Turkish Journal

of

Agriculture and Forestry

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Turkish Journal of Agriculture and Forestry

Game Theory and its Application to Field Crops in Antalya Province

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Abstract: The purpose of this paper is twofold. The first aim is to present briefly game theory and to illustrate the relationship between game theory and linear programming. The other aim is to apply game theory to field crops. The game theory model was used for main field crops, namely wheat, barley, maize, chickpea, sesame, cotton and groundnut, in Antalya province in Turkey. The data included time series of gross product values of the investigated crops for the period 1980-1999. The Wald decision-making criterion was applied to the game theory model to determine the highest income under the worst conditions. The results of the model indicated that groundnut and cotton were the most risky crops for the research area. As groundnut and cotton provide the highest expected income under the worst conditions these crops enter into the optimum plan. Furthermore, these two crops have the highest variation coefficients compared to the other crops. It can be concluded that the game theory model is a good indicator for growers selecting alternative management strategies.

Key Words: Game theory, Risk programming, Field crops, Agriculture and risk

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Turk. J. Agric. For., **26**, (2002), 303-309.
Full text: pdf
Other articles published in the same issue: Turk. J. Agric. For.,vol.26,iss.5.