Barriers In Adopting Sustainable Agricultural Practices (SAPs) Under Changing Climate In Balochistan, Pakistan

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Abstract

Climate change is vital issue hindering sustainable agriculture development and adjustments in farming practices. Conventional agriculture practices often lead to environmental degradation, ground water depletion, financial issues and even social conflicts. The population of the globe is experiencing increased temperatures, low rainfall patterns with scarcity of water availability and drought persistence due to climate change. This article, thus, focuses on the challenges of adoption of sustainable agriculture practices (SAPs) in water scarce, drought prone province of Pakistan. Data was collected from 164 farmers by semi-structured questionnaire following multistage clustering sampling and empirically analyzed through Binary Logistic Regression Model. The results of the study elucidated that farmers' education, their risk-taking behaviour, participation in training, limited availability and high cost of agriculture land, inherited system of irrigation, and access to agricultural credit as main barriers in adopting SAPs. The study recommends expansion of knowledge, planning, financial assistants from related institutes, proper training by the agriculture department and policy intervention to cope with these barriers that hold back the adoption of SAPs. The Government need to develop sustainable adaptive strategies for minimizing the adverse impacts of climate change on agriculture by on-farm demonstrations in the field thereby saving depleting water resources and encourage farmers to adopt sustainable agricultural practices.

Keywords: Sustainable Agricultural Practices; Adoption; Water Management; Logistic Regression; Climate Change; Balochistan.

تلخیص

ماحولیاتی تبدیلی پائیدار زراعت کی ترقی اور کاشتکاری کے طریقوں میں مطابقت کی راہ میں رکاوٹ ہے۔ روایتی زراعت کے طریق کار اکثر ماحولیاتی خرابی، زمینی پانی کی کمی، مالی مسائل اور یہاں تک کہ معاشرتی تنازعات کا باعث

بنتے ہیں۔ آب وہوا میں بدلاؤ کی وجہ سے دنیا کی آبادی کو درجہ حرارت میں اضافہ، کم بارش، پانی کی دستیابی میں کمی اور خشک سالی کا سامنا ہے۔ اس مضمون میں، پاکستان کے خشک سالی سے متاثرہ صوبے میں پائیدار زراعت کے طریقوں کو اپنانے کے چیلنجوں پر توجہ دی گئی ہے۔ ملٹی اسٹیج کلسٹر نیم ساختہ سوالنامے کے ذریعے ۱۶۴ کسانوں سے مواد اکٹھا کیا گیا۔ بائنری لاجسٹک ریگریشن ماڈل کے ذریعہ تجرباتی طور پر تجزیہ کرنے کے بعد مطالعے کے نتائج نے یہ واضح کیا کہ کسانوں کی تعلیم، ان کا خطرہ مول لینے والا طرز عمل، زرعی تربیت میں حصہ لینا، محدود دستیابی اور زرعی اراضی کی زیادہ لاگت، موروثی آبپاشی کا نظام، اور زرعی قرضوں تک رسائی پائیدار زراعت کے طریقوں کو اپنانے میں بنیادی رکاوٹ ہے۔ اس مطالعے میں علم کی توسیع، منصوبہ بندی، متعلقہ اداروں سے مالی معاونین، محکمہ زراعت کی جانب سے مناسب تربیت اور پائیدار زراعت کے طریقوں کو اپنانے کو روکنے والی ان رکاوٹوں کا مقابلہ کرنے کے لئے پالیسی مرتب کرنے کی سفارش کی گئی ہے۔ حکومت کو زراعت پر آب وہوا کی تبدیلی کے منفی اثرات کو کم کرنے کے لئے پائیدار حکمت عملی تیار کرنے کی ضرورت ہے جس سے آبی وسائل کے بچت ہوگی اور کاشتکاروں کو پائیدار زرعی طریقوں کو اپنانے کی ترغیب دی جائے گی۔

کلیدی الفاظ: پائیدار زرعی طریقے، اختیار کر لینا، پانی کے انتظام، لاجسٹک ریگریشن، موسمیاتی تبدیلی، بلوچستان

