

**Impacts of saffron projects and the effectiveness of agriculture
extension services on transition from poppy to saffron in
Pashtun Zarghun district of Afghanistan.**

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Applied Sciences in partial fulfillment of the requirements for the Degree of
Master of Management of Development with specialization in Training Rural
Extension and Transformation**

Research location
Pashtun Zarghun district, Herat, Afghanistan

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ABSTRACT

This study intends to explore the impacts of saffron projects and the effectiveness of agriculture extension services on transition from poppy to saffron in Pashtun Zarghun district. The term extension has been used in highly variable connotes with different meaning at different context. Here in this study the term extension is used as a professional communication intervention deployed by an institution to induce change in a voluntary behaviour with a presumed public or collective utility. Currently that the cultivation and production of poppy is significantly increased in Afghanistan and changed to a global problem, the agriculture extension sector can play an important role in introducing alternative crops to replace poppy. Considering the problem of poppy cultivation in Pashtun Zarghun district, DACAAR has worked on the extension of saffron as an alternative crop and implemented some projects aimed to the identification of alternative source of livelihood for the farmers who have been financially depended on poppy cultivation before. DACAAR has also established three saffron producers' associations in 2005 and provided saffron corm for some of the members of these associations. But the women have formed the fourth association of their own in 2007.

The main objective of this study is to identify and explore the impacts of saffron projects and the effectiveness of extension services for transition from poppy to saffron. For realizing the objective of this study the researcher used desk study as well as interviews and focus group discussions with the farmer group in the field. Interviews and focus group discussions were carried out by using open ended questions with farmers, saffron associations' members including women saffron association. The finding of this research shows that different reasons have contributed for transition from poppy to saffron. Around 50% of men and women farmers have argued that the reason for changing from poppy to saffron was the high income delivered by saffron in compare to the poppy. Some other farmers have reported that the reasons for referring to saffron cultivation are the government pressure on farmers who are growing poppy and the high risk of poppy cultivation and production. They have further argued that saffron is a drought resistance crop which only needs 2 irrigations during the flowering season but it does not compete with irrigation needs of other crops.

Regarding to the challenges, the extension workers stated that lack of communication and transportation facilities, shortage of field level extension worker and low level of salaries are the most important challenges faced by the extension workers in Pashtun Zarghun district. 39% of the men farmers have stated that in 2005 when they started cultivation of saffron, they had many technical problems with cultivation, harvesting and processing of saffron. They have also argued that the other challenges that they are facing are availability of saffron corm, insufficient extension and support services. The women farmers have stated that beside all the mentioned challenges they are also faced to the cultural constraints for participating in outdoor activities. Despite all the mentioned challenges faced by the extension workers and farmers the saffron cultivation and production have significantly increased since 2005. In 2005 the total area under saffron cultivation in this district was about 30 hectares which has increased to 50 ha in 2006; currently there are 150 hectares of land under saffron cultivation in this district. The area under poppy cultivation in 2004 to 2005 was over 180 hectares which is currently decreased to the zero and there are 800 saffron grower farmers divided in 4 associations in this district.

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ABBREVIATIONS

ASC	Afghan Saffron Company
CAP	Consolidated Appeals Process.
CDC	Community Development Councils
CRS	Catholic Relief Services
DACAAR	Danish Committee for Aid to Afghan Refugees
DLIFLC	Defence Language Institute Foreign Language Centre
DLIFLC	Defence Language Institute Foreign Language Center.
IDP	Internal Displaced People
MAIL	Ministry of Agriculture Irrigation and Livestock
MoPH	Ministry of Public Health
NAEC	National Agriculture Education Centre
OFT	On Farm Training
UNCCD	United Nation Convention to Combat Desertification.
UNDOC	United Nation Office on Drug and Crime.
UNDP	United Nation Development Program
UNFPA	United Nations Fund for Population Activities
UNHCR	United Nation High commissary for Refuges
UNICEF	United Nations International Children's Fund
USAID	United States Agency for International Development
USDA	United States Department of Agriculture
WHO	World Health Organization

1. CHAPTER ONE: INTRODUCTION

This study explores the impacts of saffron projects and effectiveness of extension services for transition from poppy to saffron in Pashtun Zarghun district of Herat province. The first introductory chapter provides general background to the research. The chapter explains the context in which the research is situated as well as the underlining problems that evokes the research. Chapter two explains the agriculture extension system and the saffron chain in Afghanistan. Chapter three and four are focusing on the results and discussions of the data collected from the field. Finally chapter includes the conclusion and the recommendations which have been given by the researcher for improvement of saffron extension and extension services in Pashtun Zarghun district. The research explains the intended objective and the key research issues which guides and drives the whole process.

Background of Afghanistan

Afghanistan is a mountainous country covering a total area of 652,225 sq km in the south-western part of Asia. Over 80% of the country population is dependent on agricultural activities as the main livelihood options. From the total land area of 65 million hectares, only 12% is arable land. The climate condition in northern, southern and western parts of the country is dry with total annual precipitation of less than 200 mm. But in south eastern parts the average annual rainfall is 320-1100 mm which helped the Oak forests grow and cover all area, (UNCCD, 2006). Moreover agriculture is the biggest and first sector which is contributing an estimated 53% of gross domestic product and providing employment opportunities and livelihoods for about 80% of the country population, (Miller, 2006). Agricultural productions are constrained by an almost total dependence on erratic winter snows and spring rains for water and irrigation systems which are still primitive. The existing irrigation system and other agricultural infrastructures and facilities were destroyed in military conflict between the Taliban and opposition forces in 1999 (Jurenas, 2001). Due to the destruction of government buildings during the civil conflicts which lost record of all previous data, Afghanistan currently do not have proper technological resources in place to maintain databases on the agricultural sector and therefore research is needed on various aspects of the agricultural section, including natural resources management, water and irrigation system. Moreover for development of the research sections human capacity is required as a key factor to operate and analyze such system.

Afghan agriculture section is facing many problems today which are deep-rooted and are by no means easily solved in a short period. Recently the donation and assistance of UN, international NGOs and governments of developed nations has been increased for rebuilding of Afghanistan's agriculture sector. Many national and international organizations and research institutes have submitted useful documents with key recommendations regarding to the solution of problems affecting the agriculture sector. Economic growth is a key factor for poverty reduction and agriculture plays an important role in this process, however the best way for growth and improvement of Afghanistan's economic and tackling poppy cultivation is development of agriculture sector. Capacity buildings, natural resource management, promoting market-led agriculture development, privatizing veterinary services, animal health, are the key areas for development of agriculture and economical growth in this country. However to meet the emerging challenges of agriculture extension and increasing agricultural productions, rehabilitation of agriculture extension should be given the priority. Higher growth rates in agricultural productivity, building an effective research and extension system, supporting farmers' cooperatives and eliminating opium poppy cultivation can contribute to the

improvement of agriculture situation. Higher rates of growth in agricultural productivity are necessary to promote broad-based economic growth, reduce rural poverty, and conserve natural resources. Afghanistan reconstruction requires a national strategy that raises the profile of agriculture productivity through application of science, technology, and information, which can be provided through national agricultural research and extension systems. As Afghanistan moves forward on developing agricultural research and extension systems it can no longer rely on just traditional government systems, and must include all organizations and institutions that generate, share, import, and use agricultural knowledge and information, (Miller, 2006).

Geography and Climate of Afghanistan

Afghanistan is a landlocked country located in central Asia, from the north it is bordered By Turkmenistan, Uzbekistan and Tajikistan, to the northeast to China, to the east and south to Pakistan and to the west to Iran. The total area of this country is 652,000 square kilometres and it is characterized by its rugged terrain and an average elevation of 1,100 meter above sea level ranging from 150 to 8,000 meters, (Kundell ,2007). Afghanistan is a mountainous country located in a dry part of the world which experiences extremes of climate and weather. Typical of a semi-arid steppe climate, winters are bitterly cold, with heavy snow in the mountains, and summers are hot and dry with almost no rain falls from June to October. There is a huge different range of temperature in this country. In July, temperatures can some times reach up to 51°C (124°F) in exposed areas of the southwest. But in January temperatures may drop to as low as -46°C (-51°F) in the highest mountain areas, (DLIFLC, 2010).

Precipitation in Afghanistan has a very pronounced annual cycle with a dry period in summer, generally from June to October. However annual precipitation sums are ranging from 50mm in the southwest to 700mm in the region of Salang which is covered with high mountains and about 300mm in the capital Kabul. Regarding the long term annual precipitation field of Afghanistan it becomes obvious that the topography has a marked influence on the precipitation pattern in this country, (Grieser, et al., 2006). There are many water resources in this country which can be used for power generation, irrigation and industrial use. The geographical situation of Afghanistan provides significant opportunity for exploitation. But unfortunately from one hand insufficient infrastructure and lack of capacity to store, properly manage, and develop its water resources, and on the other hand innate land locked setting, virtually all of Afghanistan's major rivers drain off into riparian neighbouring states which has contributed to the irrigation problems. Therefore ninety percent of Afghanistan's irrigation today is managed through traditional, community-based schemes, (King and Sturtewagen, 2010). As Afghanistan is a country with significant potential for economic development. It is well positioned to become a trade and business hub linking the markets of Central Asia, the Middle East, South Asia, and China. The potential exists for sustainable economic growth in the future Afghanistan's commercial connections to regional and global economies were severely disrupted and must be redeveloped.

1.2 Herat Province

Geography and Climate

Herat province which covers an area of 63097 km² is located in the western part of Afghanistan, about 400 miles west of Kabul the national capital. This province is consisting of 15 districts and has border with Turkmenistan (Torghundi Crossing) and Iran (Islam Qala Crossing). It also has internal borders with Farah province in the south, Badghis in the North and Ghor province in the east. More than 39% of the province is mountainous while 53% of the area is made up of flat land and the remaining is semi mountainous and semi flat areas. The province has a temperate climate. The highest temperature is in the months of June, July and August where the average temperature is 41°C, whereas the lowest temperature is during the months of December to February with the average temperature of -4°C. The rainiest months of the year in this province are December to April. The winds - known locally as "the 120-day winds" - usually begin in early July and go on until late September,(MRRD, n.d.).

Demography

Herat is one of the biggest cities of Afghanistan the total populations of 1762157 people who are divided in 226650 households (the average for a household is 6 persons). From the total population 77% of them are living in the villages and the remaining 23% are living the city. Around 50% of the population are male and 50% female. There are also Kochis or nomads living in Herat province, but there numbers is not fixed and vary in different seasons of the year. These Kochis are divided in short-range partially migratory how consist 75% of all Kochis, long-range partially migratory who are 12% of all Kochis and settled Kochis how are the remaining 13% of all Kochis population. Almost 98% of Herat populations speak Dari and Pashto and the remaining population is speaking Turkmeni and Uzbeki, (MRRD, n.d.).

Infrastructure and Natural Resources

The key element necessary development of private sector, increasing employment opportunities, increasing agricultural productivity and on the whole development of the country is depend on the basic infrastructures such as, transportation facilities, water and sanitation, communication system and energy. In Herat province 31% of the households have access to the safe drinking water in the city and urban areas. In terms of required energy, there is one hydraulic water power which has the capacity of 100kw. The rest of needed energy is imported from Iran and Turkmenistan. Currently 22% of the households have access to electricity. Access to electricity in the urban area where 74% percent of the households have access is much better than the rural areas where 6 to 8% of the households have access to the electricity. The transportation infrastructure is well developed comparing to the neighbouring provinces (56%) of roads in the province able to take car traffic in all the seasons, but 35% of the roads can take cars only in some seasons and the remaining 9% is of the province there is no road at all which has faced the people to the problems in these areas. Concerning to the communication, there is a governmental company (Afghan telecom) and many private telecommunication companies like Roshan, AWCC, Areeba, Etesalat and MTN which are operating in almost 70% of Herat areas and almost 70% of the population have access to the mobile or digital phone,(MRRD, n.d.).

1.3 Problem background

Opium cultivation and production in Afghanistan have increased since the Taliban regime was toppled in 2001 such that Afghanistan now produce 92 % of the world's illicit opium (Glaze, 2007). Despite the decrease in production and cultivation of poppy in 2009, opium production still remained a major problem in this country. From one hand Taliban, warlords, criminals and insurgents and on the other hand corrupt government officials' engagement in trade and production of opium contributed to the problem. Heroin is a highly addictive drug, and prolonged use can result in a variety of social and health-related problems. Sharing of contaminated heroin needles is a major contributor to the spread of HIV/AIDS and other infectious diseases. The expanding opium trade is threatening to destabilize the Afghan government and turn the conflict-ridden country back into a safe haven for drug traffickers and terrorists, (UNODC, 2009). Taliban and many other terrorist organizations and some rogue regimes in Afghanistan pressed for cash rely on the illicit opium trade as a source of income.

