Determination of Changes of Use of Agricultural Inputs, Due to the Liberalization of Input Prices
(Case Study: Cotton production in Iran)

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Abstract

In this study, first we evaluate the total amount of support for domestic cotton (AMS) for the years 1988 to 1999. Then, using time series data for the study years, translog cost function was constrained. Having calculated the price elasticity of demand for farm inputs, farmers' reactions to price changes due to the price liberalization were identified. The results of study showed that in the whole period of the free exchange rate, production of the cotton crop has been supported . In the year 1992 and between the years 1999 to 2001 the production of cotton has not been supported and the farmers had to pay a hidden tax.Price elasticity for the inputs including fertilizer, seeds, and water were estimated -0.342, -0.72, and -0.754, respectively. This shows that for every one percent increase in the price liberation, the input decreased less than one percent. The price elasticity for the pesticide input was equal to: -7.614 which presents a significant reduction in the use of pesticide due to the price increase that resulted from liberalization. Ultimately, we suggest that implementing better breeding, farming methods and technologies provides an effective circumstance for domestic producers to compete with their foreign counterparts. Furthermore, the study suggests that due to the high price elasticity of demand for pesticides,, the prices move gradually up with the promotion of biological control of pests and diseases in order to reduce the consumption of poison.

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Identification of the Effecting Factors on Land Amalgamation Adoption in the Kabutarahangh County of Hamedan Province.

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Abstract

Currently, the land amalgamation has important role in agricultural and under pressure irrigation development. Agricultural land amalgamation programs were introduced to farmers of Kabutarahangh county since 1990; however, the adoption process has not been successful. For instance, after a decade, only 30 percent of the irrigated lands has been adopted. Accordingly, the aim of the study was to identify effecting factors on land amalgamation adoption in the county of Hamedan province. According to the results of this study, relevant authorities can implement effective strategies to accelerate the process of land amalgamation. Using Cochran formula, the sample size was calculated. Using multiple-stage cluster sampling, 160 farmers from six villages in three counties were selected. The validity of questionnaire was investigated by a committee of experts. After the pre-test, Cronbach's alpha coefficient was calculated. The results showed that the research tool was consistent. Because of the nominal scale of dependent variable (acceptance and rejection), the logit regression model was used to examine the relationship between independent and dependent variables. Estimated Logit regression model indicated that the following variablesincluding the amount of agricultural land, farmer's income, membership on agricultural organization, consulting with extension experts, agricultural background and the land's pieces have significant effects on adoption of land amalgamation by Kabutarahang farmers.

Keywords: Adoption, Land amalgamation Program, Ordered Logit Model

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Optimum Operational Management from Surface Water Resources with an Application of Dynamic Programming

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Abstract

This study estimated the optimal operation model of the multipurpose Latian dam with the purpose of optimal allocation of water. The reservoir is used to supply water requirements of agricultural lands of Varamin plain and Tehran's municipal water. For achieving the mentioned goal, allocation priority among different water use competitors including irrigation, drinking water and hydropower was considered. With consideration to the uncertainty existence in estimating dam's water inflow, dam's operation problem was conducted based on two other techniques including time series model of SARIMA and fuzzy partitioning using Markov transition probability. Finally, using stochastic and deterministic dynamic programming, optimal operational policies for different scenarios (the beginning month, the volume of reservoir's early water and last month's irrigation) were assessed. The study data is for the years 1976-2010. Results of simulation model with optimal release policy gained from two deterministic and stochastic models revealed that stochastic model based on fuzzy partitioning in compare with deterministic model provides better results for optimal water allocation among different water use competitors including agricultural lands in Varamin plain and drinking water of Tehran city.

Keywords: Optimum Operational of Dam, Fuzzy partition, Markov transition probability, Dynamic programming, Forecasting SARIMA models

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Investigation of Technical Efficiency and Technological Gap of Iranian Laying Hen Industrial Units

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Abstract

Climate change phenomenon is an important environmental challenge of the world. Increasing extension of greenhouse gases and remote relationship phenomena accelerate the speed f climate change. Changes in precipitation level, drought occurrence and changes in the level of surface and groundwater resources are the recognized consequences of climate change. In order to study consequences of climate change on agricultural production in Shiraz County, three well rings in Shiraz plain were selected. Mean statistics of water level in wells were regressed on the year during 1978-2008. Using annual statistic of precipitation during 1958-2008 and standard precipitation index (SPI), the probability of dry year incidence was determined. Effects of 5 pumping scenarios with consideration to the probability of dry year incidence were assessed, using two-stage stochastic programming. Results showed that water levels at the desired level of agricultural wells has significant decrease 0.4 percent (p=0.034). The long-run loss of income and farm income under the mild climate change and dry years were 4.5 and 6.4 percent. The short-term loss of income and agricultural income in the same scenarios were estimated from 54 and 30 percent to 74 and 85 percent, respectively. Agricultural water use in the short and long term was estimated less than the status quo. Reduction in water use leads to reduction in yield and farm income in the study area, however, prevents the long-term damages to crop production levels and underground water resources. Ultimately, implementing policies to improve farmer's incentives to sustainable use of water resources are recommended.