Introduction

Agriculture is one of the basic activities for maintaining life on globe (McMahon, 2013). Agriculture is also an evident significance to human welfare and the prosperity of all other living animals. Then again, climate is an important deciding variable for both the areas fit for agricultural business and the profitability of horticultural crops. Pakistan in general and Balochistan in particular is vulnerable to climate change. Thus, it is not astonishing that agriculture has been recognized as field of worry in the present converse on circumstances and end results of environmental change. The effects of climate change are threat for agricultural practices, particularly for such nations that are prone to climate change and where underground water is depleting day by day. The United Nations Framework Convention on Climate Change (UNFCC) stressed that temperature change is connected to advancement and exceptional consideration ought to be given to developing nations that are most unprotected against disasters(Dunning, 2006; Dunning & Fortanier, 2007; UNFCC, 2007).

Sustainability is an idea that is generally straightforward but difficult to practice. At simplest level, it implies great ecological administration and cultivating networks that are productive, prosperous, feasible and imperative. A mix of determining barriers in adoption of SAPs have been identified in agricultural literature. For instance, Cary, Webb and Barr (2001) indicated several barriers that obstruct adoption of SAPs. According to them, these barriers may have four

different conditions: (i) the characteristics of desirable management practices, (ii) perspective of individual landholders (iii) the socioeconomic structure of adopters' communities and (iv) the broader institutional settings. Norman, Janke and Freyenberger, (1997) reported another reason for not adopting SAPs that these require a huge commitment to constant learning and are management intensive. Similarly, Suvedi, Jeong and Coombs (2010) state that one reason for farmers being unable to adopt is their inadequate managerial skills. While, on the other hand, Presley (2014) blame farmers' lack of information about SAPs as a key obstacle to adoption. Another main barrier, argued by Nowak (1991),is that farmers are unable to adopt sustainable management techniques because of limited information regarding technical and/or economic issues of these technologies. Aside from these, lack of knowledge about the implementation and viability of these practices is an important barrier to adoption(Norman et al., 1997; Presley, 2014).

Besides managerial and technical factors, economic factors also play a vital determining role in adoption(Pannell, 1999). Some of the commonly mentioned economic factors holding farmer from adoption are the cost of adopting, the uncertainty of profit ability, loss of productivity, labour demand, short-term economic requirements, and the government economic policies(Presley, 2014). Labour shortage is another economic factor, argued by Nowak (1991)that has significant negative impacts on profitability and, thereby, the farmers' decision to adopt SAP(Nowak, 1991).Along with micro-level factors, the national policies also stimulus the economic environment upon which farmers decide on the feasibility of adopting new agricultural practices (Norman et al., 1997).A study in Iran by Kheiri (2015) revealed that the high cost of sustainable agriculture and farmer's attitudes were the most important hurdles in implementation of SAPs. Keeping in view the factors identified in the literature and prevailing conventional agricultural practices and, on top of all, continuous declining underground water table. The main purpose of this research was firstly to prioritize the barriers of sustainable agriculture from the farmers' perspectives and, secondly, to identify the barriers of sustainable agriculture adoption in Balochistan plateaus. The present climate change has seriously influenced the agriculture of the area. Less precipitation and exhaustion of ground water have developed huge issues for the farmers of the region. In this way, the present research will bring awareness among farmers about climate change and its effects on farming and also to propose courses for the reasonable agriculture improvement in the region.

Review of Literature

Climate change is a real and imperative question. The global environment is changing, and the human exercises have added to it altogether. However, the change is much quicker and more dangerous than thought before. The universal

temperature of the earth has risen by an average of 0.7^o C in the 20[th]century, and proceeds on rising pattern (IPCC, 2007). Climate change shows another kind of test for development. It is now broadly recognized that climate change impacts enhance existing threatening conditions for developing nations(McCarthy et al., 2001). It is also worldwide recognized that poor people are more incapable and have less limited ability to confront such changes (Swart et al., 2003). Climate change is potentially the most challenging which the world is facing. However, its impact varies from region to region. The difficulties of climate change are winding up additionally unbearable to practical financial improvement and the totality of human presence (Hughton, 2004).Nations with an absence of assets, poor foundation, and insecure establishments have little ability to adjust and are very vulnerable (Morecroft & Cowan, 2010; Smit & Pilifosova, 2003).