Like other parts of Afghanistan large majority of people in Pashtun Zarghun district make their living from agricultural practices, similar to other areas in Southern East of Herat Pashtun Zarghun district has insufficient water for irrigation and the situation has been exacerbated by several years of drought, on the other hand lack of appropriate farming knowledge and skills among the farmers, and old and traditional farming methods has seriously affected the agricultural output and caused that the farmers refer to the poppy cultivation due to the economical problems and in order to get a higher income from their agricultural practices. More over the extension sector has been damaged during the 25 years of civil conflicts such that now there are limited research and extension stations as well as institutional capacity and experienced extension workers to support the farmers and deal with the problem of poppy cultivation in this district. Since 2002 USAID, DACAAR and ICARDA have worked on cultivation, processing and marketing of saffron in Pashtun Zarghun and Ghorian districts to develop and promote innovative alternative livelihood options for rural Afghans who are currently or have previously been economically dependent on opium poppy cultivation. In 2005 DACAAR has established a saffron producers' association with 102 members in Pashtun Zarghun district. Ninety nine more farmers joined the association in 2006 and currently there are four saffron producers' associations in this district. Women have formed the fourth association of their own in this district aiming to be self sufficient in the future, (Malik and Wyeth, n.d.).

Justification of the study

Agricultural Extension has often been conceptualized as a capacity building process, which promotes learning. If agriculture extension of a country functions effectively, it will improve the economy growth and increase the agriculture productivity through providing new technology and information to the farmers which can supports them to optimize their use of limited resources, (Muyanga and T. S. Jayne, 2006). Extension services improve the knowledge base of farmers through a variety of means, such as demonstrations, model plots, specific trainings, On Farm Trainings (OFT) and group meetings. Performing of such activities is solely intended to increase the ability of farmers to optimize the use of their resources and ultimately increase crops yields. In addition, ideal extension service provides feedback mechanism from the farmers to the research centres. In 1979, Afghanistan's agriculture research system had 24 research stations and over 1,000 staff that 22 percent of them were technical research staff. However, this system is now largely dysfunctional as a result of widespread degradation of infrastructure and human capital and needs major renovations, and training for staff. Most staff currently working in Afghanistan's agriculture extension unite have little experiences and exposure to modern agricultural management practices. Therefore, for active and effective extension services, capacity building programs are needed to focus on updating technical skills, and developing new skills related to management, monitoring and evaluation, participatory approaches, and modern agribusiness,(Miller, 2006). Currently agriculture

extension system faces a lot of challenges in Afghanistan. From one hand Security challenges and on the other hand financial challenges has seriously affected the extension services process in this country. Pashtun Zarghun is one of the Herat districts which has started the cultivation and extension of saffron from 2005 and some of the national and international NGOs have technically and financially supported the farmers for cultivation and production of saffron in this district. Since the extension of saffron as a high value cash crop and an alternative crop for poppy is part of the policy of Ministry of Agriculture Irrigation and Livestock (MAIL), therefore this ministry is interested to understand the impacts of saffron projects implemented by the NGOs on transition from poppy to saffron in Pashtun Zarghun district. There are limited studies on agriculture extension services and role of saffron for eradication of poppy in Pashtun Zarghun district of Herat province. Therefore, it is expected that this study help to identify the impacts of saffron projects and effectiveness of extension services for transition from poppy to saffron in this district.

1.4 Problem statement

Research problem

Ministry of Agriculture would like to get information on impacts of saffron projects and effectiveness of agriculture extension workers on transition from poppy to saffron in Pashtun Zarghun district in order to evaluate the impacts of saffron extension services on elimination of poppy.

Objective

The overall objective of this research is to evaluate the impacts of saffron projects and effectiveness of agriculture extension workers on transition from poppy to saffron in order to expand the area under saffron cultivation in Pashtun Zarghun district.

Main question 1

- ❖ What is the effectiveness of agriculture extension services for transition from poppy to saffron in Pashtun Zarghun?

Sub questions

- What is the role of extension workers for establishment of saffron chain in this district?
- What extension approaches do the extension services use with farmers?
- What challenges do the agriculture extension workers are facing for transition from poppy to saffron in Pashtun Zarghun district?

Main question 2

- ❖ What is the contribution of saffron projects and establishment of saffron producer associations for transition of poppy to saffron in Pashtun Zarghun?

Sub questions:

- What is the farmers' opinion about the income changes?
- To which extend did the farmers adapted themselves to the saffron cultivation and production?
- What is the farmers' opinion about the support services?
- What challenges did the farmers face for transition from poppy to saffron?
- What is the difference between the idea of women and men?

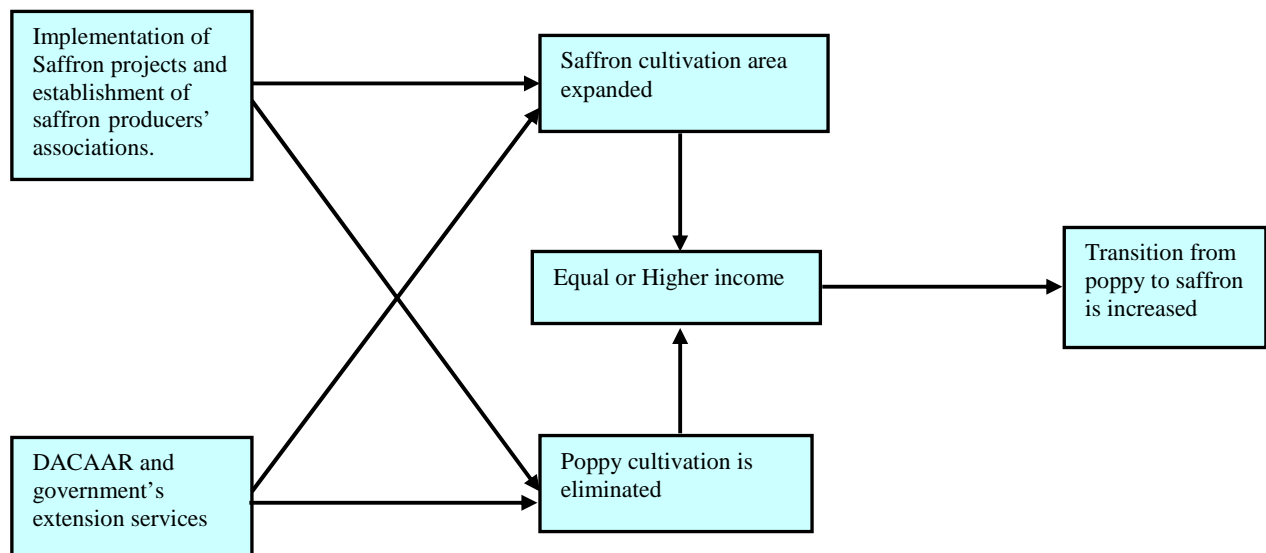


Figure-1.1: Theoretical framework

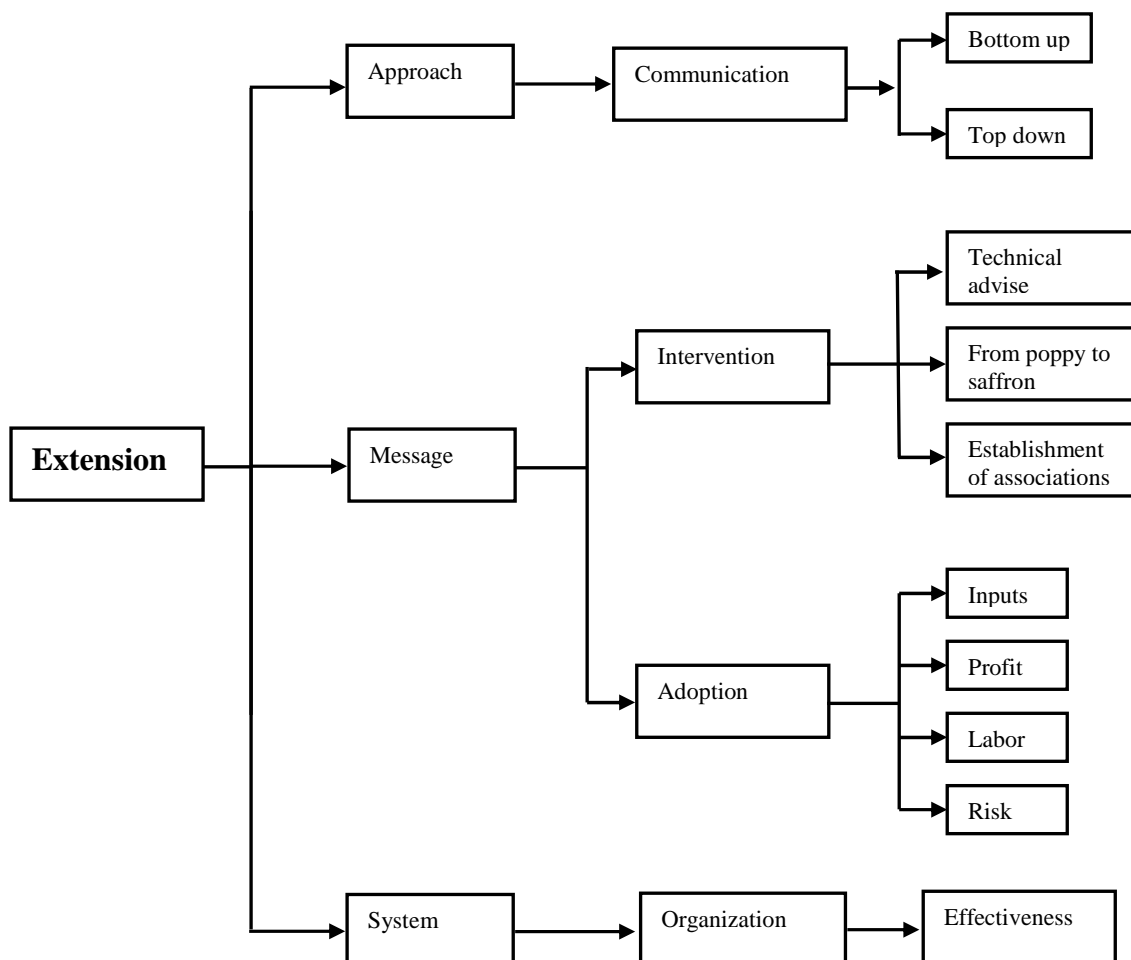


Figure-1.2: Key Concepts

1.5 Key concepts

Based on the above mentioned the concepts of Extension and Effectiveness and livelihood are unravelling as following:

▪ Definition of Extension

The term extension connotes with different meaning at different context. However according to (Roling,1988) who states that extension is a professional communication intervention deployed by and institution to induce change in a voluntary behaviour with a presumed public or collective utility,(Leeuwis, 2004, P.25).

▪ Definition of Adoption

For the term adoption the UNDP was reviewed which states that adoption is adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects.(World Bank, n.d).

▪ Definition of Effectiveness

UNESCO has defined the effectiveness as following

Evaluating effectiveness means judging the degree to which a program is achieving its objectives, (UNESCO. n.d.).

▪ Definition of Livelihood

In 1992 Robert Chambers has defined the livelihood as following:

A livelihood comprises the capabilities, assets (stores, resources, claims and access) and activities required for a means of living. (Krantz. 2003)

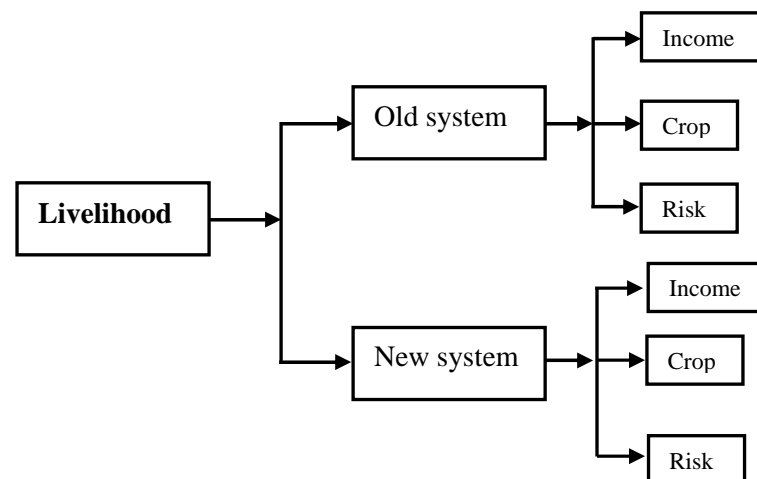


Figure-1.3: Livelihood framework

1.6 Research Strategy/Framework:

Study approach

This research is based on information which is collected by primary field data and in addition to this, secondary source of data such as internet sources, books, journals, and other related publications of Ministry of agriculture, NGOs and other organizations. Interviews and focus group discussions were carried out by using open ended questions with farmers, saffron associations' members including women saffron association, saffron traders and extension workers of Pashtun Zarghun district who are staff of Ministry of agriculture, as well as DACAAR and have direct linkage with farmers in development and innovation process. Beside that, field observation and focus group discussions were also applied. The details about the methodologies are described below.

