Analyzing Skill of Summer Crop Farmers Regarding Sustainability in Khouzestan Province, Iran

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ABSTRACT

The purpose of the research was to analyze skill of summer crop farmers regarding production system sustainability in Khouzestan Province, Iran. The method of research was correlative descriptive. A random sample of summer crop farmers of Khouzestan province, Iran (n=250) were selected for participation in study. The study was conducted between 2014 and 2015. A questionnaire was developed to gather information regarding skill of summer crop farmers about production system sustainability. The questionnaire reliability was estimated by Cronbach’s alpha. Reliability was 0.85. Data collected were analyzed using the Statistical Package for the Social Sciences (SPSS). Based on the results level of farmer's skill about items of production system sustainability on 8 items was low. The results indicate 53.2% of farmers had moderate overall skill about production system sustainability. Liner regression was used to predict changes in sustainability skill by different variables. Level of education, participation in extension practices, income, access to communication channel, attitude to sustainability, sustainability knowledge may well explain for 74.8% changes (R² = 0.748) in sustainability skill.

Key words: Skill, Production System Sustainability, Summer Crop Farmers

INTRODUCTION

A more sustainable agriculture seeks to make the best use of nature’s goods and services as functional inputs. It does this by integrating natural and regenerative processes, such as nutrient cycling, nitrogen fixation, soil regeneration and natural enemies of pests into food production processes (Pretty and Hine, 2001). Sustainable agriculture involves all three pillars of development - economic, social and environmental. It cannot be viewed merely or even primarily as farming systems that are technically able to maintain or increase yields while conserving their natural resource base (Hurst, 2007).

The empirical evidence suggests that the nine types of sustainable agriculture improvements have a variety of positive effects on people’s livelihoods. These impacts reported in the multiple projects and initiatives include (Pretty and Hine, 2001):

i) improvements to natural capital, including increased water retention in soils; improvements in water table (with more drinking water in the dry season); reduced soil erosion combined with improved organic matter in soils, leading to better carbon sequestration; and increased agro-biodiversity.

ii) improvements to social capital, including more and stronger social organizations at local level; new rules and norms for managing collective natural resources; and better connectedness to external policy institutions.

iii) improvements to human capital, including more local capacity to experiment and solve own problems; reduced incidence of malaria in rice-fish zones; increased self-esteem in formerly marginalized groups; increased status of women; better child health and nutrition, especially from more food in dry seasons; and reversed migration and more local employment (Pretty and Hine, 2001).

It is impossible to list all the innovative and varied practices farmers and ranchers use to improve sustainability, so consider SARE’s list below a sampling, not a prescription, of best practices (SARE, 2014):

i) Marketing:
Farmers and ranchers can boost their financial sustainability by using a greater diversity of marketing techniques: processing on-farm; creating value-added products and a strong brand identity; conducting market research to match product to

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demand; selling direct to consumers at farmers markets, community-supported agriculture (CSA) enterprises, roadside stands or through the Web; and delivering to restaurants, small grocers and local institutions—to name just some techniques.

ii) Community Vitality:
Thriving communities—rural and urban—are a key to quality of life for all. When farmers and ranchers hire help and sell in nearby communities, for example, they contribute to the local economy. In turn, they have a nearby hub for raising their families and a possible market for their products.

iii) Ecological Insect And Weed Management:
Ecological pest management avoids single-bullet solutions that can harm beneficial insects, and instead uses a combination of many complementary strategies—for example, biological controls such as trap crops for insect pests, physical removal of weeds and insects, application of chemicals if necessary, and other methods such as selecting crops that smother or shade out weeds and creating habitat for beneficial insects.

iv) Grazing:
Management-intensive, or rotational, grazing systems keep animals moving from pasture to pasture to provide high-quality forage and reduce feed costs. An added bonus is that—with a little attention from the farmer or rancher—grazing animals distribute manure across the field, which contributes to soil fertility and reduces the need for purchased fertilizer inputs.

v) Conservation Tillage:
Many soil conservation practices—contour tillage, reduced tillage and no-till, to name a few—prevent soil loss from wind and water erosion. Conservation tillage systems also help minimize soil compaction, conserve water and store carbon to help offset greenhouse gas emissions.

vi) Cover Crops:
Growing plants such as rye, clover or vetch after harvesting a cash crop can provide multiple benefits, including weed and insect suppression, erosion control and improved soil quality. Cover crops are now grown on millions of acres across the country.

vii) Crop, Livestock And Landscape Diversity:
Growing a greater variety of crops and livestock—especially genetically diverse open-pollinated plants and heritage breeds—can make a farm more resilient to diseases and pests, as well as extremes in weather and market conditions. Certain agroforestry techniques—inter-planting trees with crops and growing shade-loving specialty crops, for example—help conserve soil and water, provide wildlife habitat and increase beneficial insect populations.

