



## Determine the Optimal Cropping Pattern Due to Limited Groundwater Resources in Kavar Plain

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### Abstract

Due to limitation of available water and soil resources on the one hand, and the Iranian goal of self-sufficiency in irrigation and agricultural products on the other hand, the challenge of optimizing the utilization of these resources has become more significant. One of the economic solutions to the issue is to plan to achieve the most optimum level of water use along with optimizing farming activities. The present study –aimed at determining the optimal cropping pattern and the optimal level of water consumption in the Kavar plain of Fars. Using time series data for price and yield of agricultural products between 1999-2009 as well as the data set collected from a questionnaire, the mathematical programming models were applied. The results show that the goal of maximizing profit makes a higher profit, compared to the goal of maximizing utility, however the former goal consumes more water. Furthermore, water consumption and the characteristic of risk averse are inversely related, and as a result, risk adverse farmers do not use all of their water resources.

**Keywords:** Crop pattern, Groundwater, Mathematical programming, Kavar plain

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## Determination Farm Planning in Sabzevar City Using Fuzzy De-Novo Programming

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### Abstract

In farming activities, various resources and inputs are utilized to produce agricultural products.. One of the most important goals of agricultural managers and programmers is to assess the optimal resource allocation for designing an appropriate cultivation pattern. Mathematical programming is a common approach to achieve the optimal pattern. In this study, the two approaches of Fuzzy De-Novo and De-Novo programming are first described, and later their applications in determining the optimal cultivation pattern is discussed. The study was conducted in 2009-2010. Using the random sampling technique, 127 farmers of Sabzevar city were selected and interviewed in person. The data collection was based on completing questionnaires. Results showed that farmers in the three groups of the small farms (less than 6.5 hectare), the medium farms (high than 6.5 and less than 13 hectare) and the large farms (high than 13 hectare) can increase the level of the impure efficiency and can make the resource utilization more efficient by changing their present cultivation patterns. using proper cultivation patterns.

**Keywords:** De-Novo programming, Fuzzy De-Novo Programming, Cultivation Pattern, Sabzevar

**JEL Classification :**C61,Q21

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## Estimation of Iran's Agricultural Aggregate Demand and Supply: 1959-2007

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### Abstract

Estimation of agricultural sector demand and supply and identification of its determinants could lead to more efficient policies and planning in this sector. In this study, aggregate demand and supply of agriculture sector for the years of 1959-2007 were estimated, using the nonlinear restricted ARMAX model. The results indicate that aggregate agriculture demand is inelastic in both the short and the long run with -0.118 and -0.162 coefficients, respectively. For the short and long run, the demand price adjustment coefficient is about 0.273. Furthermore, the supply price elasticities for the short and the long runs are 0.129 and 0.166, respectively. The adjustment coefficient for both short and long runs is 0.225. These results accentuate that the agricultural products in Iran are necessity goods.

**Keywords:** Supply, Demand, Agriculture sector, Nonlinear Restricted ARMAX model, Iran

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## Survey on Entrepreneurial Characteristics of Owners of Dairy Cattle Industry in Razavi Khorasan Province

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### Abstract

Entrepreneurship has long history in human life and the related studies are initiated by scientific activities of the industrialized countries. However, this issue has been discussed recently in our country. The main objective of this study was to assess the behavioral and personality characteristics of entrepreneurship in order to identify entrepreneurs of the dairy Cattle industry in Razavi Khorasan Province as well as to distinguish between entrepreneurs and non-entrepreneurs. The interval data was collected from the 85 owners of industry dairy farms (a sample of the statistical population with 125 members), of which 30 from milk collection centers and 10 from feed mills. Using AHP techniques, the behavioral indicators of active actors in the dairy cattle industry were identified and the degree of importance for each indicator was determined. Using the cluster and discriminant analysis techniques along with the defined indicators, distinguishing factors of the two groups of entrepreneurs and non-entrepreneurs were considered. Results showed that, from the study population of the owners of the dairy cattle industry, 19 cattle owners, 5 milk collecting centers and 2 feed mill centers were entrepreneur. The most important Behavioral indicators-found effective on becoming an entrepreneur were risk-taking, activity growth and selection of their unit as the superior one, respectively. Also, the outcomes of the discriminant analysis technique indicate that among the personality variables considered by the present study, the variables associated with risk-taking spirit (potentiality of the risk-taking), innovation, effort and follow, expansion, internal control orientation and opportunity-seeking were the most important factors that distinguish the two groups of entrepreneurs from non-entrepreneurs, respectively. Using the findings, suggestions for improving the entrepreneurial process in the dairy cattle industry are presented.