Primary Sources

Primary data have been generated from July 14th to August 1st, 2010 through, interviewing respondents and conducting focus group discussion with two field level extension workers of Ministry of Agriculture Irrigation and Livestock (MAIL) who are based in Pashtun Zarghun district, two more agriculture extension workers of DACAAR organization, six farmers from Gulmir-e-Bala Saffron Producers' Association, six farmers from Dorokhshan Saffron Producers' Association, Six farmers from Foshkan Saffron Producers' Association, six women farmers from Rawandan Women Saffron Producers' Association of Pashtun Zarghun district and Afghan Saffron Company which is a saffron trader company. The primary and secondary data have been analyzed and discussed in two chapters from August 4th to September 10th 2010.

Secondary Sources

The main sources of secondary data consulted by researcher are desk research. Journals, internet sources, books, extension profiles reports, programs and published by different organization and ministry of agriculture were studied and used in order to reach the objective of research.

1.7 Location of the Study

Pashtun Zarghun district is situated in the central part of the Herat Province, in the valley of Hari Rud River which borders Karukh district to the North, Obe district to the east, Adraskan district to the south and Guzara district to the west. The total population of this district is 90817 people. There are 69 CDCs in Pashtun Zarghun district which are located in different villages. Like other parts of Afghanistan about 80% of population in this district are the people who directly or indirectly depend on agriculture as main source of income. Wheat, vegetables, fruits and cereals are the main crops produced in this district, (MRRD,n.d.).

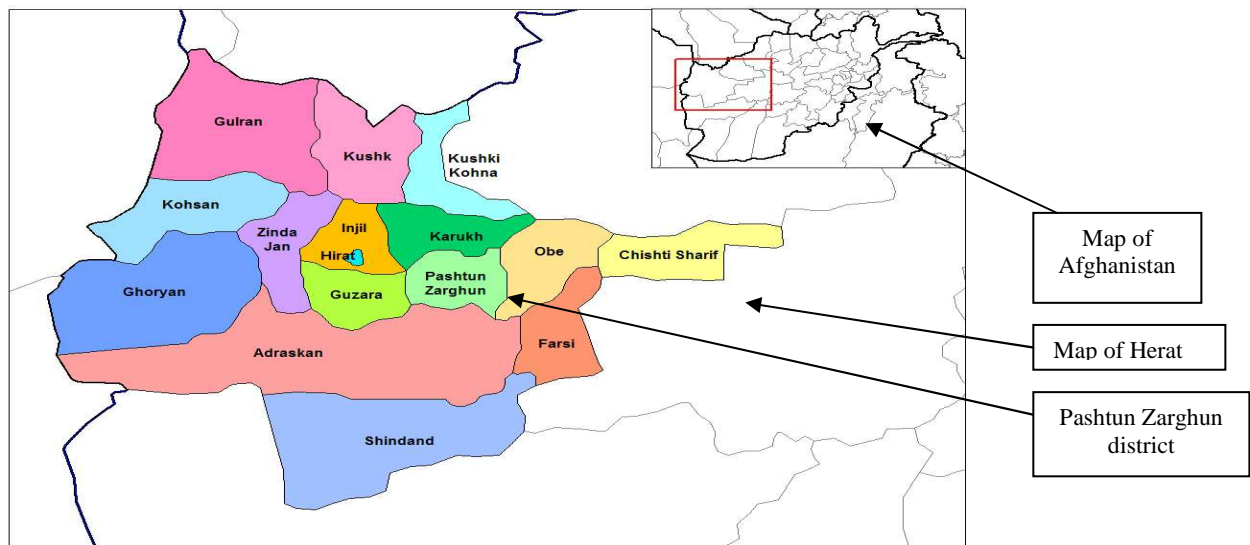


Figure- 1.4: Map of Herat province

Source: Wikimedia Commons, 2007.

2. CHAPTER TWO: LITERATURE REVIEW

2.1 Review of Agriculture Extension System in Afghanistan

Extension is an essential pillar for research and development in Afghanistan. However, unfortunately, 25 years of war and civil conflict has seriously affected the extension system, infrastructures. Currently in Afghanistan research institutes are needed to focus on the technical aspects for generating useful technologies, while at the same time a strong and useful agriculture extension system is needed to work in a field problems-oriented mode and focus on the acceptance and adoption of those technologies by users. As it is argued in previous section, in 1979 Afghanistan's agriculture research system had 24 research stations and over 1,000 staff that 22 percent of them were technical research staff. But due to the civil war and conflicts has largely dysfunctional as a result of widespread degradation of infrastructure and human capital. From the 371 districts nationwide, only 136 of them have functioning extension units now and even these 136 units are faced to many challenges and need major renovations, as well as training for their staff.

In Afghanistan, agriculture research and extension is in transition – influenced by trends toward reduced government intervention in the economy, growth of the private sector, civil society and globalization. The government of Afghanistan has recognized that agriculture plays an important role in economic growth and poverty reduction that productivity growth is based largely on application of science, technology, and information, and needs to be provided through national agricultural research and extension systems. However, as Afghanistan moves forward on developing agricultural research and extension systems it can no longer rely on just traditional government systems, and need to improve and should include all organizations and institutions that generate, share, import, and use agricultural knowledge and information, (Miller, 2006). Fortunately in recent years some donor countries and organizations like USAID, USDA, European Union and World Bank have provided assistance to deliver new technologies and information to the farmers and herders through workshops, demonstrations and On Farm Trainings (OFT), at the provincial level.

Extension approaches

❖ Top-down approach

In this extension approach normally the decision-making is concentrated in the hands of national officers, and the people who are in the top positions. The decisions are being made according to the available budget rather than considering the farmers' need. However there is hardly any involvement of farmers in decision making and extension programs, (Qamar, .n.d.) Normally there is a top down extension approach in the government extension systems of developing countries and it is easier to adopt a participatory approach within the NGOs rather than the government organisations.

▪ Transfer of Technology

For along time the economists as well as the extension workers have assumed that the extension is transfer of technology. Many extension organisations and economist are now convinced that using a transfer of technology approach in which the extension administrators decide on the targets to be realized by the field-level extension agents is no longer desirable. And instead it is preferred to use the participatory approach which gives the opportunity to the farmers to decide which changes are desirable and what kinds of support are needed for

extension to realise these changes,(Joseph,2000). The intervention goal of this extension method is realisation of given policy projectiles and per-defined behaviour change. However the role of extension workers is to deliver the information, knowledge or technology, and famers are assumed as receives of the massage and there is no instruction between the extension workers and farmers,(Leeuwis,2004).

❖ **Bottom-up approach**

In bottom-up method the field level extension workers and the staff who are in lower positions are also involved in decision making. In this approach the research and extension organisations operate at the same status in a country, using a bottom-up approach in decision-making on linkage activities. The bottom up extension system involves all stakeholders in decision making process and gives them the opportunity to identify and explore their priorities. It is assumed that in many cases farmers are good judges of their problems and they know what is needed to improve their agriculture.

▪ **Agriculture knowledge system**

In agriculture knowledge and extension system, the emphasize is on creation of a network building, social learning and conflict management in view of reaching at new innovation. In this system the extension workers interacting with a set of actors in compare to the knowledge institutions (Lwees,2004). The Agriculture knowledge and information system has been described by FAO and World Bank as following:

An agricultural knowledge and Information system for rural development links people and institutions to promote mutual learning and generate, share and utilize agriculture-related technology, knowledge and information. The system integrates farmers, agricultural educators, researchers and extensionists to harness knowledge and information from various sources for better farming and improved livelihoods. This system is designed to respond to the farmers needs for knowledge and improve their welfare and income as well as managing the natural resources, (Julio and Germán, 2001).

2.2 Systems of land tenancy in Pashtun Zarghun

The following are the types of land tenancy in Pashtun Zarghun district.

- **Landownership:** In this system the land owners are directly involved in farming perform all practices them selves. They hire additional labour to work on their farms when needed.
- **Sharecropping:** In this system landowners hand over a portion of their land to smallholders or landless farmers to grow crops and take a portion of harvest. Commonly they pay the same share of cash costs for inputs such as fertilizer, seed and pesticide that they take of the sharecropper's harvest.
- **Leasing or renting:** In this system the landowners is not working on his or her land but rent out a portion or whole of his/her land for cash or crops to another person. But some landowners provide credit or other inputs to the farmer, which they return at the time of harvest or later, (Gohar and Wyeth, 2006).

2.3 Why saffron for poppy alternative

Saffron is not only a legitimate crop but also a very lucrative one. The profits delivered by saffron are one-half or two third of profits delivered by poppy and 8 times more than wheat per hectare. Saffron is called red gold in Afghanistan due to the several advantages and high price in local and international market. Saffron growing season is from September 15th to mid-November which is outside of the normal cropping seasons (from March to August). Although saffron needs irrigation during the flowering season but it does not compete with irrigation needs of other crops. As it is mentioned before Pashtun Zarghun is one of the Herat's 15 districts which does not have sufficient water sources for irrigation and some times conflicts emerges on distribution of water, therefore an important advantage of saffron is the water needs and irrigation season of this crop. Although saffron is a labour intensive crop and 80-90 % of cultivation, harvest and post harvest is preformed by hand but it doesn't compete with labour needs during the regular growing season. All family members especially women are involved in growing and flower harvesting which takes place in early mornings, (Hein, n.d.).

Table-2.1: The reason that saffron is a suitable crop for Afghanistan

1	Low water requirement	One or two irrigation usually suffice.
3	Simple machinery (Tools)	All activities are possible by hand
4	Easy transportation	Compared to other crop products, saffron is not bulky
5	Income is higher than for other crops	At least 5,000 USD per ha annually
6	International market	The demand increases year by year
7	Short growing season	One month labour input required per year
8	Suitable water requirement time	During saffron growing season other crops do not need water
9	7 years production	Land preparation and cultivation labour requirements only in the first year
10	Low risk	Drought resistance, no specific saffron diseases
11	Gender	80% of activities can be carried out by women
12	Good storage abilities	Up to 2 years after drying
13	High productivity	Afghanistan's soil and climate are very suitable

Source: Saffron manual for Afghanistan (n.d.)

Table- 2.2: Inputs/Expenses (per hectare) for 5 years

Items	Estimated Amount (Afs)
Land preparation	12500
Animal Manure	36000
Corm (planting materials)	300000
Planting of corm	16633
Corm treatment	10000
Weeding	90500
Breaking soil crust	29000
Flower harvesting	10500
Irrigation	18000
Processing (spice separation, drying...)	90250
Total	613383

Source: Qaraeen, (n.d.)

Table-2.3 Income (per hectare) for 5 years

Items	Estimated Amount (Afs)
Saffron spice	1,200,000
Corms	82500
Dried leaves (livestock feeds)	10000
Total	1,292,500

Source: Qaraeen, (n.d.).

2.4 Role of women in harvesting and post harvesting of saffron

As mentioned in previous section, saffron is a labour intensive crop and more than 80% of cultivation and processing activities are performed by hand. Women have an important role in cultivation and process of saffron in Afghanistan. Similarly women in Pashtun Zarghun district are involved in all stages of crop (cultivation, irrigation, weeding and picking the fresh mauve flowers, stigmas and processing) equally working with the men. Therefore from one hand this gives them improved family and community status in comparison to the opium farming due to the religious and cultural believes of the community which has contradiction with the poppy cultivation and on the other hand this is an important source of income and employment opportunity for hundreds of vulnerable widows and female-headed families who work as labour, (Hein,n.d). However the percentage of women involved in planting corms and harvesting of flowers may depend for some farmers on distance of fields from the home, cultural norms which present a major obstacle to promoting women's participation in livelihood activities and how visible the workers are from the road, but the really time consuming work is separating the stigmas from the flowers and drying, which takes place at home and women look after that. Although in recent years three saffron producers' associations were established in Pashtun Zarghun district but the women in this district have formed the fourth association of their own called (Women's Saffron Producers' Associations). This can hopefully be a positive step toward women's economy improvement and self sufficiency in the future. The most important constraints faced by women in Pashtun Zarghun is participation in activities outside the household which are governed by longstanding cultural notions of honour. These cultural mores primarily restrict women to work within the private space of the

household. The men are usually working in public are responsible to protect the family and provide food and other required stuff. These cultural roles play out in division of labour in the household. Women are usually performing the tasks which are performed inside or near the house such as kitchen garden, crop and vegetables processing activities and livestock. The hard works like land preparation, cultivation and harvesting are usually performed by men. Considering the women role in household, they contribute significant amount of time to the on agricultural and livestock activities, (World Bank, nd).

2.5 Saffron Chain

Input supplying

There are various actors involved in support services for saffron cultivation in Pashtun Zarghun district. The government and NGOs like DACAAR and CRS are the supporting organizations which have been working of saffron extension in Pashtun Zarghun since 2005. In the inputs supply level of the subsector, provision of the saffron corm is the biggest concern of the saffron producers in Herat. Among all involved parties in input supply of saffron, DACAAR is the biggest supplier of corm and works with the largest number of producers. In 2005 DACAAR has established 4 saffron producers' association and provided corm for 53 members of associations which have been planted in 6.5 jeribs (A jerib is one-fifth of a hectare or about half an acre) of land. In 2006 DACAAR has again provided corm to 119 members of these associations who have recently joined the associations and these corms were planted in area of 28.2 jeribs. DACAAR has also provided saffron dryers to the saffron producer' association and conducted training workshops on saffron cultivation, harvesting and post harvesting of saffron. Beside the DACAAR, organization CRS has also provided saffron corms to the farmers of Pashtun Zarghun which has been planted in different villages. Although the government did not physically provide input for saffron production, but the government role in smoothing the input supply procedure, supporting the NGOs and encouragement of the donor nations and organizations for investment in saffron is undeniable. (Malik, & Wyeth, 2008).