Sustainable Development is a method for evacuating the auxiliary conditions that may have caused climate change, and then again distinguishing climate change as an outcome of un-sustainable advancement. Inside this specific situation, climate change strategies are viewed as vital to sustainable development, where the climate denotes a vital signpost for social association and thoughts over how to manage the outcomes of climate change (Baker, 2006; Hjerpe & Linnér, 2009).

Sustainable development might be portrayed as "basically challenged idea" (Gallie, 1956). Since the presentation in the late 1980's, its significance has been examined and tested generally. The distinctive understandings have been drastically disparate, raising doubt about whether it is one and a similar idea that has been examined. We discover understandings of practical improvement as 'proceeded monetary development' (Beckerman, 2003; Kurukulasuriya, 2006; Walls & Maris, 2006). Sustainable farming is not only an arrangement of practices yet a procedure requiring abilities of flexibility (Milestad, 2003). The nearness or absence of such adjustment aptitudes is a major determinant of how weak a particular framework is to outer or inside anxieties lie weather change. With regard to climate change, flexibility is regularly alluded to as "flexible limit," characterized as the aptitude of a structure to be conventional to environmental change (counting climate changeability and boundaries) to direct potential harms, to exploit openings or to adapt to the outcomes of climate change(McCarthy et al., 2001). In the dialect of sustainability, the more versatile limit a framework has, the stronger it is to keep up its respectability in spite of worries from interior and outer elements and henceforth is more practical (Costanza & Daly, 1992).

In developing countries with abnormal amounts of poverty and a reliance on climate fragile farming, ponders concentrating on climate change adjustment, arranging, and strategy forms, have increased relative significance throughout the years. Climate change and agriculture have an exceptional relationship. There is developing proof to propose that Climate change is genuine and has possibly wrecking results on mankind. Climate changeability and change influence mankind through higher than

typical normal temperatures, adjusted examples and force of precipitation, mid-season dry spells, and flooding. Smallholder farmers will probably be affected more by climate change. Building versatility to climate change is one key factor that can diminish the future effects of climate change. Adjustment can lessen the power of things to come effects of climate change on harvest yields and vocations. It is obviously expressed that an adjustment to climate change can mollify the effects of agribusiness. In any case, the effective utilization of Sustainable Agriculture Practices (SAP'S) can offer feasible answers for a portion of the difficulties incited by climate change in the agrarian segment. Past investigations propose that a compelling appropriation of SAPs possibly lightens a portion of the numerous issues presented by climate change and changeability, through a decrease in land debasement, and a change in harvest yields and jobs (Howden et al., 2007).

Text on modification and lessening of natural jeopardy finds that conduct reactions to hazards depend in extensive part on risk observation or belief about the presence and trait of an attribute risk (Nigg & Mileti, 2002). The conduct of change is impacted by view of the dangers related with a given regular risk, which are interceded by convictions around (1) the presence of the threat and (2) its qualities. Seen chance among people or collectivises, while a basic determinant of zeal to get ready for or moderate normal dangers, is frequently inconsistent with target appraisals of hazard. Since view of hazard are socially developed and transmitted, contrasts in perspectives, individual encounters, assumptions regarding innovation, trust in establishments, and different variables can impact mindfulness and comprehension of risks and choices and activities (or inaction) accordingly (Slovic, 2009).