viii) Nutrient Management:
Well-managed and properly applied on-farm nutrient sources—such as manure and leguminous cover crops—build soil, protect water quality and reduce purchased fertilizer costs.

ix) On-Farm Energy Conservation And Production:
Farmers and ranchers are using energy-saving devices, windmills and solar power, while also learning how to grow and process their own fuel. These practices not only make farm operations more profitable, clean and efficient, they help reduce dependence on foreign oil and reduce greenhouse gas emissions.

x) A Whole-Farm Approach:
A whole-farm approach combines the practices listed above into one integrated management system that works with nature: Reducing tillage and careful application of on-farm nutrient sources, for example, build soil organic matter; energy costs are reduced when fuel is produced from waste or renewable sources; pests are controlled by plant and landscape diversity; income is boosted by more efficient use of on-farm resources—and the list goes on.

Sustainable agriculture, as a managerial philosophy and a system that provides agricultural needs of both present and future generations has raised as a major challenge of the 21st century to meet these complications and natural and human difficulties; that is, agriculture should be consume less and be sustainable more (Qamar, 2002; Rasul and Thapa, 2003; Leeuwis, 2004).

MATERIALS AND METHODS

The purpose of research was analyzing skill of summer crop farmers regarding sustainable agriculture, Khouzestan Province, Iran. This study was carried out by survey during 2014-2015. The method of research was correlative descriptive. A random sample of summer crop farmers of Khouzestan province, Iran (n=250) were selected for participation in the study. A questionnaire was developed to gather information regarding technical knowledge of regarding sustainable agriculture, Khouzestan Province, Iran. The questionnaire was pilot tested and reliability was estimated by calculating Cronbach’s alpha. Reliability was (Cronbach's alpha = 0.86).

Table 1: Demographic profile of staff

<table>
<thead>
<tr>
<th>Variables</th>
<th>F</th>
<th>P</th>
<th>CP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td></td>
<td></td>
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<tr>
<td>20-30</td>
<td>71</td>
<td>28.4</td>
<td>28.4</td>
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<tr>
<td>30-40</td>
<td>85</td>
<td>34</td>
<td>62.4</td>
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<td>40-50</td>
<td>71</td>
<td>28.4</td>
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<td>50-60</td>
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<td>Educational level</td>
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<tr>
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<td>26</td>
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<td>26</td>
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<tr>
<td>High school</td>
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<td>Work experience (Year)</td>
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<td>10-20</td>
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<tr>
<td>30-40</td>
<td>6</td>
<td>2.4</td>
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</tbody>
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F: Frequency, P: Percentage, CP: Cumulative Percentage
RESULTS

Demographic profile

Table 1 shows the demographic profile and the descriptive statistics for some characteristics of summer crop farmers. The results of the demographic information and the descriptive statistics of the participant indicated that minimum age of participant was 20 years. Their maximum work experience was 40 years.

Skill of Farmers about Sustainability

For assessment skill of summer crop farmers regarding sustainability, 12 questions were designed. Lowest point for each item was (Min=0) for lack of use and highest point was (Max= 2) for always answer and 1 for somewhat answer. Based on number of questions (n=12) and point range of each question, the minimum and maximum scores of skill were 0 and 24, respectively. Thus people who had a score of 0 to 8 located in first group, those who had of 8 to 16 were in the second group. People, who had a score of 16 to 24, were in the third group.

Level of farmer's skill about items of sustainability revealed mean on 8 items was less than 0.67. This indicates that skill of summer crop farmers regarding sustainability is not a suitable situation (Table 2). The results of table (3) indicate 94.4% of farmers had low and moderate overall skill regarding sustainability.

Correlation study:

Spearman correlation coefficients to test hypotheses was used, the results of this test are as follows (Table 4): The results of table 4 showed the correlation between skill about sustainable agriculture and level of education, participation in extension practices, income, access to communication channel, attitude to sustainability, sustainability knowledge at the level of 0.01 was significant. It means that with 99% of confidence, we can conclude that farmers with high level of education, participation in extension practices, income, access to communication channel, attitude to sustainability, sustainability knowledge had high sustainability skill.

Regression analysis

Table 5 shows the result for regression analysis by stepwise method. Liner regression was used to predict changes in sustainability skill by different variables. Level of education, participation in extension practices, income, access to communication channel, attitude to sustainability, sustainability knowledge may well explain for 74.8% changes ($R^2 = 0.748$) in sustainability skill.

$$\text{Y} = 1.786 + 0.679x_1 + 0.842x_2 + 0.946x_3 + 0.567x_4 + 0.934x_5 + 0.739x_6$$

DISCUSSION

The results indicate that skill of summer crop farmers regarding sustainability is not a good situation. This result
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REFERENCES


SARE, 2014. what is Sustainable agriculture?, Developed by the Sustainable Agriculture Research and Education (SARE) program with funding from the USDA’s National Institute of Food and Agriculture (NIFA).