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Agroforestry Management as A Sustainable Productive Alternative to Support Food Security and Nutrition and its Resistance for Northeast Mexico

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Abstract

Agroforestry Systems (SAF) are designed to combine forest and agricultural elements, and thus be able to make more efficient use of the soil, working sustainably with nature. They represent a productive and ecological use of the soil with deliberate retention of evergreens in support of agricultural or animal production. Likewise, they represent a response to the current deterioration due to deforestation and inappropriate use of resources. By doing the above, it is possible to: increase productivity, maintain sustainability, without causing damage to the ecosystem and improve the living conditions of producers, diversifying production, reducing producer risks and mitigating detrimental effects of natural elements. Objective of the study was to develop and test agroforestry technologies as productive strategies in the different environmental conditions and soil management conditions in northeast Mexico. Activities carried out are research to try different sustainable productive agroforestry strategies. The proposed goals are to develop two different and innovative models of agroforestry systems for northeast Mexico and to train human resources. The results were the development of productive strategies that support the production of the field in a sustainable way and help to improve the ecological conditions of the natural, technological and socioeconomic resources in northeast Mexico. Supporting quality food and fighting extreme poverty. The resulting SAFs as the most adaptable and adoptable were the intensive silvopastoral systems in cattle ranching among native trees, among the most important impacts can be mentioned increases in meat production, milk production, micro-climatic modifications and generation of environmental services. Regarding milk production, average increases of 50 % are reported with the use of *Leucaena leucocephala* in densities greater than 50,000 $^{\text{plants}}/_{\text{ha.}}$, And two grasses; one *Cynodon plectostachyus* and Pannicum maximum, and the SAF of the agroforestry type for northeast Mexico of the Silvicultural Production type, forming alleyscroping with forage or agricultural production, as well as silvicultural production, serving as windbreaker curtains for livestock or agricultural production and finally, the riparian barriers or filters of river banks. It was concluded that agroforestry technologies could be developed and tested as productive strategies in the different environmental conditions and soil management conditions by producers.

Keywords: Agroforestry systems, crops, environment, livestock, productivity

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