Table- 2.4: Inputs/Expenses (per 5 jerib/1 hectare) for 5 years

Items	Estimated Amount in Afs	Estimated Amount in US\$
Land preparation	12,500	250
Animal Manure	36,000	720
Corm (planting materials)	300,000	6000
Planting of corm	16,633	332.3
Corm treatment	10,000	200
Weeding	90,500	1810
Breaking soil crust	29,000	580
Flower harvesting	10,500	210
Irrigation	18,000	360
Processing (spice separation, drying...)	90250	1805
Total	613,383 Afs	12,267.3\$

Source: DACAAR, n.d.

Producing

Although saffron cultivation and production is new in Herat province, but it had a good adoption and potential in last five years. A good yield from a jerib of saffron land in Herat is 2 kg/jerib, although in first year the yield can be expected less. In 2006 around 20 kg of saffron was produced in Pashtun Zarghun and 120 kg in Herat province as whole. To make one kg of saffron it takes some 450,000 stigmas and as a saffron flower has only 3 stigmas therefore the workers should process 150,000 blossoms to produce a kg of saffron stigma. There were 250 saffron growing farmers in Pashtun Zarghun district in 2006, this number is increased to 800 farmers in 2010 who are divided in 4 saffron producers' associations. (Malik, & Wyeth, 2008).

Processing

Collection of saffron flowers takes place in the early morning and transported to the farmhouse or to a process centre, where the flowers should be kept in a clean and shady place until the stigmas are separated from the blossoms. The collection of flowers and separation of stigmas are performed by hand. About 80% of flower collection and stigma separation is performed by women who are working as daily wage and get paid 250 Afs (5 \$) per day. If the processing of the flower is delayed it is necessary to store the flowers at temperature of about 0°C, because wilting of flower s makes the processing difficult or even impossible. On the other hand it will also decrease the quality of stigma. As soon as the stigmas are separated from the blossoms it should be dried immediately and in a proper way to keep the quality and achieve the required moisture. If the stigmas are too dry it will break easily and turn into powder. On the other hand if it is too moist it may spoil or get infected with fungus. Although some NGOs have provided dryers for the farmers but that is not enough quantity to dry all the produced saffron of Pashtun Zarghun and therefore the farmers still use air dried method which takes a week to dry it the stigmas(Qaraeen,nd).

Packaging

After the saffron is being processed it should be packaged and sealed in proper containers. It is also required to keep the saffron away from the direct sun light. Tins and dark glasses are good to store the saffron for a longer time. It is also possible to keep the saffron in clear glasses containers to be visible for quality assessment by costumers but it should be stored in a dark place until it is sold. Some countries like USA would like to receive the saffron in bulk and packaging it in their own standards, (Malik, & Wyeth, 2008). But some other countries like Dubai prefer to receive the Afghan saffron packaged. Currently there are three registered private companies working on processing, packaging and exporting of saffron in Herat province. The biggest share of saffron in Herat is packaged and exported to international markets under the brand of Afghan Saffron which has a great influence in saffron price in Herat saffron market. Besides these companies, a large amount of Herat saffron is delivered to Iran by minor traders and branded as Iranian saffron, and the international markets receive it as Iranian saffron.

Saffron Marketing

Saffron is a very expensive spice which is used for its smell, colour and healing features. Spain, China, Iran and Japan are the largest producers of saffron in the world. Afghanistan has recently started cultivation and production of saffron in some provinces. In Herat province Ghoryan is the first district which started growing saffron, where farmers came who had learned how to produce it while refugees in Iran. Those farmers acquired corm and started production on their own initiative. But after that some NGOs have also supported the farmers in Pashtun Zarghun district, (Wyeth and Gohar, 2006). The small merchants in Herat buy

partially from Afghan farmers and then sell in Iran. By this route, Afghan saffron reaches world markets as Iranian saffron. As the volume of production in Herat is currently insignificant compared with Iran, this channel can easily absorb any amount of saffron that Herat producers can produce in the foreseeable future. However, Herat producers have not been in a good bargaining position when negotiating prices with traders selling in Iran because they have had no alternative outlet. The price of saffron spice in December 2007 was between 1,200 to 1,400 USD/kg in Herat local markets. In 2006 the price of saffron in European and American market was 8000 US\$/Kg,(DACAAR, n.d.). In 2008 the price of saffron in Afghanistan was 2500US\$/kg which could be sold in 3000 US\$ in Iran and finally 6000 US\$ in Europe market. The Afghan saffron producers and traders would be in a stronger position and could obtain a higher price if they could establish their own links with the world market. (Malik & Wyeth, 2008) With out a proper market channel farmers will not be able to access the potential of market. Lack of quality assurance for international buyers, packaging facilities, and knowledge of market dynamics are the other challenges faced by saffron producers and traders in Herat. However there is a strong interest amongst international buyers to procure Afghan saffron,(Malik and Aslami,2007)

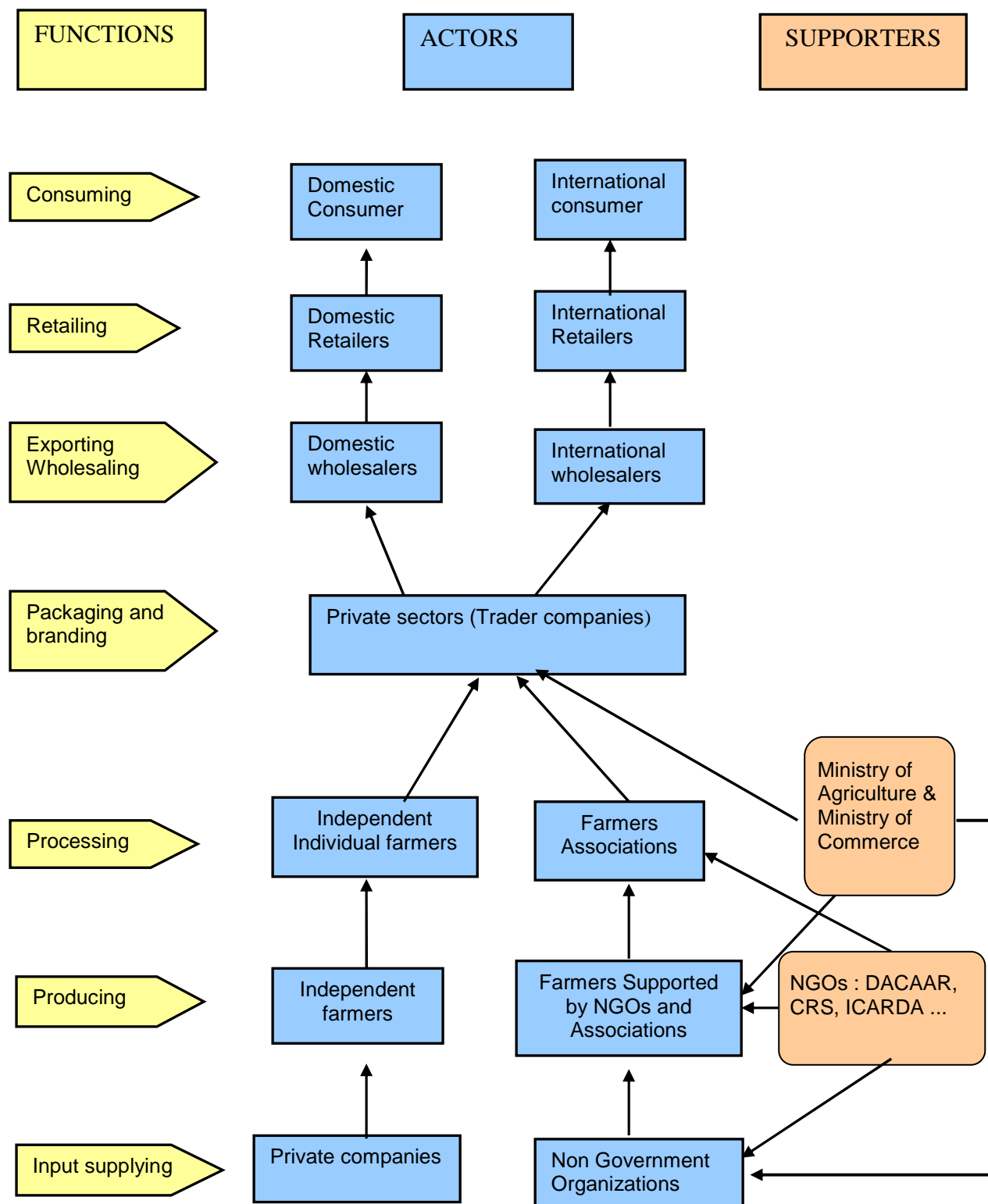


Figure-2.1: Saffron Chain in Afghanistan

2.6 Challenges of saffron production

There are many challenge faced by farmers for production of saffron in Pashtun Zarghun district. Availability of corm and the low economical situation of farmers are the most important challenges faced by farmers. Due to the high demand and interest for the saffron corm among farmers price of saffron corm increased and current investment are needed are 6000 US\$ per hectare which is a high amount and the farmers are not able to afford. Because of the strong demand for saffron corm farmers are now short term gains by producing saffron corm rather that producing saffron. In some cases farmers are given corm by the NGOs or donors organizations without being trained sufficiently in land preparation, cultivation, fertilization, harvesting and processing. some organizations import the saffron corm from Iran rather than buying from the local farmers. (Qaraeen., nd). Despite all the mentioned challenges the saffron cultivation and production had a good growth in last five years and the farmers are interested in saffron cultivating. In 2005 the farmers in Pashtun Zarghun district were growing poppy in large area, but at the present they do not cultivate poppy. Besides the interest of farmers in saffron cultivation and being banned by the government, the religious leaders and elders in the community have played an effective role in extension of saffron and restraining the farmers from poppy cultivation, (Gohar and Wyeth, 2006).

3. CHAPTER THREE: RESULTS

This chapter includes the primary data which is the result of the interviews and focus group discussions with extension workers, three men and one women saffron producers' associations members and saffron trader company. The findings of this study are presented into four sections. The first section is related to the extension workers, the second section is related to the men saffron growing farmers, the third section is the results of the interviews and focus group discussions with the women farmers and finally the fourth section is related to the interview with the staff of saffron trader company. The numbers of respondents in these interviews and focus group discussions are mentioned in Table 3.1.

Table – 3.1 Type and number of respondents

No	Type of respondents	NO of respondents
1	Government extension workers	2
	DACAAR extension workers	2
2	Men farmers	18
3	Women farmers	6
4	Head of Afghan Saffron Company	1
Total:		29

Source: Own study

3.1 Extension workers

Four extension workers respondent were interviewed (Two from government and two from DACAAR organization) in Pashtun Zarghun district. From the total 4 extension workers 3 (75%) of them were 25 to 35 years old and 1 (25%) of them was 40 years old. All of them are male and there are no female extension workers in this district. The reason that there are no female extension workers in this district is the security challenges, difficult work for the women due to the far distances between the villages, and cultural constraints. Among the all field level extension workers one of them was graduated from agriculture high school and had 19 years work experience in different districts (two years experience in Pashtun Zarghun district). The other three extension workers had bachelor degree in agriculture with 3-5 years work experience. The education level and work experience of respondents is presented further in table 3.2.

Table -3.2: Age group, education level and work experience of extension workers

Age group	Education level	Working experiences	Male	Female	Percentage
25-30	Bachelor	3 years	1	-	25%
30-35	Bachelor	3-5 years	2	-	50%
35-40	High school	19 years	1	-	25%
Total			4	0	100%

Source: Own study

Dynamic of area under saffron and poppy cultivation in last five years

According to the DACAAR extension workers, in 1998 DACAAR has started saffron cultivation with a few farmers in Pashtun Zarghun district and by year 2005 due to the good adoption and high value of saffron more than 300 farmers have started growing saffron under the supervision and financial support of DACAAR. Currently there are 800 saffron grower farmers in this district who are divided in five associations. In 2005 the total area under saffron cultivation in this district was about 30 hectares which has increased to 50 ha in 2006, currently there are 150 hectares of land under saffron cultivation in this district. The area under poppy cultivation in 2004 to 2005 was over 180 hectares which is currently decreased to the zero. Moreover the number of farmers growing poppy in 2004 to 2005 was over 850 farmers which is currently decreased to the zero.