Materials and Methods

District Mastung of Balochistan Province was selected as target area for the study. The district is situated in the northwest of Balochistan and it was set up in 1991. Preceding 1991, it was a part of Kalat District. The aggregate region of the Mastung District is 5896 Square Kilometers and it lies between 66°11'34"-67°25'59" East and 29°20'13"- 30°15'8" North. According to the total population of the District Mastung is 266,461(GoP, 2017). This district comprises of four *Tehsils*[1] to be specific Dasht, Kardigap, Kad Kucha and Mastung. The climate is portrayed by dry sweltering summers and mild to cool winters. Precipitation is inadequate and amid winter, snow falls in the valley. The employments of the general population in the district are profoundly subject to farming. This district has awesome potential for horticultural products including almond, apple, apricot, grapes, peach, plum, pear, pomegranate, cherry and pistachio. Primary source of irrigation is tube well as about 35,644 hectares are harvested by tube wells comprising of 98.98% of the aggregate irrigated area. District Mastung is susceptible to climate change and has experienced severe drought spells in last

two decades making farmers at risk where majority of the rural population directly or indirectly depends on Agriculture.
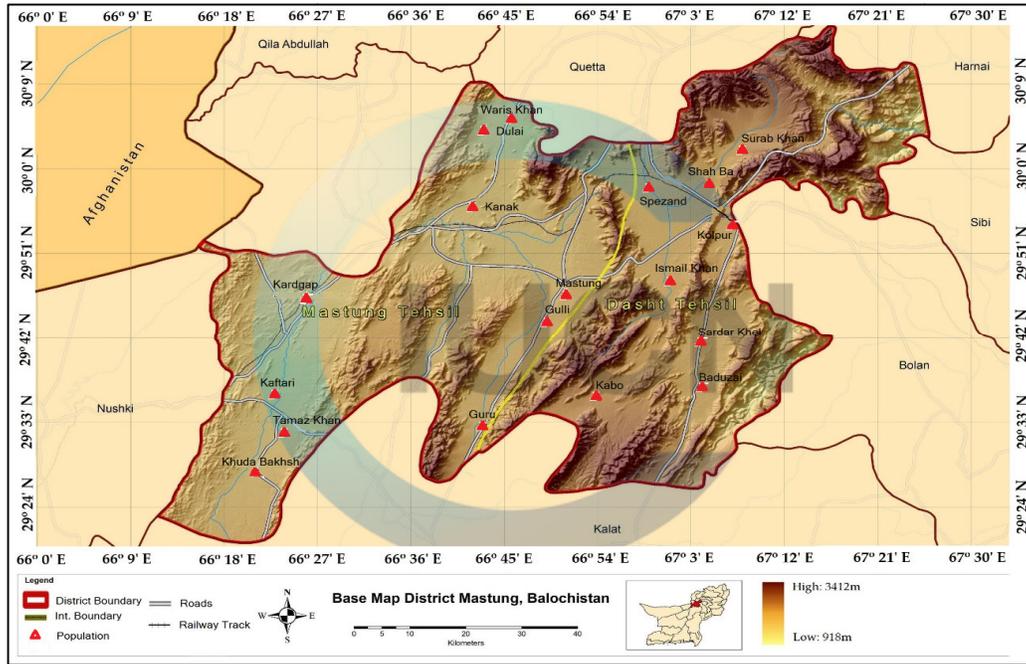

Figure 1 Map of the Study Area

Sampling Procedure and Sample Size

As mentioned earlier, the district comprises of four *Tehsils* among which *Tehsil* Mastung is more dominantly urbanized. Therefore, with consultation with and on recommendation of the respective *Patwaris*[2] of each *Tehsil,* the data was collected from rest of three rural *Tehsils* having 20,599 household. In this study, data from a sample of 164 farm households were collected following the formula of Arkin and Colton (1963) with a confidence level (Z) of 95% and a sampling error (e) of 7.5% and at 50% degree of variability (P).

$$n = \frac{NZ^2 \times P(1-P)}{Ne^2 + Z^2 P(1-P)}$$ (Equation 1)

A multi-stage random sampling technique was used to identify farm households to be surveyed. Firstly, eight Union Councils[3] with relatively high intensity of farming were selected with the consultation of *Patwaris*. Then, 16 villages were selected randomly from these selected UCs in the second stage. In the last stage, 164 farm households were randomly surveyed from the villages selected in the second stage. The household survey was conducted from August to October of year 2018.Along with the primary data, secondary data was collected from various sources like profile of the district and related agriculture department and water management department.

