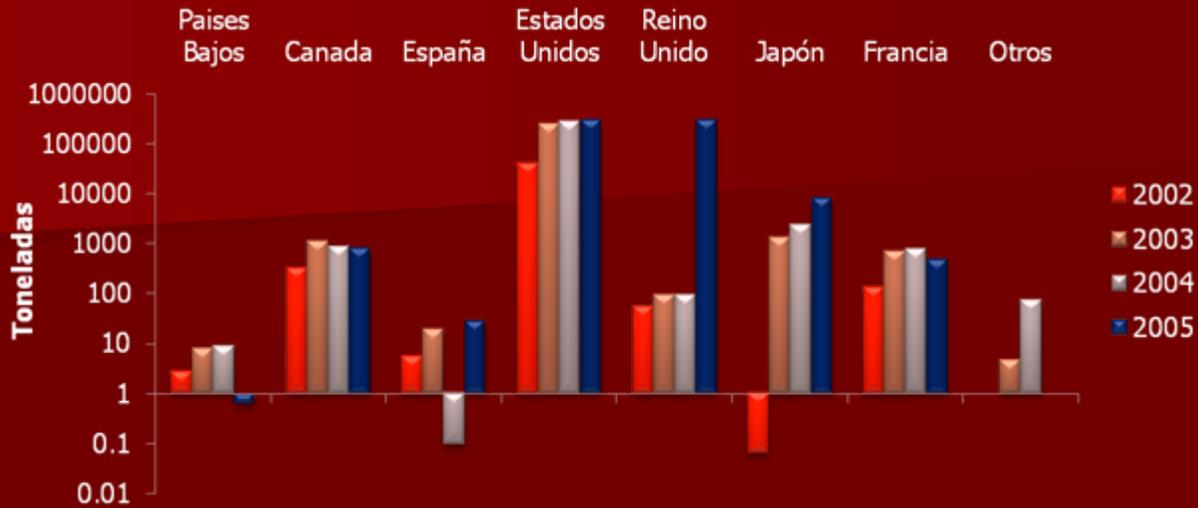
Insecticide use for controlling *C. cactorum*

The present costs vary for nopal production from 2800 to 5500 dollars/ha/year and for tuna between 1400 to 2800 dollars/ha/year. In case of applying control management practices for this insect the production costs would increase severely, being difficult to pay by the farmer.

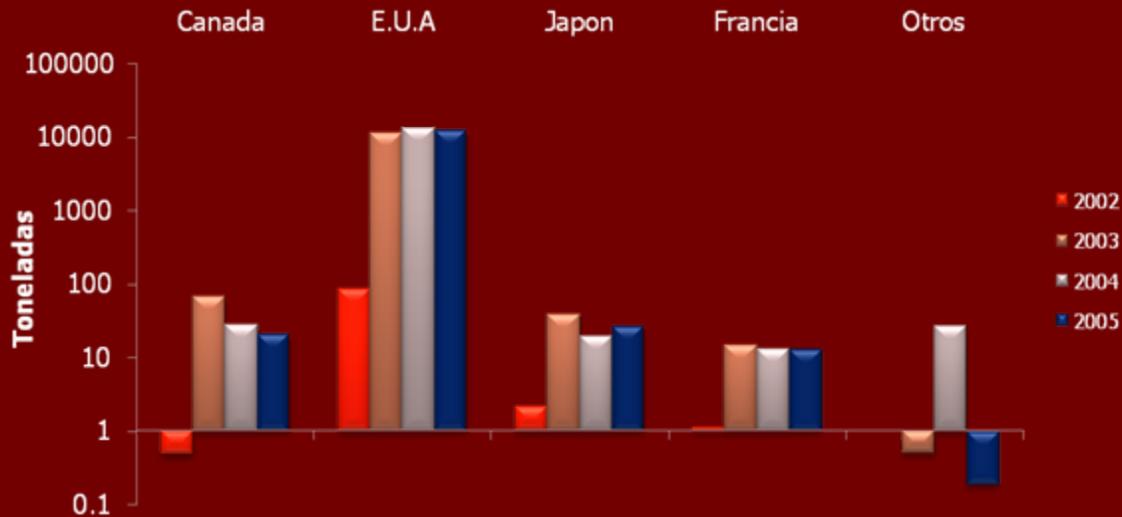
For example, the cost to make an application of metidation, insecticide used for lepidopterous species, in the nopaleras zones of the country would be \$1,5 millions of dollars, whereas for tuna the application would reach a price of 7 millions of dollars.