**Keywords:** Entrepreneurship, Dairy cattle industry, Hierarchical analysis, Discriminant analysis, Razavi Khorasan

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## Assessment Operation of Rangelands Projects in Khorasan Razavi with Delphi Fuzzy Approach and Multi-criteria Decision-making Models

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### Abstract

Rangeland management plans- as an alternative for managing rangelands- are established based on reallocating rangelands to the beneficiary holders under certain programs. The purpose of this study was to identify criteria and the related indicators affecting the performance evaluation of the rangeland schemes, and consequently, to rank the rangeland management plans in Razavi Khorasan by the identified indicators. To conduct the study, six rangeland management plans in Razavi khorasan were selected. The plans were ranked based on the identified indicators. Using Fuzzy Delphi method, of the criteria to evaluate the performance of the rangeland management plans were identified into five main indicators (including 1- The ability to prepare the plan, 2- Compatibility of the plan with the area condition, 3- consideration to the legal needs during the plan implementation, 4- Management and monitoring on the plan execution, 5- The results of the plan execution) and 14 sub-indicators. Then, the rangeland Plans were ranked using the defined indicators and TOPSIS technique. The results of TOPSIS algorithm showed that in the rangeland management plans for the regions of Are kamar of Fariman, Bahar Kish of Nishabor, Cal Kaqazi of Kalat, Nahor fountain of Khaf, Farmad of Mashhad and Rahim Abad of Kashmar have the highest rates of performance. In total, it was recommended that social, economic and ecological conditions of the study area as well as the capacities and limitations of both the natural and human resources should be considered in preparing rangeland management plans.

**Keywords:** Rangeland management plan, evaluation criteria, TOPSIS algorithm, Fuzzy Delphi approach, Razavi Khorasan

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## Investigating Export Potential Vision and Competitiveness of Iran's Agricultural Product in Middle East and North Africa

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### Abstract

The present study compares the Iran's agricultural products with the products of MENA's countries (Middle East and North African countries) in their competitiveness potentials during 1995-2011. To achieve the goal, agricultural export and import indices were primarily calculated for each one of the twenty countries, based on which, the revealed comparative advantage indices of the agricultural trade were calculated. Results showed that, only in 1998, Iran had comparative advantages in exporting the agricultural commodities. Investigating correlations among MENA's countries revealed that Iran had positive relationship with the countries of Libya, Lebanon, Saudi Arabia, Oman and Syria in the agricultural products trade. It is concluded that the export comparative advantages of the Iranian agricultural products is linked to the status of the mentioned countries. To develop the export of the country's agricultural products, we should consider the policies implemented by the mentioned countries in order to gain some new export target markets and to increase trade benefits. In order to gain insight into the Iran's position in exporting agricultural products, Iran's export comparative advantages were forecasted by 2017 using ARIMA technique. The results revealed that the export index will have a declining trend during the forecasted period of time. This refers to the need of applying serious policies for controlling the negative consequences, implementing the program associated with development of the nonpetroleum commodities trade and reducing the dependency on the petroleum income. Evaluating the Iran's trade plan, it is concluded that Iran was a loser in the international markets of the agricultural commodities during the years between 2007 and 2009 (when the import of agricultural commodities had been globally growing). This indicates that Iran either lost its trade target markets or did not improve its share in the international markets along with the growth in the global import.

**Keywords:** Trade Power, Comparative Advantages, Forecast, Trade Plan, Agricultural Commodity, MENA Region, Iran

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## Evaluate the Effects of Targeting Subsidies on Cultivation Pattern in the Esfarayen County (Interval Programming Approach)

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### Abstract

The purpose of this study was to determine the optimal cultivation pattern for the Esfarayen County before and after the experience of targeting subsidies on the cultivation pattern, using Interval mathematical programming approach. To achieve this purpose, farmers based on the water resources- that they used for their cultivations- classified into three groups of river water users, deep wells water users and rainfed cultivation farmers. The required data for this study was collected by using simple random sampling method and questionnaire completion from 207 farmers of the three groups. The results determines the optimal cultivation patterns with consideration to the existing constraints for each the three groups. For the group of the river water users, it was indicated that the optimal cultivation pattern was Onion before and after the experience of targeting subsidies. For the group of the deep well water users, optimal cultivation pattern before the experience of targeting subsidies was to cultivate sorghum, irrigated alfalfa, sunflower and seed watermelon, while after the experience of targeting subsidies the cultivation pattern should be adjusted to sorghum, irrigated alfalfa, cumin and seed watermelon. For the rainfed cultivation farmers, the optimal cultivation pattern before the experience of targeting the subsidies was to cultivate Chickpea and Lentil. For the same group, the optimal cultivation pattern after the experience of targeting the subsidies was to cultivate Chickpea, Lentil and Barley for  $\alpha = 0$ , while they were Chickpea and Lentil for other values of  $\alpha$ .

**Keywords:** Optimal cultivation pattern, Interval mathematical programming, the experience of targeting the subsidies

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## Analysis of Management Factors Impact on Irrigated Wheat Yield in Nazloo and Silvana Regions of Urmia County

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### Abstract

In Urmia County, the irrigated wheat yield varied across different regions in 2011. The highest yield was attributed to Nazloo region (6.58 tons per hectare) and the lowest yield was for Silvana region (2.77 tons per hectare), respectively. The purpose of this study was to analyze the impacts of the management factors on the irrigated wheat yields in the two regions of Nazloo and Silvana of Urmia County. To achieve the goal, 159 farmers were selected using proportionate (number of farmers) classified random sampling method. The data which was collected based on questionnaires was examined by some relevant statistical tests. The flexible yield functions were also estimated. The results of the yield functions showed that the highest elasticity related to educational skills index and planning skills index belonged to Nazloo region and the highest soil conservation index and technical skills index belonged to Silvana region. This suggests that the farmers can increase the yield of the region by learning the new method, improving their knowledge and participating in extension classes.

**Keywords:** Flexible functions, the irrigated wheat, management factors, Statistical tests, Urmia county, Yield

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