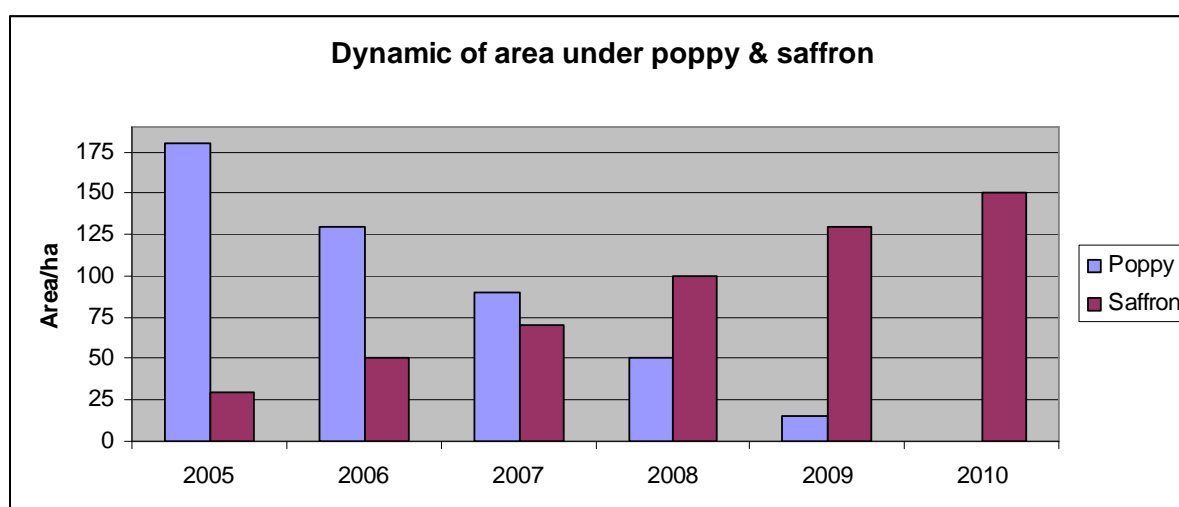


Figure: 3.1 Dynamic of saffron and poppy area form 2005 to 2010

Source: Own study

Challenges faced by extension workers for transition from poppy to saffron

According to the 2 government's extension workers, although a great deal of progress has been achieved since the beginning of the saffron projects in early 2005, but there are still challenges ahead related to the saffron production in terms of harvesting, post harvesting, corm quality, and marketing. The extension workers stated that there are 172 villages in Pashtun Zarghun district which are located far from each other, but there are only two government extension workers who are responsible for all these villages. Low level of salaries (180 to 200 US\$ per month), lack of capacity building programs for extension workers and the security issues are the problems faced by extension workers which have been found out by researcher through group discussion with extension workers. But some of the challenges are different with the two other extension workers who are working with DACAAR organization. They say that their salary is between 500 to 600 US\$ which is enough for a normal life. They also have no problem with transportation. Whenever they want to go to the field they will inform the transport section to provide them vehicle, if they travel by motorcycle fuel will be provided by the logistic section. They communicate with the colleagues and main office by email or mobile and contact with the farmers through meetings, workshops and field visits. However the most serious challenge that is faced by DACAAR's extension workers is the security challenges. The Taliban are some times warning the people who are working with the National or International NGOs or some times attack to the field offices, killing the staff and

burning the offices. However due to the mentioned security problems the DACAAR extension workers are also not able to travel to the isolated areas.

Extension approaches

There are different approaches used by the government's and DACAAR's agriculture extension workers in this district. The DACAAR extension workers say that they are working together with farmers and involve them in decision making process, this will let the farmers to present their own priorities for development and get them incorporate into development planes. However this is also a good way of interacting with the farmers and learning from each other. One of the DACAAR's extension workers said that from the time that farmers decide to plant saffron in their farms until they collect and sell their products they are in touch with farmers. He also said that surveys and need assessments are being performed in the field in order to find out the farmers needs and priorities before the new projects are started. This also gives the opportunity to identify the poor male and female farmers and involve them in the support services and programs. The DACAAR extension workers have also stated that they regularly visit the saffron fields and farmers' saffron producers' associations and give technical advice to the farmers when needed.

The other ways of communicating with the farmers are on farm trainings which takes place twice or three times per year and the workshops held for capacity building of the farmers. The On Farm Trainings (OFT) normally takes place during the cultivation, and harvesting seasons so that the farmers practically learn the saffron growing and harvesting methods of saffron. The farmers who are participating to the on farm trainings and workshops are being paid for the transportation for travelling to the field and back to their village. However some times the farmers themselves come to DACAAR field office to get information about the saffron agro techniques. The extension workers have also argued that there is a bottom up extension approach in DACAAR office. The decisions are being made according to the information and data collected from the field by extension workers and the field level extension workers are involved in decision making process. But through the interviews with the government extension workers the researcher found out that there is a top down approach in government's extension system. The government's field level extensions workers said that the decisions are being made in the ministry level and we are just following the roles, regulations and the decisions which have been made in the ministry level, they further argued that their suggestions and recommendations can never reach to the ministry or even if reach no body will apply it. The two government's extension workers visit the farms 4 days per week, each day 2 villages; this means that from 172 villages the extension workers can only visit 32 villages per month; these are the villages which are located near the district centre. Due to the insufficient transportation facilities the extension workers can not travel to the villages which are located far from the district centre.

The farmers, who are interested or have problems, gather in farmers' cooperative once a month and the government's extension workers train them on cultivation, harvesting and post harvesting of crops and fruits. Therefore field visits, meetings and gatherings are the only way of communication between the extension workers and farmers. The extension workers feel easy to work with the farmers but the transportation and financial challenges are the constraints which faced them to the problems. From the interviews with the extension workers the researcher found out that there are different extension approaches used by government and DACAAR extension workers. Therefore if we classify the government and DACAAR's extension system we see that the government extensions system is a production oriented system. There is a centralization power in government extension system which has a minimum autonomy and maximum restrictions on operations of subunits of the organization. There is a vertical communication in government system in which the top-level management produces decisions that are communicated down to tell employees how to perform their jobs, but these employees are not involved in decision making. But according to the DACAAR

extension workers, there is a people oriented extension system in this organisation. The field level extension workers involve the farmers in decision making through the participatory methods. There is also a decentralization system in which the delegation of power and decision-making is allocated to the subunits of organization or to the field level extension workers. Compared to government extension agents, DACAAR staff are also often better trained to support and advise the farmers for saffron production harvesting, post harvesting and marketing which can play an important role in transition of farmers from poppy to saffron.

3.2 The farmers

In this section therefore, the researcher endeavours to disclose various research findings on impacts of saffron projects on poppy cultivation and farmers' life, the reasons that the farmers referred to the saffron cultivation in this district and subsequent inferences got from the data collected in respect to the research objectives and questions. The interviews and focus group discussions with the farmer groups were conducted between July 10th and August 4th, 2010 by the researcher. It involved interviews and focus group discussions with 24 farmers who are divided in 4 saffron producers' associations. From the total respondents 18 (75%) of them were men who are members of three saffron associations (Gulmir-e-Bala, Dorokhshan and Foshkan saffron producers' associations) and the remaining 6 (25%) of the respondents were women who are the members of Rawandan women saffron producers' association.

Table- 3.3: Age distribution and sex composition of respondents

Age group	Male	Female	Total	Percentage
20-29	3	1	4	16.6%
30-39	5	2	7	29.16%
40-49	6	2	8	33.3%
50-59	3	1	4	16.6%
60+	1	–	1	4.16%
Total	18	6	24	100%

Source: Own study

From the data presented in the above table, 18 (75%) of all respondents were men and mostly between the age group of 40-49. The remaining 6 (25%) of the total respondents were women, between the age group of 20-59. Throughout the interviews with the women farmers the researcher found out that despite the economical, cultural and security challenges which is faced by women in Pashtun Zarghun district, they could improve and experience a great income level from saffron projects in last 3-4 years.

3.3 Men Saffron Producers' Associations

The following information about the Saffron Producers' Associations is the results of focus group discussions and interviews with farmers and extension workers.

Gulmir-e-Bala Saffron Producers' Association

Gulmir-e-Bala Saffron Producers' Association is one of the first associations established in Gulmir village of Pashtun Zarghun district in 2005. In first year this association started working with 35 members and currently there are 170 members in this association who are all male farmers. The member have to pay 1000Afs (10\$) for the registration fee for the first time and 5Afs (0.01\$) per month as membership fee to the association. Six farmers including Mohammad Akbar head of association were randomly selected and interviewed in this association. Mohammad Akbar is a pioneer in saffron cultivation as an alternative crop for poppy in Afghanistan. He says that he has started saffron cultivation at a demonstration plot of 1,000 square meters which is located in Gulmir village along the Pashtun Zarghun road, by technical and financial support of DACAAR. He was also sent for a workshop to the neighbouring country Iran by DACAAR for sharing experiences with the Iran saffron producers. Upon his return from Iran he has travelled to many districts of Herat and Badghis provinces to encourage the farmers to the saffron cultivation and sharing the experiences with them. He is now called Father of saffron in all over Afghanistan and is an icon of success in his village and the province at large. Mohammad Akbar was appreciated and given a medal by Hamid Karzai president of Afghanistan for his hard working on saffron cultivation and extension as an alternative crop for poppy in Herat province.

Dorokhshan Saffron Producers' Association

Dorokhshan Saffron producers' Association is located in Shah Abad village of Pashtun Zarghun district. This association was established in 2006 and currently has 117 members who are from 21 villages and all of them are male farmers. From the total 117 members of this association 40 farmers are from Shah Abad, the village where the association is located and the 77 other farmers are from the 20 villages around Shah Abad. Abdul Latif head of association said that they receive 1000 Afghani (10\$) for the registration of the new members and 5 (0.01\$) Afghani per month from all members as membership fee. Abdul Latif has also said that all of the existent members of this association were poppy growing farmers in 2004 but now they all grow saffron instead of poppy. Six farmers including Abdul Latif head of Association were selected for interviews and focus group discussion.

Foshkan Saffron Producers' Association

Foshkan Saffron Producers' Association is located in Foshkan village of Pashtun Zarghun district. This association was established in 2005 and started working with 25 members in the first year of establishment. Currently the total members of this association are 170 persons and all of them are male farmers. Abdul Razaq is the head of this association. With the support from DACAAR, he was sent on working/experience sharing tour to Germany in 2006 and for a workshop on saffron processing and marketing to Italy in 2010. Six farmers including Abdul Razaq were selected and interviewed from this association.

3.3.1 Male farmers

Eighteen male interviewees of three saffron producers' associations were respectively interviewed in three different villages of Pashtun Zarghun district. Moreover one focus group discussion was also conducted with each group of farmers. Since the responses of all three different groups of farmers were similar to each other, therefore they are presented together as following.

The reason for changing from poppy to saffron

Throughout the interviews with farmers different reasons have been given for changing from poppy to saffron. From the total eighteen respondents 3 (16.6%) of them have stated that because the risk of poppy cultivation was very high, therefore they stopped poppy cultivation and referred to the saffron. They further argued that some times the government officials destroy the poppy field which is a very big risk for the farmers who have invested in poppy cultivation. 8 (44.45 %) of the total respondents argued that the reason for changing from poppy to saffron was the high price and economical value of saffron in market. 1(5.5%) of respondents said that the reason for changing from poppy to saffron is the government pressure, through the district governors and village elders. He also mentioned that in some cases the government is warning the poppy growing farmers before the cultivation season not to grow poppy otherwise their poppy fields will be destroyed. The 2 (11.11%) of the interviewees discussed that the reason they referred to saffron is because the saffron is a drought resistance crop in compare to the poppy. They also mentioned that Pashtun Zarghun is one of the districts which is farced to the shortage of water for irrigation in summer, many conflicts raise on distribution of water every year in this district. Therefore, saffron is drought resistance crop which needs only two irrigation in the seasons which there is no shortage of water for irrigation. 4 (22.2%) of the respondents have argued that the reason for changing from poppy to saffron is that poppy is against Islam religion. They were encouraged by the religious leaders to stop poppy cultivation.

Table-3.4: The reason for changing from poppy to saffron

Reason for changing from poppy to saffron	No of farmers	Percentage
High risk of poppy cultivation	3	16.6%
Economical value of saffron	8	44.45%
Government's pressure	1	5.51%
Saffron is a drought resistance crop	2	11.11%
Poppy against Islamic law	4	22.22%
Total	18	100%

Source: Own study

As can be seen from table 3.4 the majority (44.45%) of farmers argued that the reason for changing from poppy to saffron is because saffron is a lucrative crop in compare to the poppy. In addition the high risk, pressure from the government, adoption of saffron to the drought and being against Islam religion are the other reasons which have been argued by farmers.

Challenges faced by male farmers

This section presents the challenges faced by male farmers for transition from poppy to saffron since last five years. Through the interviews with 18 respondents of Gulmir-e-Bala, Dorokhshan and Foshkan Saffron Producers' Associations, the following challenges were found out as the most important challenges which are faced by farmers for saffron cultivation.