Data Analysis

In this research we used both qualitative and quantitative methods of research. To find out the factors affecting the farmer's awareness and adaptation of sustainable agriculture practices, a logistic regression setup was followed which is given as below;

Log [p/ (1 – p)] = α + βixi   (Equation 2)

Where βi are coefficients and Xi are independent variables assumed to affect farmers' choice of adopting sustainable agricultural practices. The detail of type, measurement level and description of dependent and independent variables is given in the Table 1. The data was analyzed by using SPSS version 21.

Table: 1
Description and measurement of variables

Variable	Measurement	Description
Adoption of sustainable agricultural practices **(Dependent Variable)**	Binary	1 = Adopter; 0 = Non-Adopter
Independent Variables		
Family members working in field	Scale	Number of family members working as agriculture labor in the field.
Farming Experience	Scale	Number of Years in farming
Farmer education	Binary	1 = Educated; 0 = Uneducated
Farmer's risk-taking behavior	Binary	1 = Risk-taker; 0 = Risk-averse
Participation of farmer in Agriculture training	Binary	1 = Yes; 0 = No
Limited availability of land for agriculture.	Binary	0 = No importance; 1 = High Importance
Non-availability of credit to the farmers.	Binary	0 = No importance; 1 = High Importance
Lack of extension services	Binary	0 = No importance; 1 = High Importance
Lack of Government support	Binary	0 = No importance; 1 = High Importance
High cost of agriculture land.	Binary	0 = No importance; 1 = High Importance
Inherited system of Irrigation	Binary	0 = No importance; 1 = High Importance

Results and Discussion
Profile of Respondents

Agriculture in district Mastung is dominated by conventional agriculture where farmers practice flood irrigation and are growing conventional water-demanding crops like apple, apricot, peach and plum. This is also apparent from our findings where only about one-third of the respondent farmers are following sustainable agricultural practices (Table 2). More than half of them have never attained formal education and, on average, have more than 30 years of farming experience. Little more than one-fourth of the farmers have ever attended any agricultural related training; while more than two-thirds of them were afraid of taking risk of going for sustainable ways of agriculture.

Farmers were also asked to prioritize other factors which they perceive to be important barriers to SAPs (Table 3). Highest rank (importance) was given to availability of credit to farmers for availing/ affording SAPs by 87% of respondent farmers. Credit was followed by need of extension services and the conventional way of irrigation. Farmer also ranked higher the unavailability of land for agriculture, and its high cost (if available) as main hurdles in adopting SAPs. Almost three-fifths of the farmers also prioritized government lack of interest and support to farmers in adoption of sustainable agricultural practices.

Table: 2
Summary Statistics of respondent farmers' profile

	Adopters of SAPs		Non-Adopters of SAPs	
Variables	**Frequency**	**Percentage**	**Frequency**	**Percentage**
Adoption of sustainable agricultural practices **(Dependent Variable)**	51	31.1	113	68.9
Independent Binary Variables				
Farmer's education	Educated		69	42.1
	Uneducated		95	57.9
Farmer's risk-taking behaviour	Risk-taker		50	30.5
	Risk-averse		114	69.5
Participation of farmer in Agriculture training	Yes		43	26.2
	No		121	73.8
Independent Scale Variables				
	Min	**Max**	**Mean**	**S.D.**
Family members working in field	1	25	4.07	3.77
Farming Experience	2	75	31.98	17.97

Source: Authors own calculation from survey 2018.

Table: 3
**Farmers' perceived prioritization of factors (independent variables) as the
barriers of SAPs**

Variables	High Importance		No Importance		Rank
	Frequency	Percentage	Frequency	Percentage	
Lack of Government support for SAPs	95	57.9	69	42.1	1
High cost of agriculture land.	111	67.7	53	32.3	2
Limited availability of land for agriculture.	130	79.3	34	20.7	3
Inherited system of Irrigation	139	84.8	25	15.2	4
Lack of extension services	140	85.4	24	14.6	5
Non-availability of credit to the farmers	143	87.2	21	12.8	6

Source: Authors own calculation from survey 2018.

