

## SUMMARY

### ***Asparagus officinalis* L., as an alternative crop for high altitude tropical areas at the State of Veracruz**

To analyze the current situation of asparagus and the feasibility of being a profitable crop, we established the hypothesis that the subtropical climate of the Elotepec, Huatusco, Veracruz region has the necessary characteristics for the production of asparagus. The present investigation evaluated the current situation of *Asparagus officinalis* L. as an alternative crop for high altitude tropical areas in Mexico and particularly in the state of Veracruz. To locate potential areas for asparagus cultivation, areas of suitability for the species were modeled and identified, and a current and potential distribution map for Mexico and Veracruz was drawn up. The profitability for the cultivation of asparagus was determined and a market study for the Xalapa region, as a case study for a high-altitude tropical zone were also determined. Currently, asparagus is distributed in the middle and northern part of Mexico, where temperate climates predominate. In this regard, using an asparagus cultivation model at 2200 meters above sea level, it was possible to identify areas of Veracruz, Puebla, Michoacán and the State of Mexico as potential areas for asparagus cultivation. In an investment plan calculated for the first two years of the project with an investment of \$1,585,587.32, it was found that the producer can cover all its operating and sales costs, without incurring in losses, maintaining a production level, which is obtained of the annual target production. For this study, 15,000 kg/ha of asparagus production was set for \$ 170.00 per kilo, increasing by \$ 2.00 pesos per year. Which generated a breakeven point in 2022 of \$ 1,497,323.70, this means that from the sale of the third year of \$ 1,497,323.70 onwards, profits will be obtained. For the year 2022, the project has a liquidity of \$ 2,043,392.00, efficiency, and operation of each asset weight that generates \$ 1.18 of sales. As a result of the financial study, it was found that the percentage of the internal rate of return (IRR) was higher (35%) than the percentage (24.13%) of the minimum acceptable rate of return (TREMA); which indicates that, in this project, it is feasible to invest, since comparing the percentages, we calculated, a yield of 35%. According to a market study carried out in the city of Xalapa, Veracruz for asparagus, it was recorded that it is consumed equally by gender, and people who have not consumed it or are unaware of it, commented that they would surely buy it, this indicates that if it existed an appropriate approach, there would be a high degree of interest on the part of those surveyed, in acquiring and know the vegetable and incorporate it into their diet. However, the little publicity and the high price have generated this ignorance of acquiring it. In conclusion, there is interest in incorporating green asparagus in the diet of consumers and its cultivation in high altitude tropical areas is a viable and profitable business.

Key words: *Asparagus officinalis*, agro-ecological zones, financial reasons, economic study, market study.