- From the total 18 respondents 7 (38.9%) of them have stated that in 2005 when they started cultivation of saffron for the first time, they had many technical problems with cultivation, harvesting and processing of saffron. Lack of knowledge, experiences and required equipments have forced 40% of the farmers to leave saffron cultivation. They further argued that due to the lack of knowledge and experiences for drying of saffron, they have lost the entire saffron product that they got from their farms in the first year that they started saffron production. Instead of drying the saffron inside a room or using a dryer they used the open area and dried the saffron under the sun light which has spoiled the saffron quality. But the 6 (33.3%) of other respondents said that they learned the production and processing of saffron while living as a refugee in Iran, and therefore they had no major problem while they have started saffron cultivation in Afghanistan. 5 (27.7%) of the interviewees have stated that when they have started cultivation of saffron for the first time they had problems with processing of saffron and at the moment they don't have a processing centre in their village.
- Availability of saffron corm and losses due to mice eating corms in the field is another challenge which has been stated by 13 (72.22%) respondents. They further argued that although many farmers in Pashtun Zarghun district are aware of saffron economical value and they are interested in saffron cultivation, but the price of saffron corm in Herat local market is minimum 5000US\$ per tone which is a high price and the farmers can not afford to purchase the corm. DACAAR has provided saffron corm for 119 saffron growing farmers of Pashtun Zarghun district through the Saffron Producers' Associations in 2005 which has been planted in an area of 1.3 hectares of land. These corms were provided as loan to the farmers and they had to return the same amount of corm to the association in the 4th year. In 2006 DACAAR has again distributed 16,000 kg of corm for the farmers of Pashtun Zarghun district. Other NGOs like Catholic Relief Services (CRS) has also distributed saffron corm to the farmers, but there are still challenges ahead related to the corm preparation for the farmers who are interested in saffron cultivation. The 5 (27.7%) other farmers have stated that they don't have problems with availability of corm and they are self-sufficient now.
- Another challenge faced by saffron growing farmers is fluctuations in demand and prices for saffron. All the 18 (100%) respondents have mentioned that there is no proper market and fixed price for saffron in Herat. They also said that there are only a few trader companies which are buying and setting the price for Afghan saffron. One of the respondents mentioned that the Afghan saffron reach to the global market by the name of Iran saffron which has faced the Afghan saffron not to be able to compete in global market. However Lack of quality assurance for international buyers, packaging facilities, and knowledge of market dynamics are the other challenges faced by saffron producers and traders in Herat. Furthermore lack of security and presence of Taliban in some isolated villages of Pashtun Zarghun district is another challenge which have been reported by 2 (11.11%) of the respondents.

Income change

The following findings are the results of the focus group discussions with male farmers.

In focus group discussions all the 18 male farmers stated that they are happy with the income changes since they switched from poppy to saffron. One of the respondents argued that from the income he got through saffron production since 2004, he bought 4 hectare of land which costs 40,000 US\$, one motorbike which costs 500US\$ and currently he has 2 hectares of land under saffron cultivation. He was a smallholder farmer with a mud house and backyard who is now comfortably living in a newly built house with his entire family and visiting his farms with his motorbike. He also says that the key to success for him was his hard working in saffron cultivation and production. For the comparison of poppy income with the saffron income 6

respondents' farmers stated that the profit delivered by saffron is three to four times higher than the profits delivered by poppy. 7 farmers said that saffron is a high value crop which grows from September 15th to November 15th which is outside of the normal growing season for the other crops (March to August). Although saffron needs irrigation during the flowering season but it does not compete with irrigation needs of other crops. Saffron is also a labour intensive crop which 80-90% of cultivation, harvest and processing are preformed by labours, but it doesn't compete with labour needs during the regular growing season, because in this season the farmers are free and there is no other crop ready for harvesting in Afghanistan. Moreover all family members especially women can be involved in growing and flower harvesting along with the men.

But the poppy growing season is from the December to April which is a high demand for water and labour in this season in Afghanistan. Poppy also needs 2-3 times weeding during the growing season but the saffron doesn't need weeding or if it needs it is only once each year. One of the respondents said that saffron is a sustainable crop which doesn't need land preparation and cultivation every year, once that it is planted it will continues flowering for 4 years and in the fourth year it produces 15 tons of corm per hectare. From the total 15 tones of corm 4 tones are needed to cultivate in the same land again and 11 tones are for sale. Each tone of saffron corm costs 5000 US\$ in Herat local market. Moreover each hectare produces minimum 12.5 kg of saffron stigma per hectare from the second year of cultivation and each kg costs minimum 2000US\$ in local market. But the poppy produces 25 kg of opium per hectare and each kg costs 100US\$ in local market. Therefore a poppy growing farmer will earn maximum of 2500 US\$ per hectare. Saffron grows on the lands is too dry and not suitable for the other crops, therefore it will not replace any crop currently being cultivated in the region or reduce food production. But the poppy needs the irrigated lands which are usually under the cultivation of vegetables, wheat or cereals.

Table -3.5: Comparison of saffron with poppy

NO	Saffron	Poppy
1	Less water needed to grow	More water need
2	Land preparation and cultivation is needed only in the first year	Land preparation and cultivation is needed every year
3	Legal crop	Illegal crop
4	Low risk in saffron cultivation	High risk in poppy cultivation
5	High income minimum 15000US\$ per ha each year	Low income maximum 3000US\$ per ha each year
6	No competition on water and labour	High competition on water and labour need
7	80% of the activities are performed by women	15-20% of activities are performed by women
8	Only one weeding is needed per year	2 to 3 weeding are needed per year
9	Up to 7 years production ability	Only one year ability of production
10	More difficult to grow	Less difficult to grow
11	Higher amount of input needed	Low amount of input needed

Source: Own study

The data presented in table 3.5 indicate that saffron delivers higher returns than poppy. It does not compete for irrigation and labour with other crops because the cropping season is different. It also requires only two irrigations, which is ideal for farmers with small landholdings and little access to water. Moreover saffron bulbs remain in the soil throughout year for several years and therefore needs long term commitment. Despite the large potential profits, some farmers cannot afford the initial investment to buy saffron bulbs and therefore donors support will be needed.

3.3.2 Rawandan Women Saffron producers' Association

Rawandan Women Saffron Producers' Association was established in 2007. In first year this association started the activities with 30 members in Rawandan village, at the present the number of members increased to 120 women who are from 12 villages of Pashtun Zarghun district. Nazifa is the head of this association who was selected for this position through an election process by association members. She said that all women are happy and interested in saffron cultivation and currently 1.3 hectare of is the property of 20 women; the other women are growing saffron on the lands which is not their own property. These lands are belonging to their husbands or some of them are growing saffron as share cropping on other people's farms. Six women farmers were selected and interviewed in this association the results of interviews and group discussions and as following.

3.3.3 Female farmers

The following information is the results of focus group discussions with the female farmers who are the members of Rawandan Saffron Producers' Association. During the focus group discussions the female farmers have argued about the income change, challenges and constraints faced by them and the support services provided by government and NGOs.

Income change of women farmers

During the focus group discussions all the total 6 women farmers have stated that cultivation and production of saffron over the last 3 years has improved their livelihood and income level. From the total 6 women respondents 2 of them have argued that before starting saffron cultivation, carpet weaving was their major activity and source of income. They further discussed that the income delivered by carpet weaving was not as much as delivered by saffron. For instance a high quality twelve sq/meter carpet would take 3 weavers four months to be produced. This carpet can be sold in maximum price of 600\$ in Herat local market. From the total 600\$ that can be earned from sealing of this carpet 200\$ is the price of materials which has been used for producing of this carpet. The remaining 400\$ is the income earned by 3 women from selling of this carpet at the end of fourth month, which can be the amount of 33.3 US\$ per month for each person. Regarding to the saffron cultivation and production they have stated that if a woman has a 400 sq/meter of saffron plot, it will produce 0.5kg of saffron per year which costs 1000 US\$. Even if the women don't have their own saffron fields they can be engaged in wage work on other peoples' land and get paid 250 Afghani (5\$) per day. Two other women stated that before saffron cultivation they were busy with embroidery and handicrafts production, but there was no demand and good market for their products in Herat market or if there is a market the prices are as low as it can only be the cost of materials used to make the handicrafts. The 2 other respondents have argued that before referring to the saffron cultivation they were helping their husbands in agricultural practices especially in poppy cultivation and production. They said that they were involved at various stages of poppy production including cultivation, weeding and collection of opium, but there was no sufficient

income from those activities. They further discussed that saffron cultivation and production has provided them both higher income and a better social position in the community.

Support services for women farmers

In focus group discussions the respondents have stated that although the women received supports services from DACAAR in last three years, but these services were not enough to cover all 120 members of this association. From the total 6 respondents 2(33.3%) of them have argued that each of them have received 200 kg of saffron corm from DACAAR and they have also attended to the 2 capacity building workshops on saffron cultivation processing and quality which has also been conducted by DACAAR. 2(33.3) of the respondents said that they didn't receive any support services from DACAAR or government until now and they have started saffron cultivation by their own capital and by support of their husbands and sons. 2 (33.3%) of the respondents have stated that they didn't receive saffron corm from DACAAR yet, but they got the opportunity to participate in 2 training workshops which has been conducted by DACAAR since they have started saffron cultivation. But all of the 6 (100%) of respondents have mentioned that they didn't received any support from the government yet. Nazifa the head of association said that in 2007 DACAAR has distributed 600 kg of saffron corm to the 20 members of association (30 kg for each person). In 2009 DACAAR has again distributed 4000 kg of corm to the 20 other members of the association (200 kg for each person) through the women saffron producers association, but these corm were distributed as loan and will be returned to the association after 4 years and will be again distributed to the other members of association. For more support services she has stated that 3 saffron dryers were also provided to the women saffron association by DACAAR. For more support services she mentioned the workshops and training programs which have been conducted for some of the association members in last 3 years by DACAAR.

Challenges and Constraints faced by women for saffron cultivation

Throughout focus group discussion with female farmers, majority of them mentioned that they had been faced to many constraints for saffron cultivation in three last years. Out of 6 women, two have reported that they had constraints in performing the outdoor activities in the first year of saffron cultivation. They have stated that their lands are located 2 to 3 km far from their houses and their husbands didn't want them to work on these lands due to the longstanding cultural notions of honour and shame. Finally after many days of discussions they could convince their husbands to let them start working on these lands. One other respondents said that her farm is saffron farm is 3 km farm from her house and there is no means of transportation to get there and therefore she has problem of transportation. She has to walk 3 km to the field and 3 km back home every day which is quit difficult for her. Three other women farmers have argued that beside the cultural mores restricted the women to work within the private space of the household; they were also faced to the security problems since they have started saffron cultivation. They further argued that although they believe that women have the potential to play an important role in cultivation, production and extension of saffron as an alternative crop for the poppy, but some times the Taliban are warning the women not to work outside their houses or attend to the trainings and workshops which are conducted by the NGOs or government. Moreover 3 (50%) of respondents have reported that they are faced to the technical challenges. Although DACAAR organization is some times conducting trainings for women regarding cultivation, harvesting and post harvesting of saffron, but these trainings are not enough to cover all 120 members of the women association. Access to the saffron corm is and insufficient market for saffron are the other challenges which is reported by the 6(100%) of the respondents.

Table -3.6: Comparison of challenges faced by men and women

Descriptions	Male		Female	
	NO	Percentage	NO	Percentage
Security challenges	2	11.11%	6	100%
Transportation challenges	–	–	1	16.50%
Cultural constraints	–	–	2	33.33%
Technical challenges	7	38.9%	3	50%
Marketing challenges	18	100%	6	100%
Challenges for providing saffron corm	13	72.22%	6	100%

Source: Own study

Findings of interviews with female farmers

The reason for referring to saffron cultivation and establishment of association

During the interviews with individual female farmers, all of the 6 women respondents have argued that the reason for establishment of saffron producers' association is considerable role in of association in improving access to the market, cheap input supply for the members, price risk management and improving access to the credit. They also stated that the women saffron producers' association can help them to get more fund and investments from the national and international NGOs. Moreover the women can sell their saffron through the association as whole to the traders in a higher price than selling them individually. One of the respondents stated that before establishment of the women saffron producers association, there was no responsible person to coordinate and bring all actors in the innovation and development process, but now the management board of the association made a coordination between all the members of association as well as to the local market. Regarding to the reason that women referred to the saffron cultivation 3 (50%) of respondents argued that the reason saffron cultivation and production is the higher income delivered by saffron than the other activities specially the carpet weaving that we have been performing before. 1(16.6%) of the respondents said that the reason for referring to the saffron cultivation was the high ability and involvement of women in saffron production. She said that she was involved in 80 to 90% of the cultivation, weeding, flower harvesting, stigma separation and drying of saffron, but she said she didn't own anything; all the income delivered by saffron farm was belong to her husband. Therefore she thought she can be independent saffron producer, and finally she has started saffron growing in 2007 by the support of DACAAR on a 200sq/meter land that she had inherited from her father. The 2(33.3%) other women respondents have argued that they believe opium is the source of social problems in every community, many of the youth generation are being addicted to the heroin in all over Afghanistan every year. The heroin addicted persons are creating social, behavioural, and health problems, as well as creating crimes which are a misery in our society. Therefore we started saffron cultivation to avoid eradicating the poppy cultivation and encouraging the other farmers to stop poppy cultivation and refer to the saffron as an alternative.