Barriers to Adoption of SAPs

After running the Logistic Regression Model, following results were obtained
from adoption model. It is to be noted that out of eleven (11) independent
variables, seven (07) proved to be significantly affecting farmers' adoption of
sustainable agricultural practices (Table 4). These factors included farmers'
education, their risk-taking behaviour, usefulness of training, high cost of
agriculture land, limited availability of land, inherited system of irrigation, and
access to agricultural credit as main barriers in adopting SAPs.

The probability value of variable associated with farmer's education is (0.010),
indicating a significant positive relationship between adoption of SAPs. The odd
ratio of 2.92 shows that educated farmers were almost three times more likely to
adopt SAPs compared to their uneducated counterparts. This factor is in line with
the findings of (Rodriguez et al., 2009) and (Cary et al., 2001) where they have
found significant effect of farmers' education on their adoption behaviour. The
result is plausible in the sense that farmers' lack of education and knowledge and
unfamiliarity with practices makes the uncertain of something new or unknown.
Uneducated farmers also are likely to lack to understand how the SAPs will
benefit them in the long-run. They need to be educated that that this system will
benefit them and their next generations in future. In Balochistan, majority of the
farmers are illiterate and they are not aware of the latest trends in agriculture,
especially in the context of climate change. When inquired about the

consequences of climate change and its mitigation one of the farmers in sub-district *Kadkoucha,* said:

> *"I don't have the awareness and knowledge about climate change and how all the pieces come together".*

Table: 4
Results of variables tested as barrier in adoption to SAPs

Variables	B	S.E.	Sig.	Exp(B)
Farmer's education	1.072	0.416	0.010	2.920
Farmer's risk-taking behaviour	1.021	0.474	0.031	2.777
Participation in Agriculture training	1.350	0.497	0.007	3.857
Family members working in field	0.038	0.056	0.502	1.038
Farming Experience	-0.027	0.647	0.676	0.763
Lack of Government support for SAPs	0.204	0.426	0.632	1.226
High cost of agriculture land	0.871	0.464	0.060	2.390
Limited availability of land for agriculture	1.404	0.610	0.021	4.073
Inherited system of Irrigation	1.452	0.667	0.030	4.271
Lack of extension services	0.478	0.573	0.405	1.613
Non-availability of credit to the farmers	0.031	0.013	0.019	1.032
Constant	-6.946	1.636	0.000	0.001

Source: Authors own calculation from survey 2018.

Risk-factor was another barrier showing significant effect over adoption behaviour of farmers. The probability value of variable associated with farmer's risk is (0.03), it's odd ratio indicated that farmers ready to take risk were almost three times more likely to adopt SAPs compared to the farmers which were afraid of taking risky decisions. Some researchers (Norman et al., 1997; Rodriguez et al., 2009) link increased risk to decreasing yields during application and transition of SAPs from conventional farming, specifically when new machinery or equipment are required or when the mix of inputs changes. Another factor linked to farmers' risky behaviour is the perception that sustainable practices might reduce profits due to increased costs related to SAPs.

The probability value of variable associated with farmer's agriculture training is (0.007), indicating a significant positive relationship between the variable's agriculture training and adoption of sustainable agriculture practices. The odd ratio is 3.857 showing that farmers who participated in agriculture trainings were more likely to adopt sustainable agriculture practices almost four times higher as compare to the farmers who did not participate in any agricultural related trainings. It has now become mandatory that training and development programs should be organized for farmers to avoid the bad effects of climate change on the agriculture. During the investigation of the farmers of selected area, astonishing results were obtained where majority of the respondents did

not attend a single training program. However, more than one quarter of the farmers attended training programs organized by BRSP (Balochistan Rural Support Program).