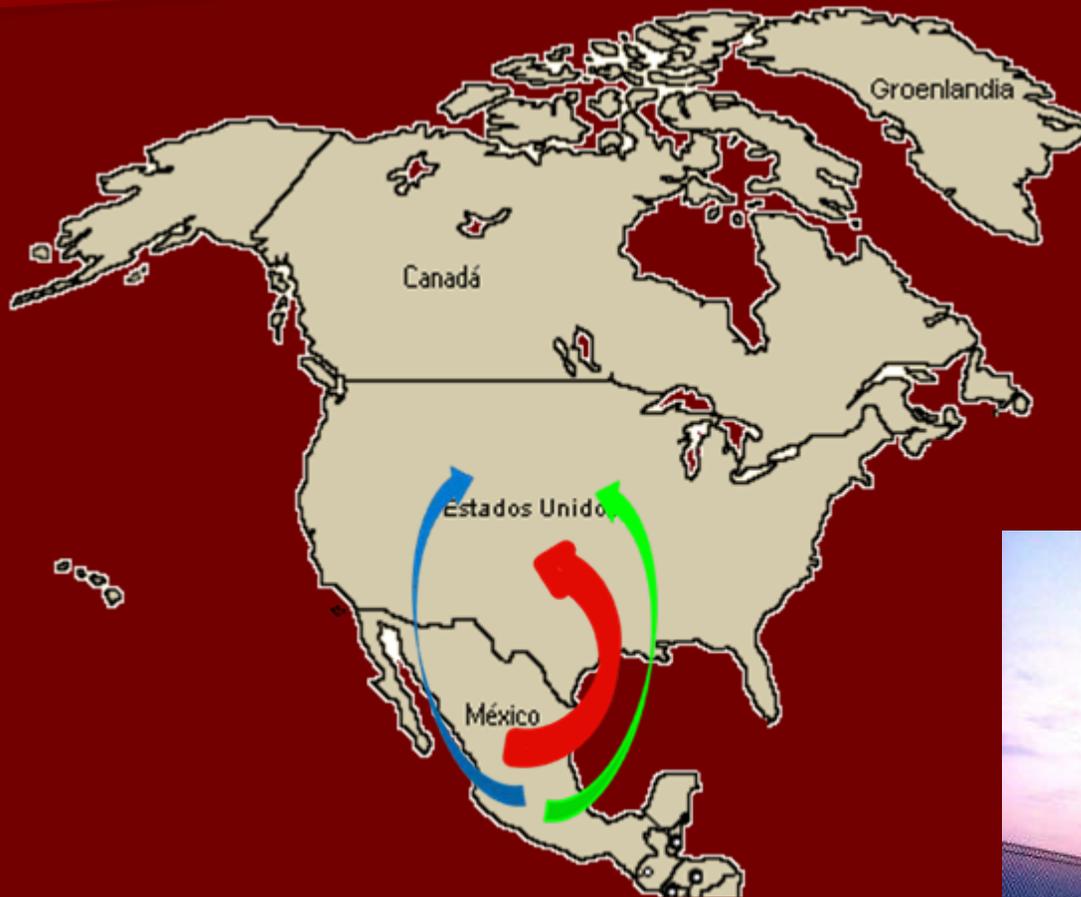
Exportaciones de nopal

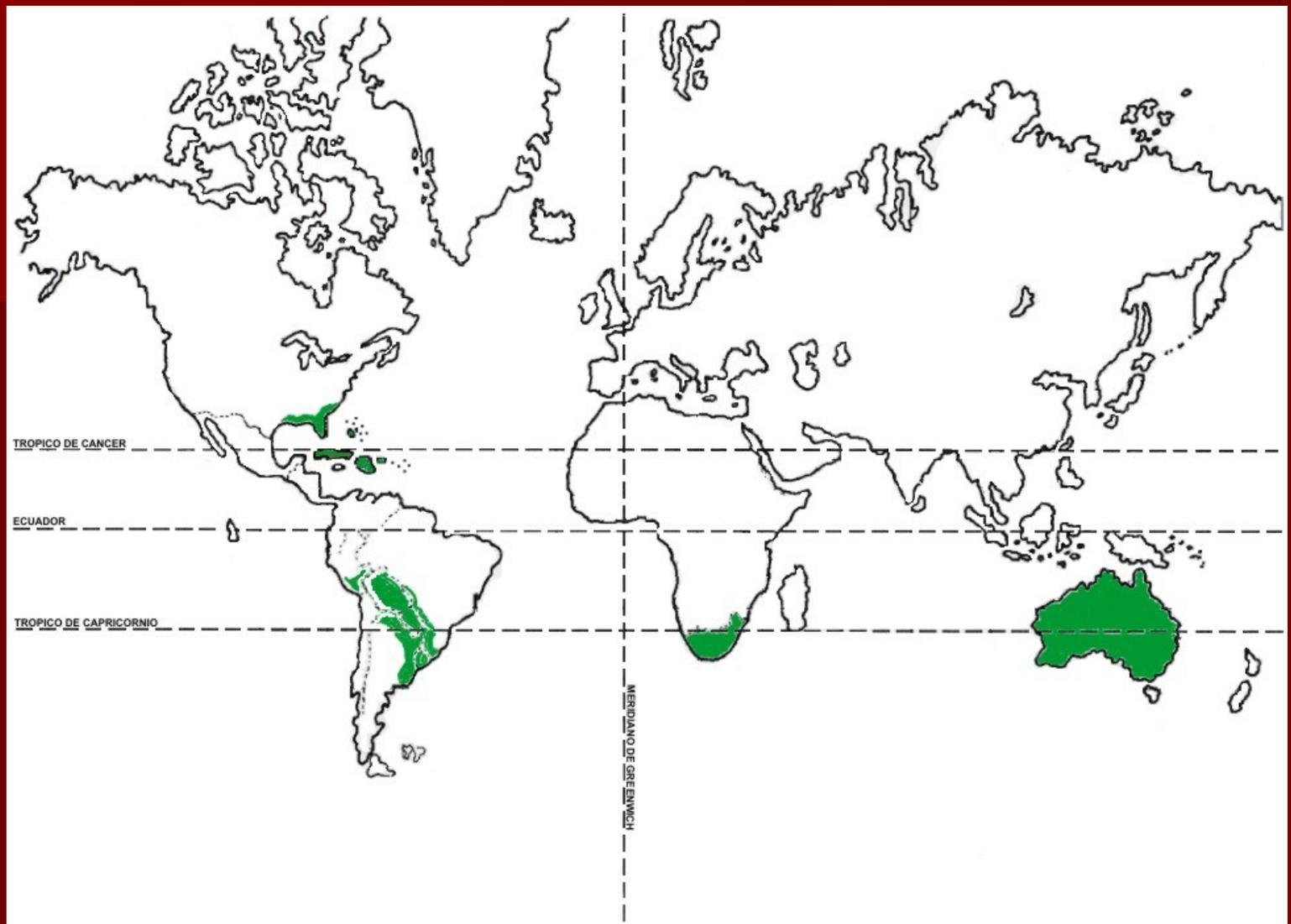


Exportaciones de tuna



The migration of people would be increased towards USA, in the states of Mexico, Zacatecas, Morelos, Puebla and Federal District, among others. At present, the emigration rate is in average close to 50% in Zacatecas, with the resultant social cost.





At present is observed that populations of *C. cactorum* in Argentina, Australia, South Africa, Hawaii, the Caribbean and in USA southern coasts concentrate on areas with less than 500 meters of altitude, in contrast with the area patches of prickly pears of Mexico than usually are found to heights over 500 meters.



Larvae of Cactus moth, Isla Mujeres, Mexico August, 2006

The considerable efforts that make SENASICA-SAGARPA and the DGSV to avoid the entrance and propagation of the cactus moth must be continued; particularly those directed to the growers, authorities, academic and public in general outstanding the importance of detecting early the presence of cactus moth in Mexico.



Pheromone trap for Cactus moth, Isla Mujeres, Mexico August, 2006

Two future events make indispensable to preserve and to foment the species of *Opuntia* spp., these are: the aperture of the North American Free Trade Agreement (NAFTA) with the total opening to agricultural products in 2008, and the probable reduction of the oil reserves of Mexico.



CONCLUSIONS

- *C. cactorum* constitutes a great economic risk for Mexico.
- The economic losses though they are not very significant in the GDP they have a great social impact among a million persons who live direct or indirectly of the prickly pear cactus and of the prickly pera cactus fruit.
- In case of applying control management practices for this insect the production costs would increase severely, being difficult to pay by the farmer.
- The migration of people would be increased towards EUA, in the states of Mexico, Zacatecas, Morelos, Puebla and Federal District and others
- As a result of the increase in the production costs, the number of jobs generated from this crop could be diminished and to as well cause a reduction in the monetary value associated to the crop, affecting the purchase of the food, clothes and the essential services.

CONCLUSIONS

- Moral damage to the population since the prickly pear and the tuna are parts essential from the national symbols
- Finally, two future events make indispensable to preserve and to foment the species of *Opuntia* spp., these are: the aperture of the North American Free Trade Agreement (NAFTA) with the total opening to agricultural products in 2008, and the probable reduction of the oil reserves of Mexico.

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