3.4 Saffron trader

Afghan Saffron Company is one of the private Afghan companies which was founded in 2006 by Ghaffar Hamidzay and aims to improve the quality of Afghan saffron according to the international standards, finding a trustable long lasting business relationship with world market, technical packages in Afghanistan saffron industry, playing a key role in annihilation and eradication of poppy in Afghanistan by replacement of saffron as a licit substitute crop for poppy plantation. The interview was conducted with Ghaffar Hamidzay director of the company. The following points are results of the interview.

View of ASC about the saffron production and marketing in Herat

Mr. Hamidzay stated that many parts of the country have potential for production of high quality saffron; it is seen as an excellent potential source of income for both small- and medium-scale farmers, and the best alternative crop the poppy. On the other hand it has a good scope for creating employment for the women and poor communities working at production and processing stages. Currently there is a high interest for cultivation of saffron among the Herat farmers, especially in Pashtun Zarghun and Ghoryan district the saffron is being cultivated in large area which has improved the farmers' livelihood. In 2008 Afghan Saffron Company (ASC) has cultivated 100 jeribs (20 hectare) of saffron and plans to increase it to 200 jeribs (40 hectare) in 2010. He also argued that in 2006 when we established the Afghan Saffron Company, we were purchasing the saffron from the farmers and selling them to Iran in a low price. Selling the saffron in a low price was the only option due to the insufficient amount of saffron produced and lack of market linkage with the global market. Currently ASC is trading the saffron with European countries like Spain, Netherlands and Italy in a higher price than selling to the neighbouring countries. A linkage with the European market from one hand increased the income level of ASC and on the other hand has built the capacity of its staff attending to the trainings and conferences in Italy and Spain. He also stated that ASC has established a saffron quality testing laboratory which can measure the colour, smell and moisture of saffron. Before the establishment of this laboratory the saffron produced in Herat had to be sent to Iran for quality test, but now the quality of saffron is tested in Herat.

Challenges faced by Afghan Saffron Company

Despite the improvement in cultivation harvesting, post harvesting and marketing of saffron in recent years in Herat, there are still challenges ahead to the saffron producers and traders. Hamidzay mentioned that the most important challenge for ASC is the security issues. Due to the lack of security (presence of Taliban, warlords and kidnapers) in the rural areas the ASC staff can not travel to the villages for conducting trainings for the farmers and purchasing the saffron directly from the field. Therefore, the ASC has established a building in the centre of the city called House of Saffron Producers. The saffron producers gather in this house for trainings, and selling of their saffron. Another challenge faced by ASC is the transportation facilities. ASC pays 50\$ for transportation of one kilo of saffron from Afghanistan to Europe which is a high amount. Although this is a high amount but the ASC have to pay it due to the limited Afghan airlines between Afghanistan and Europe and lack of alternative means of transportation. The transportation cost for Iran saffron is 15\$/8kg which is very cheap in compare with Afghanistan and this is one of the reasons that the afghan traders can not compete with Iran traders. He has also stated that lack of a corm producing centre is also a challenge for saffron producers and traders. Now the saffron growing farmers are purchasing the low quality corm which is coming illegally from Iran or using the local corm which is not enough for all buyers. Therefore a 200 ha corm producing farm is needed to produce certified corm in Herat.

4. CHAPTER FOUR: DISCUSSIONS

In this chapter results from the previous chapter are analyzed and discussed with the literature reviewed and the observation of researcher from the field.

4.1 The reasons that the farmers changed from poppy to saffron

As it was mentioned in the previous chapter there are many factors which have contributed in transition from poppy to saffron. Some of these reasons are the technical facilities and advantages of saffron agro techniques than poppy and other crops. However the majority of farmers have argued that the reason for changing from poppy to saffron was the high price and economical value of saffron in market. They have stated that saffron delivers four times higher income in compare to the poppy. Comparing the reasons given by the majority of the farmers for transition from poppy to saffron with the conceptual framework of this study, it can be derived that the profit delivered by saffron in compare to the poppy and other crops is most important reason for the farmers who are currently referred to the saffron. Since 80% of the country population are directly or indirectly depend on agricultural activities as a main source of livelihood (Miller, 2006), therefore, a profitable crop like saffron can improve their economy level .

The rural populations who have previously been heavily relayed on opium production in Pashtun Zarghun district are now producing saffron which delivers a higher income. One out of eighteen male farmers has mentioned that saffron is a sustainable crop which doesn't need land preparation and cultivation every year, once that it is planted it will continues flowering for 7 years. Therefore the costs for land preparation and cultivation is only once per each 4 to 7 year. The cost for land preparation is 1250 US\$/ha which includes ploughing, levelling and plot making. However the costs for the planting of corms is 6000 US\$/ha. In Afghanistan the saffron corm is planted by hand because of the lack of machinery and therefore it requires a large number of labours and a big amount of money to be paid for the labours' wage (Qaraeen, nd). One of the farmers stated that beside the stigma saffron also produces corms which can be considered as a big part of saffron income. In four years one hectare of saffron can reproduce 15 tons of corms which can be soled in the fourth year of cultivation. From the total 15 tons of corms, 4 tons (27%) are needed to be planted in the same land again and 11 tones (73%) are for sale.

Each tone of saffron corm costs 5000 US\$ in Herat local market and therefore, at the end of the fourth year each farmer can earn 55000US\$ per hectare only from selling corms which can be 13750\$ per year from each hectare. Moreover each hectare produces minimum 12.5 kg of saffron stigma per hectare from the second year of cultivation which each kg costs minimum 2000US\$ in local market. From the literature review and interviews which has been conducted with the farmers extension workers and traders it can be derived that due to the high interest of farmers for saffron cultivation in Pashtun Zarghun district the price of saffron corm has significantly increased in Herat. Therefore the farmers focused more of the short term production of corm rather than focusing on production of saffron. The saffron corm produced in Herat is not enough for all interest farmers looking for corms, and some times time they are buying the low quality corms imported illegally from Iran.

In 2008 the price of saffron in Afghanistan was 2500US\$/kg which could be sold in 3000 US\$ in Iran and finally 6000 US\$ in Europe market (Malik & Wyeth, 2008). Comparing the saffron price in Afghanistan market with the price in European market we can see that the saffron price in European countries is 41.7% higher the price in Afghanistan market. The reason why there is a big difference between Afghanistan market and European market is the high cost of labour wage in European countries in compare to Afghanistan. Since a vast amount of labour is required in harvesting and on-farm processing of saffron, therefore the price of saffron in Europe is higher than Afghanistan. The high demand and various usage of saffron in European countries are the other reasons which influenced the saffron price in these

canonries. If the Afghanistan government support the farmers and make a clear marketing strategy as well as a linkage between the Afghan saffron producers and traders with the global market it will help the Afghan saffron to be sold in a higher price and brings a sustainable economic growth for the saffron growing farmers as well as the private sectors. Creating links to cross-border trade for afghan saffron will from one hand improve the national economy of the country in long-term and on the other hand it encourages the farmers to stop poppy production and refer to saffron. With out a proper market channel farmers will not be able to access the potential of market. Lack of quality assurance for international buyers, packaging facilities, and knowledge of market dynamics are the other challenges faced by saffron producers and traders in Herat, (Malik and Aslami,2007).

4.2 Extension services

The DACAAR extension workers have stated that in 1998 DACAAR has started saffron cultivation with a few farmers in Pashtun Zarghun district. In 2005 due to the good adoption and high value of saffron DACAAR has expanded the saffron extension programs which have covered 300 more farmers. By 2010 the number of saffron growing increased to 800 who are divided in four saffron producers' associations. The extension workers have further argued that in 2005 the total area under saffron cultivation in this district was about 150 jeribs (30 hectares) which has increased to 250 jeribs (50 ha) in 2006, currently there are 150 hectares of land under saffron cultivation in this district. The area under poppy cultivation in 2004 to 2005 was over 180 hectares which is currently decreased to the zero. Moreover the number of farmers growing poppy in 2004 to 2005 was over 850 farmers which are currently decreased to the zero. At present the Pashtun Zarghun farmers do not cultivate poppy. Besides the interest of farmers in saffron cultivation and being banned by the government, the religious leaders and elders in the community have played an important role in extension of saffron and restraining the farmers from poppy cultivation, (Gohar and Wyeth, 2006). From the above mentioned points it can be derived that the people in Pashtun Zarghun district are interested in saffron cultivation and had a good contribution for prohibition of poppy. Since saffron has a high value and a good adaptation with the Afghanistan climate and soil. Therefore, if the government of Afghanistan and NGOs support the farmer technically and financially, it can completely replace the poppy in all over Afghanistan. In 2005 DACAAR has established a saffron producers' association with 102 members in Pashtun Zarghun district. Ninety nine more farmers joined the association in 2006 and currently there are three saffron producers' associations in this district. Women have formed the fourth association of their own in this district aims to be self sufficient in the future, (Wyeth and Malik, n.d.). The farmers have argued that establishment of saffron producers associations by DACAAR was a positive step toward sustainable production of saffron and involvement of farmers in production of saffron. They have also argued that forming the saffron producers' associations created a better coordination and cooperation among all the saffron producers. Moreover through the saffron producers' associations there is a higher possibility of creating a linkage between the farmers and the saffron traders and all the member of associations can seal their saffron through the association together as whole sealer in a higher price than sealing individually.

4.3 Extension approaches

The agricultural extension system in Pashtun Zarghun district is consisting of two types of approaches, top-down and bottom-up, which are very different from each other. According to the government's field level extension worker there is a top-down approach used in government's extension system in this district. The government extension workers have stated they are using the per-defined objectives and goals which have been made at the ministry

level. The farmers and extension workers are not involved in decision making process. They further argued that no participatory method is used for solving the problems of farmers and we are delivering the innovation packages created by ministry of agriculture. According to the (Joseph,2000) Many extension organisations and economist are now convinced that using a transfer of technology approach in which the extension administrators decide on the targets to be realized by the field-level extension agents it is no longer desirable. And instead it is preferred to use the participatory approach. But unfortunately in government extension system of Afghanistan there is still the top-down approach which emphasize on transfer of knowledge and technology to the farmers. There is no interaction and sharing of ideas between the extension workers and farmers. The top down extension approach applied by the ministry of agriculture in this district do not give the opportunity to the farmers to express their priorities and needs themselves.

But the DACAAR's extension workers have stated they are using the participatory methods in order to involve the entire stakeholder in innovation process. The reason for involvement of farmers and additional stakeholders in the creation, content and conduct of a program is creation of a network between all involved parties which helps to successful implementation of projects and programs. They also said that the participatory process gives the opportunity to identify the poor male and female farmers and involve then in the support services and programs. Regarding to the methods of communication with farmers they have mentioned that they normally visit the farmers through group and individual meetings which take place tow or three times per month. The other ways of communicating with the farmers are on farm trainings and workshops held for capacity building of the farmers. The On Farm Trainings (OFT) normally takes place during the cultivation, and harvesting seasons so that the farmers practically learn the saffron growing and harvesting methods. The farmers who are participating to the on farm trainings and workshops are being paid for the transportation for travelling to the field and back to their village. However some times the farmers themselves come to DACAAR field office to get information about the saffron agro techniques. The extension workers have also argued that there is a bottom up extension approach in DACAAR office. The decisions are being made according to the information and data collected form the field by extension workers and the field level extension workers are involved in decision making process. But through the interviews with the government extension workers the researcher found out that there is a top down approach in government's extension system.

4.4 Challenges faced by farmers and extension workers

There are many challenges faced by farmers for production of saffron in Pashtun Zarghun district. Availability of corms, lack of government support due to the insufficient number of field level extension workers, budget limitation, technical problems of farmers for cultivation harvesting and post harvesting of saffron and the low economy level of farmers' households due to the resent droughts and insufficient income delivered by their farms are the important challenges faced by saffron producing farmers. The investment needed for saffron cultivation is 5,000 US\$ per jerib (2000 m²) which is a high amount and the farmers are not able to afford. Strong demand for saffron corm in Herat market caused the farmers to focus on short term gains by producing saffron corm rather than producing saffron stigma. Providing saffron corm for the farmers by NGOs and donors organizations without technical trainings in land preparation, cultivation, fertilization, harvesting and processing are the other challenges faced by farmers (Qaraeen, n.d.). 13 out 18 male farmers mentioned that availability of saffron corm are the serious challenges for saffron production. Due to the high demand and interest for the saffron corm among the farmers the price of corm highly increased such that the farmers are not able to afford. They have mentioned that if the government provides the corm as loan it will help a larger group of farmer to refer to the saffron cultivation. The knowledge and experiences for saffron cultivation, harvesting and post harvesting are also the other challenge

of farmers. 5 out of 18 farmers have mentioned that due to the insufficient technical knowledge for drying of saffron stigma they have lost their saffron yield that they got in one year. DACAAR has been involved in promotion of saffron in Pashtun Zarghun and helped the farmers with providing essential materials and technical trainings, necessary inputs for production and processing of saffron, assisting the saffron associations with marketing facilities and linkage between the producers and traders.

