

Problems and opportunities for Pulses Growers: Baseline Survey Report Larkana District

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Abstract:

Pulses are considered important contributors in the livelihood of rural people in Sindh. Pulses are cultivated in various areas of Larkana District i.e Ratodero, Naudero and Dokri Taluka. Pulses are cultivated in Sindh both irrigated and un irrigated river belt of Indus River. ACIAR Australian Centre for innovative Agriculture Research is making efforts to improve value chain of pulses in Pakistan considering all value chain actors. The research project intends to understand the current practices and obstacles, different value chain actors are facing. After identifying the possible interventions to improve value chain of pulses in the country, interventions will be tested across the value chain. In order to see the effect of interventions on the performance of interventions, it is the utmost important to have information on the current practices in pulses production particularly at the farm level, socioeconomic characteristics and other related aspects of the target area of the project. For this purpose, the baseline survey is conducted to find out the information from the project site. Chickpea, Mungbeans and Lentil are cultivated in all Tehsil of Larkana District i.e. RatoDero, Naudero and Dokri area. Larkana and Sukkur are selected for the research project. Ratodero Teghsil is contains larger land area and production where chickpea, lentil and Mungbeans are cultivated on irrigated land. We have selected few lead farmers from each tehsil and they provided list of the various villages where pulses are growing in all Tehsil. I have selected 45 farmers from Naudero, 50 from Ratodero and 35 from Dokri. In. Dokri area Chickpea and lentil are cultivated on unirrigated land in river Indus belt. In Sukkur District were have selected Abad Kacha, Pano Akil and Bagarji in all Tehsils Chickpeas and lentil is cultivated in the belt of Indus river and unirrigated land and Mungbeans are cultivated in irrigated land.

Keywords: *Problems and opportunities, Pulses Growers*

Data Collection Methodology: A well-structured and pre-tested questionnaire was prepared with the help of the experts and project team and Before starting the survey, the enumerators were rigorously trained in various areas and ifor one day by the project team responsible for the baseline survey in Larkana and Sukkur District. In first few visits I checked them whether they are collecting information according to the questionnaire. During the survey, one member of the project team randomly verified the questionnaires filled by the enumerators on the daily basis. Similarly he also made surprise visits to different villages where the enumerators were doing the data collection activities. Descriptive statistics are used to analyze the collected data. Mean, standard deviation, frequency and percentage are employed.

According to the demographics of the pulse growers descriptive statistics of the selected households. Age of the respondents is, on an average, 36-45 years. Education of head of the household is merely very less (4.05 schooling years), showing that head of the households is merely educated. All the respondents are male. Farming experience is 25 years. Average family size is 6.43, on an average. Adults and children are involved in farming, is 4-5. According to the income level Income from agricultural production is highest from all the sources (Table 2). Income from pulses production is the second highest source of income and off-farm income is Rs. 190,670 per annum. The results from land use change with history and intensions. A total of 1.83 parcels are reported on an average. Cropped area is around 18 acres with standard deviation of 19.5. Own land and rented-in land are also reported in the project area. Grazing land is 1.34 acres, on an average. The area of production for chickpea increased by 18 percent and 50% of mung bean but lentil area of production is decreased by 5 percent according to the response by growers reported an increase in production of pulses crops. The main reasons for an increase in production of mung bean are favorable conditions including and mostly Mung bean is cultivated as third crop in Sindh after wheat or chickpea so that's main reason most of the farmers in Sindh are growing. Increase in chickpea production are favorable conditions including temperature (40%), for Mung beans 50%. In both Districts women is equally

responsible in cultivating pulses Broadcasting, drill, irrigation application, preparation of land, weeding and spraying pesticides are activities solely done by men while cleaning, picking, weeding and harvesting are performed by women in pulses production. Activities performed by both men and women include harvesting, weeding, drying and collecting pulses crops.

Introduction:

Pulses are smart crops both for humans and the cropping system as they provide protein, minerals, vitamins, and fiber for human diet and nitrogen to the soil and contribute to the maintenance of biodiversity. Pulses, also called grain legumes, contribute about 33% of the global dietary protein requirement of the human population. Pulses are considered important contributors in the livelihood of rural people in Sindh. Pulses are cultivated in various areas of Larkana District i.e Ratodero, Naudero and Dokri Taluka. Pulses are cultivated in Sindh both irrigated and un irrigated river belt of Indus River. In Sukkur District were have selected Abad Kacha, Pano Akil and Bagarji in all Tehsils Chickpeas and lentil is cultivated in the belt of Indus river and unirrigated land and Mungbeans are cultivated in irrigated land.

ACIAR Australian Centre for innovative Agriculture Research is making efforts to improve value chain of pulses in Pakistan considering all value chain actors. The research project intends to understand the current practices and obstacles, different value chain actors are facing. After identifying the possible interventions to improve value chain of pulses in the country, interventions will be tested across the value chain. In order to see the effect of interventions on the performance of interventions, it is the utmost important to have information on the current practices in pulses production particularly at the farm level, socioeconomic characteristics and other related aspects of the target area of the project. For this purpose, the baseline survey is conducted to find out the information from the project site

RatoDero- is located in the north of Larkna and about 20 k.m away from city center, we have started baseline survey from 28th-31st March 2021 at Joya, Junejo, Selera and Markhiyani, Kati Mumtz, Taub, and Wada Unnar villages Taulka Ratodero district Larkana. Almost 90% of the household heads are born in RatoDero and 81 % are born in the same village where they currently reside. Among those born outside of the village the median household head moved to the village 25 years ago. Around 95% of the household heads are currently married. The religious affiliation of the household heads was varied: around 89% described themselves as Muslim), 11 % were Hindus. Major castes are Bhutto, Soomro, Joyo and seelro.

