Abstract

This paper describes the efficient use of a Bio-inspired computation technique to fuzzy goal programming (FGP) formulation of land allocation problems having chance constraints for optimal production of different seasonal crops in agricultural system. In the proposed approach, utilization of total cultivable land, different productive resources, achievement of target levels of the production of seasonal crops and expected profit from the farm are fuzzily described. In the model formulation of the problem, the concept of tolerance membership functions in fuzzy sets for measuring the degree of optimality of crops-production by utilizing the productive resources is considered. In the solution process, achievement of the defined membership goals to the highest degree (unity) to the extent possible on the basis of priorities is determined by employing genetic algorithm (GA) scheme in the decision making environment. A case example is considered to demonstrate the approach.

References

Bio-inspired Computation Technique to Chance Constrained Fuzzy Goal Programming Model for Resource Allocation in Farm Planning

- Deb, K. 2002 Multi-objective Optimization using Evolutionary Algorithms, John Wiley & Sons Ltd.
- Govt. of W. B., Department of Agri-irrigation, Office of the Executive Engineer, Krishnanagar, Nadia, India.
Index Terms

Computer Science
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Keywords
Fuzzy Goal Programming; Chance Constrained Programming; Fuzzy Stochastic Programming; Genetic Algorithms; Membership Function.