The female farmers have also argued that there are many challenges faced by them for saffron cultivation and production. 33% of the women farmers have reported that they had constraints in performing the outdoor activities in the first year of saffron cultivation. They stated that due to the cultural notions old tradition the men do not allow the women to work out of their houses. Participation in outdoor activities is the serious challenge face by the women of Afghanistan. These cultural mores primarily restrict women to work within the private space of the household. The men are usually working in public are responsible to protect the family and provide food and other needed staff. These cultural roles play out in division of labour in the household. Women are usually performing the tasks which are performed inside or near the house such as kitchen garden, crop and vegetables processing activities and livestock. The hard works like land preparation, cultivation, harvesting etc. Considering the women role in household, they contribute significant amount of time on agricultural and livestock activities, (World Bank, n.d.)The other challenges faced by women are transportation, security and market challenges which have affected the process of transition from poppy to saffron in Pashtun Zarghun. From the interviews and focus group discussions with the extension workers, the researcher found out that there are many challenges faced by the government and DACAAR extension workers. The government's extension workers have stated that shortage of field level extension workers, low level of salaries, lack of communication and transportation facilities are the serious problems they are facing. The government has provided motorcycles for the extension workers but there is no budget for fuel and maintenance says Abdul Razaq one of the government's extension workers in Pashtun Zarghun district, therefore, they can only visit the nearest villages. In 1979, Afghanistan's agriculture research system had 24 research stations and over 1,000 staff that 22 % of them were technical research staff. But unfortunately 25 years of war and civil conflict has seriously affected the extension system, infrastructures. Currently in Afghanistan research institutes are needed to focuses on the technical aspects for generating useful technologies, (Miller, 2006).But the DACAAR extension worker argued that the only serious problem they are facing is the security. The presence of Taliban and warlords in some villages of Pashtun Zarghun is a big threat for the NGOs staff working in these areas.

The Taliban some times attack to the NGOs' field offices, killing the staff and burning the offices. But the DACAAR extension workers said that they don't have financial problems. They get paid 500 to 600 US\$ per month which is enough for a normal life. They also stated that the communication and transportation facilities are provided by DACAAR. Whenever they want to go to the transport department provides them vehicle, if they travel by motorcycle fuel will be provided by the logistic section. In general the extension workers especially the DACAAR and other NGOs extension workers play an important role in training of farmers, consulting with farmer for solving their problems and introducing and extension of saffron as an alternative crop for the poppy in Pashtun Zarghun district. Therefore, the increasing of saffron areas from 30 ha to 180 ha, decreasing of poppy areas form 150ha to Zero and involvement of over 800 farmers in saffron cultivation and production of can be considered as the major effects of extension services carried out by different institutions in this

5. CHAPTER FIVE: CONCLUSION AND RECOMMENDATIONS

5.1 Conclusion

The study shows that even though respondents of the research site are interested in cultivation and production of saffron as a cash crop, but there are still many challenges ahead to the farmers which faced them to difficulties. 72.22% of men respondents and all 100% of women has stated that access to the saffron corm is one of the biggest challenges faced by them. The price of saffron com is 5000 US\$ per ton which is a high price and the farmers can not afford to buy it. The marketing opportunity is also another challenge which is faced by the saffron growing farmers and traders. All the (100%) if men and women respondents have stated that there is no proper market for saffron inside Afghanistan. It seems likely that selling the saffron to the global market will generate a higher income than selling to the traders inside Afghanistan. Moreover the majority of women farmers expressed that the security issues and cultural constraints are also the major problems faced by them for cultivation of saffron and participating to the out door activities. Although there are many challenge ahead for the marketing of saffron in Afghanistan but the recent linkage between the afghan traders and European market can be a positive step toward sustainable production of saffron in Herat province.

They study has also highlighted that there are many challenges faced by the extension system in Pashtun Zarghun district. Insufficient number of field level extension workers, shortage of budget, low level of staff salaries, and lack of communication and transportation facilities are the challenges faced by government field level extension workers. The DACAAR field level extension workers are in a better position in compare to the government extension workers, the transportation and communication facilities are provided by DACAAR and they are paid a higher salary, but the only problem that they are facing is the security challenge which is out of the DACAAR control. Regarding to the transition from poppy to saffron different reasons has been argued by farmers. The majority of women farmers expressed the reason for referring to the saffron cultivation was the high income delivered by saffron in compare to the embroidery, carpet weaving, and production of small handicrafts made at home. The other reasons for women farmer for referring to saffron and establishment of saffron producer's associations is increasing the family income, gain access to the extension services, donors' funds and to extend the saffron as an alternative for the poppy. However the majority of men farmers have also stated that the reason for changing from poppy to saffron is the high income delivered by saffron in compare with poppy.

For the comparison of poppy income with the saffron income the respondent farmers stated that the profit delivered by saffron is three to four times higher than the profits delivered by poppy. The other reasons for transition from poppy to saffron are the risks of poppy cultivation, government pressure, and opposition of poppy cultivation with Islam religion. Establishment of saffron producers' associations from one hand provided a good basis of continuing the promotional work for the farmers and on the other hand created coordination between all the saffron producers. Furthermore it has created a linkage between the farmers and the saffron traders. Since 2005 a big change has occurred in the areas under cultivation of saffron and poppy. The study revealed that despite various constraints and challenges, implementation of saffron projects and providing extension services by different institutions especially by DACAAR in Pashtun Zarghun district had a positive impact on extension of saffron and elimination of poppy in this district. As a result of the extension services we can mention the increasing of saffron areas to 180 ha, decreasing of poppy areas to zero and involvement of 800 farmers in saffron cultivation since 2005.

5.2 Recommendations

Based on the conclusions derived from this study the following recommendations are considered by researcher.

Since there is a high interest among the Pashtun Zarghun farmers for cultivation and production of saffron, but due to the high price of saffron corm and other required inputs, the farmers can not afford to buy the input and start saffron cultivation without the support of NGOs and other organizations. Therefore, it is recommended that the Afghan government and donor organizations support the saffron cultivation as alternative livelihood options for rural Afghans who have previously been economically dependent on poppy cultivation.

To ensure sustainability of saffron production, farmers should adopt themselves to the limited resources and do not only rely on the donation and external sources.

In order to influence the market and sealing the saffron in a higher price, it is recommended that all the farmers seal their saffron as whole through the saffron producers' associations instate of selling individually. Sealing the saffron as whole will increase the bargaining power of farmers and generate a higher income for them.

Since the availability of saffron corm is a big challenge for majority of the saffron producers, it is recommended that the NGOs or the other involved institutions establish a saffron corm producing centre in Herat which can produce enough amount of high quality corm.

Due to the cultural constraints the women are not interested to participate to the training programs which are conducted by male trainers. Therefore, it is recommended that the NGOs and other extension organizations conduct the trainings by female trainers.

Women play an important role for extension of saffron as an alternative crop for poppy. Therefore the government and NGOs' staff should not assume that the men are more energetic and stronger than women farmers. And the programs and the trainings should be made to address the different needs of women's and men's involved in the saffron cultivation.

The transportation expenses of saffron are very high for exporting the Afghan saffron to the European countries. Therefore, it is recommended that the government of Afghanistan decrease the transportation fee of saffron in order to support the saffron traders.

Agriculture extension system is an essential pillar for capacity building of the farmers and transition from poppy to saffron. However, unfortunately, the extension system in Afghanistan has been seriously affected during the many years of civil wars. Therefore, it is recommended that agricultural extension rehabilitation should be given high priority to meet the emerging challenges and provide a broad range of services for saffron growing farmers.

For a better implementation of saffron projects it is recommended that all involved NGOs as well as the ministry of Agriculture have more coordination and cooperation with each other.

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Annex-1

Interview questions

1. Did the farmers like to change from poppy to saffron?
2. What is the reason for changing from poppy to saffron?
3. What were the major cash crops that the farmers were cultivating before poppy?
4. What knowledge and experiences did the farmers have about cultivation harvesting and post harvesting of saffron before they start cultivation?
5. What challenges are faced by farmers for transition form poppy to saffron?
6. What income changes did the farmers experience since they started saffron cultivation?
7. How the associations' management team has been selected?
8. What do the women think about transition from poppy to saffron?
9. What is the reason for establishment of women saffron producers' association and referring to saffron?
10. What were the women major activities before starting saffron cultivation?
11. What are the constraints faced by women for cultivation, processing and marketing of saffron?
12. What is the education level of extension workers working in this district?
13. Which extension approaches do the agriculture extension workers use for intervention in transition from poppy to saffron?
14. How often do the extension workers contact with farmers?
15. What support services did the DACAAR and Government provided for farmers?
16. How the establishment of saffron producers associations done?
17. What means of communication do the extension workers use in this district?

- 18 What technical challenges agriculture extension workers are facing for transition of poppy to saffron in this district?
19. What other challenges do extension workers face for transition from poppy to saffron?
20. What is the dynamic of poppy in last five years in Pashtun Zarghun district?
21. What is the dynamic of saffron area in last five years?
22. What are the changes in the number of farmers growing saffron and poppy in last five years?

Annex-2

Map of Afghanistan showing Herat province



Annex-3

Map of Herat province showing Pashtun Zarghun district

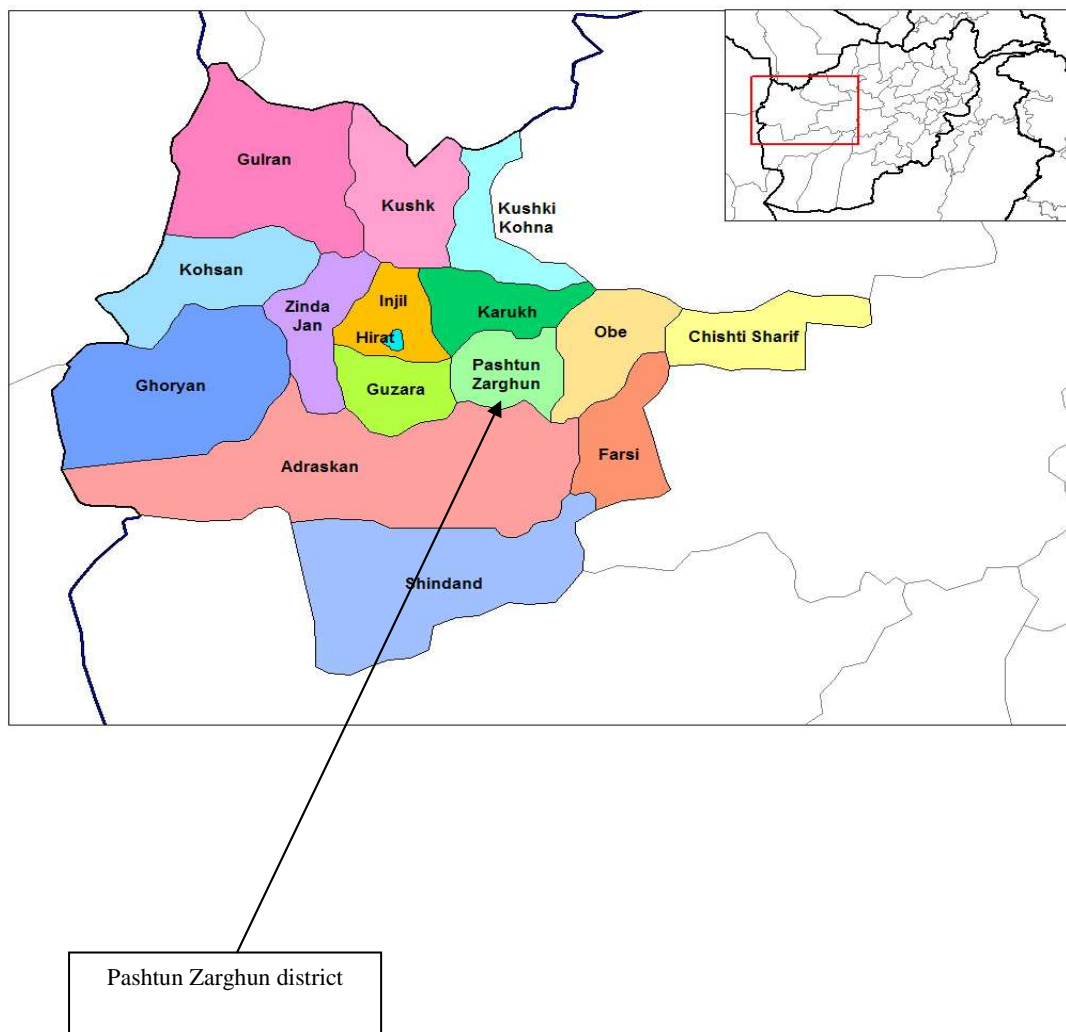


Figure: Map of Herat province showing Pashtun Zarghun district

Annex-4

Photos



Photo: Researcher having group discussion with the farmers of Gulmir-e-Bala saffron association



Photo: Researcher having group discussion with the farmers of Dorokhshan saffron association



Photo: Researcher interviewing head of Foshkan Saffron Producers' Association



Photo: Researcher interviewing one of the government's extension workers



Photo: Saffron flowers



Photo: Saffron dryer



Photo: Saffron flowers harvesting



Photo: Women harvesting saffron flowers