Keywords: Climate change, Ground water resources, Two-stage stochastic programming, Shiraz

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Determination of Kashmar Plain Cropping Pattern Based on Protection of the Quality of Groundwater Resources

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Abstract

In the present study, ranking of agricultural land use constraints for about 700 hectares of Kashmar plain lands were determined by studying the consumption of the chemical fertilizers and impacts of irregular harvest on the quality of the groundwater resources. The studied lands were divided into 8 groups. The quality and more use restrictions were ranked by Vicor multi-criteria programming method and the related factors and indicators. Using weighted goal programming model with consideration to the 4 environmental and economical goals for each group simultaneously,, optimal cultivating pattern, sustainable management of groundwater use and achievement to the sustainable agriculture were proposed. The required data were collected from the Agriculture Administration, the Regional Water administration and the meteorological office of Kashmar County in 2011. Results showed that priority ranking of land use restrictions should be considered to prevent more damages to the agricultural areas. The results on the agricultural water resources quality during 2009 and 2011 showed that salinity increment in different subdivisions has developed. This causes the regional agriculture to face serious damages in the near future. Therefore, in order to achieve a comprehensive management on exploiting the regional groundwater resources, it is necessary to pay attention to some programs such as groundwater quality management, cultivation pattern change, cultivating the more resistant plants to salinity, replacing the chemical fertilizers with organic ones and considering the sustainable agriculture in the region.

Keywords: Goal Programming, Vikor Method, Sustainable agriculture, Groundwater quality

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Investigation of Climate Change Phenomenoun on Agricultural Production
(Case Study: Shiraz County)

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Abstract

Climate change phenomenon is an important environmental challenge of the world. Increasing extension of greenhouse gases and remote relationship phenomena accelerate the speed f climate change. Changes in precipitation level, drought occurrence and changes in the level of surface and groundwater resources are the recognized consequences of climate change. In order to study consequences of climate change on agricultural production in Shiraz County, three well rings in Shiraz plain were selected. Mean statistics of water level in wells were regressed on the year during 1978-2008. Using annual statistic of precipitation during 1958-2008 and standard precipitation index (SPI), the probability of dry year incidence was determined. Effects of 5 pumping scenarios with consideration to the probability of dry year incidence were assessed, using two-stage stochastic programming. Results showed that water levels at the desired level of agricultural wells has significant decrease 0.4 percent (p=0.034). The long-run loss of income and farm income under the mild climate change and dry years were 4.5 and 6.4 percent. The short-term loss of income and agricultural income in the same scenarios were estimated from 54 and 30 percent to 74 and 85 percent, respectively. Agricultural water use in the short and long term was estimated less than the status quo. Reduction in water use leads to reduction in yield and farm income in the study area, however, prevents the long-term damages to crop production levels and underground water resources. Ultimately, implementing policies to improve farmer's incentives to sustainable use of water resources are recommended.

Keywords: Climate change, Ground water resources, Two-stage stochastic programming, Shiraz

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An Investigation on Consequences of Increasing Rural and Urban Households' expenditure on Using Energy in the Agricultural Sector and Emitting Pollutants Pollutants

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Abstract

Changes in households' consumption expenditure affects energy use in economical sectors such as agricultural sector. The main objective of this paper was to study consequences of increased rural and urban households expenditures on energy use in agricultural sector and on environmental pollutants in Khorasan Razavi province. For this purpose, we used input-output tables of 2001 as a base data. Using RAS method, the data was updated for Khorasan Razavi province in 2007. In this paper, the consequences of increased households' expenditure on energy use and environmental pollutants were studied in 6 scenarios. The results showed that under constant conditions, 10% increase in urban households' expenditure causes 2.74% increase in energy use in agricultural sectors as well as 7.32% increase in energy use in other sectors. However 10% increase in rural households' expenditure increases energy use in the agricultural sectors and other sectors by 0.921% and 2.12% , respectively. Under constant conditions, 10% increase in urban households' expenditure causes 1.07% increase in energy use in the agricultural sector as well as 0.02% increase in energy use in other sectors. In regard to rural households, 10% increase in consumption's expenditure causes 0.43% increase in energy consumption in the agricultural sector as well as 0.04% increase in other sectors. The results showed that the urban household expenditure affects energy use in the agricultural sectors more than what rural households expenditure does. Furthermore, an increase in the households' expenditure ,due to the increase in the consumption of the agricultural products, has little effects on the total energy use of the province. The results presented the effect of raising the households' expenditure of the province on CO_2 emission that was realized the greatest pollutant SO_3 and CH_4 emissions were little; that is due to to the sort of energy use systems in the agricultural sector, compared to other sectors.