Similarly, the unavailability and high prices of agriculture land and adoption of sustainable agriculture practices have significant relationship (0.02 and 0.06, respectively) with adoption of SAPs. The land available for agriculture does matter in attaining sustainable agriculture development. In the context of Balochistan, when this question was inquired the responses were astonishing. The present situation of the water available for agriculture is very depressing which has pushed the farmers to reduce their agriculture land and now with this limited irrigated land it has become impossible for them to achieve sustainable agriculture development. The results clearly explain that almost four-fifths of the farmers consider limited availability of agriculture land as a constraint of very high importance in adoption of sustainable agriculture practices.

The probability value of variable associated with unavailability of agricultural credit is (0.019), indicating a significant positive relationship of the variable to adoption of SAPs. Since all of our life is encompassed by cash therefore credit is compulsory. It is the foremost important thing which is required to run all the activities of the life, because it plays a basic part within the handle of commercialization and upgrading of agriculture sector, particularly rural economy (Riaz, A., G.A. Khan, and M. Ahmad, 2012).Climate change has brought numerous problems for the farmers, and their income is reducing with the passage of time due to reductions in agriculture land and livestock size. Their meagre resources do not permit them to bring changes in their agriculture practices. Subsequently, with the financial help of the government, they can cope with the adverse effects of climate change by changing their agriculture practices. However, when farmers were asked that why they are not availing the credit facilities of *Zarai Tarqaiti Bank* of Pakistan, majority of them replied that they being Muslim are prohibited to pay interests and the second reason they explained was the lengthy process of credit awarding.

Lastly (but not least), the probability value of farmers' perceived ranking of inherited system of irrigation also indicated a significant positive relationship (0.030) with the highest odd-ratio of all (4.27) proving that farmers consider conventional irrigation system to be a barrier in adoption of SAPs four times higher than other perceived factors. This belief is plausible in the sense that the trees in the study area had been irrigated via flood irrigated system for years, as a result the root canopy of the trees has been expanded to a larger area. Now the

drip irrigation system makes it unfeasible and not viable because of its smaller service area. This fact was also identified by Khair, Culas and Hafeez, (2010) and Khair *et al.*, (2012) as key reason of failure of drip irrigation system in fruit orchards of Balochistan. The study recommends expansion of knowledge, planning, financial assistants from related institutes, proper training by the agriculture department and policy intervention to cope with these barriers that hold back the adoption of SAPs. The Government need to develop sustainable adaptive strategies for minimizing the adverse impacts of climate change on agriculture of the province thereby saving depleting water resources. This can be done by successful on-farm trials and demonstrations suggesting which sustainable practices will work best and are economically viable in the climate and soil of the province. Such demonstrations would hopefully encourage farmers to adopt sustainable agricultural practices.

Conclusions

We know that human beings have always been good at adapting to diverse climatic conditions and this capability to succeed in different climates has made him different species. Climate change will definitely test that adaptability during continuous and violent variation in rainfall and temperature in Balochistan. This research study allowed us to gain an understanding of the factors/ hurdles that farmers are facing in adoption of the sustainable agriculture practices in their farming in the context of climate change. The research identified farmers' education, their risk-taking behaviour, participation in training, limited availability and high cost of agriculture land, inherited system of irrigation, and access to agricultural credit as main barriers in adopting SAPs. The study recommends expansion of knowledge, planning, financial assistants from related institutes, proper training by the agriculture department and policy intervention to cope with these barriers that hold back the adoption of SAPs. The Government need to develop sustainable adaptive strategies for minimizing the adverse impacts of climate change on agriculture of the province thereby saving depleting water resources. This can be done by successful on-farm trials and demonstrations suggesting which sustainable practices will work best and are economically viable in the climate and soil of the province. Such demonstrations would hopefully encourage farmers to adopt sustainable agricultural practices.

Endnotes

1. *Tehsils:* Local term for Sub-district in Pakistan.
2. *Patwaris:* Local term used for the officer keeping land records in Pakistan.
3. *Union Councils*: Local term used for the administrative unit lower than Tehsil.

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