Keywords: Input-output, Energy, Households' expenditure, RAS method, Khorasan Razavi province

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Welfare Effects of a Reduction in the Energy Subsidy for Agriculture Sector of Iran

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Abstract

Energy is considered as an important input for agricultural products. A decrease in energy subsidy and its demand reduces agricultural outputs and raises the production costs. Changes in production and costs may significantly affect welfare of the agricultural producers. The main objective of this study was to analyze the impact of increased energy prices (reduction in the subsidy) on the agricultural producers as well as the government expenditure. In order to achieve the objective, production factor demands (labor, capital and energy) were estimated. Then, impact of increased energy price (decrease in subsidy) on its demand was analyzed. Using production function, the impact of decreased energy consumption on agriculture production was estimated. Using the demand function for agricultural products, the impact of decreased energy consumption on the agricultural prices was estimated. The study groups to analyze the welfare were agricultural producers and the government. The welfare impact of reduced energy subsidy includes a change in the production value , in the production costs and the government expenditure allocated to the energy subsidy in the agricultural sector. The results showed that for the short run an increase in energy prices raised energy cost, however the total production costs tended to decrease due to robust reduction in the agricultural production. Increased energy price results in an increase in the production prices which is beyond the decrease in the production and the decrease in the government expenditure. In the long run, increase in the energy costs and decrease in the government expenditure tended to progress rapidly. However, in the long run compared with the short run, due to the increased production and the decrease in the output price a lower increase in the production value occurs. The welfare analysis showed an increase in the welfare of the study groups, however, that was more considerable in the short run compared with the long run. Supporting the agricultural producers with credit facilities and technology improvement were suggested as the effective policies.

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Modeling Indicators for the Farmers' Psychological Empowerment in Mazandaran Province, Iran

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Abstract

During recent years the concept of farmer empowerment has been considered as an important part of many development organizations' and NGOs' policies for supporting agricultural and rural development. The overall goal of this study was modeling the farmers' psychological empowerment indicators in Mazandaran province, Iran. To achieve this goal, farmers' psychological empowerment indicators and affecting factors on farmers' empowerment were identified in Mazandaran province. The statistical population included 1368233 farmers living in the Mazandaran province, Iran. The sample size was determined using Cochran's formula. Stratified sampling with proportional allocation was used in this study. Research methodology applied in this study was a combination of descriptive-analytical and quantitative methods. To run the appropriate analyses, SPSS and LISREL softwares were employed. Cronbach's alpha and ordinal theta were 0.91 and 0.91 respectively. The mean of farmers' age and their farming experiences were respectively 49.31 and 25.58 years. 22 percent of farmers' psychological empowerment variance was determined through four factors of farmers' loan sources, solutions (positive factors), training methods and obstacles. The bank was found the primary source of loan fund for farmers. Among the solutions (positive factors), providing credits and loans to farmers was the most important in the farmers' psychological empowerment in Mazandaran province. Low literacy level was found the main obstacle in empowering farmers. Participating in farmer field school was found the most useful method to empower the farmers.

Keywords: Psychological Empowerment indicators, Farmers, Mazandaran

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Comparing Effects of Two Policies of Reducing Profit Rate and Increasing Supply of Credits on Growth of Production in Iran: A FCGE Analysis

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Abstract

   This study investigates the effects of two policies of reducing profit rate and increasing supply of credits on the growth of production in the economic sectors in Iran. To achieve the goal, the ORANI-G computable general equilibrium model was modified tothe present situation of Iranian economy. The model was also extended to accommodate the financial sector of the economy. To use the CGE model, a financial social accounting matrix based on the latest input-output table published by Statistical Center of Iran in the year 2001 was developed. Using the developed model, two scenarios were simulated. Simulation results of reducing interest rate of credits supplied to the sectors showed that the effects of this scenario on expansion of economic sectors is higher than the impact of the second scenario in the form of increasing supply of credits. This increased the real GDP growth rateby almost twice (1.2% versus 0.6%) of that in the second scenario. furthermore, the total exports experienced positive growth in the first scenario while it faced the negative growth in the second one. Additionally, a reduction in the profit rate of credits reduced prices of commodities and services, which in turns increased the inflation rate by 0.53 percent. However, increase in supply of credits led to an increase in the prices of commodities and services . This caused a rise in inflation rate by 0.04 percent. Increase in supply of credits, however, caused an increase in fixed capital formation in the economy by 1.6 times comparing to the profit rates reduction scenario. These results revealed that there is a compromise between these two policies with respect to their effects on the economy. Based on the goals and priorities of policymakers, one of the policies might be preferred to the other one.

   Keywords: Profit rate, Credit supply, FCGE, FSAM, Production Growth, Iran

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