In RatoDero 60 farmers cultivate Chickpea, 10 farmers Mungbeans and 8 lentils. The total area for pulse crops is about 130 areas and 10 percent of the total cultivated area. In this area irrigated land is used for these crops.

Naudero is located center of Larkana district and 17 K.m away from city center Larkana. Naudero is very famous for Guava fruit ad about 60 percent of the farmers are engaged in guava fruit farming. I have motivated 10 farmers to cultivate Mungbeans in guava field at Aghani village and farmers received 30,000 per/acre extra income. Ratodero.

Dokri is located in the west of Larkana and about 22k.m from city center taluka Dokri area 1-2nd May visited different villages Chutto Wahan, Balregi, wado wahan, , Jalbani village and Hullio village. . Almost 98% of the household heads are born in Dokri and 81 % are born in the same village where they currently reside. Among those born outside of the village the median household head moved to the village 25 years ago. Around 95% of the household heads are currently married. The religious affiliation of the household heads was varied: around 89% described themselves as Muslim), 11 % were Hindus. Major castes Hullio, Jalbani, Soomro, Shaikh and Sohu. In Dokri area 40 farmers are cultivated Chickpea, 7 farmers of Mungbeans and eight lentils. The total area for pulse crops is about 120 acres and 8 percent of the total cultivated area. In this area irrigated land is used for these crops.

Methodology

Chickpea, Lentil and Mung bean is growing in Larkana and Sukkur -Sindh-Pakistan. Larkana and Sukkur Districts are selected for the project area. Two Tehsils from Larkana and Three Tehsils from Sukkur District were selected for this research project. Lead farmers provided names of the growers addresses. Data were collected from 260 farmers from the Larkana and Sukkur Districts. A Structural and pre-tested

questionnaire was prepared with the help of the experts and project team. Before starting the survey, the enumerators were rigorously trained for one day by the project team responsible for the baseline survey in Sukkur and Larkana. During the survey, one member of the project team randomly verified the questionnaires filled by the enumerators on the daily basis. Similarly he also made surprise visits to different villages where the enumerators were doing the data collection activities. Descriptive statistics are used to analyze the collected data. Mean, standard deviation, frequency and percentage are employed.

Results:

Demographics

Table 1 shows descriptive statistics of the selected households. Age of the respondents is, on an average, 36-50.38 years. Education of head of the household is merely very less (4.05 schooling years), showing that head of the households is merely educated. All the respondents are male. Farming experience is 2 years. Average family size is 6.41, on an average. Adults and children are involved in farming, although the number varies. Almost 99% of the household heads are born in native place and 92% are born in the same village where they currently reside. Among those born outside of the village the median household head moved to the village 30 years ago. Around 96% of the household heads are currently married. The religious affiliation of the household heads was varied: around 89% described themselves as Muslim, 11 % were Hindus. Major castes are Bhutto, shaikh, Memon, kartio and katpar. The Average age of the respondents range from 15-55 in all village, education level 80 percent having basic primary education, the number of adult people around range from 4 Female and 5 male. Number of children's averages in all villages of Nuodero 11 female 12 male. Most respondents were male. The average farming experiences range from 10 to 40 years in all villages. On average 4 family members are involved in farming. The major income sources from agriculture farming. In Nuodero average four children’s are working in the field with their parents.

PERSONAL CHARACTERISTICS (Please cross the box (x) if you do not wish to answer)

1. Age of respondent: _____ years Do not wish to answer
2. Education of the respondent: _____ years Do not wish to answer
3. Relationship with household head: _____ Do not wish to answer
4. Number of adult people in the household: M _____ F _____ Do not wish to answer
5. Number of children in the household: M _____ F _____ Do not wish to answer
6. Education of head of household: _____ years Do not wish to answer
7. Gender of respondent: Male / Female Do not wish to answer
8. Experience in Farming _____, Pulses Farming Experience _____ Do not wish to answer
9. Number of Household members _____, Male _____ Female _____
10. Number of adult household members involved in farming, Male _____, Female = _____
11. Number of children household members involved in farming (Male = _____, Female = _____)

Income sources of households

Table-2 Shows the major sources of income are considered in the baseline survey. Income from agricultural production is highest from all the sources. Majority of the farmers 70% are engaged in Agriculture. Income from pulses production is the second highest source of income and off-farm income is Rs.189300. per annum.

Table 2. Major income sources of households

Income sources	Annual income (Rs/year)
Agricultural production (total farm income)	
Pulses production (income from pulses)	
Number of animals and income from animals	
Other on-farm income	
Off-farm income	
Remittances	
Others	

In table:3- Pulses area and production

Chickpeas, mung beans and lentil are crops commonly reported in the project area (see Table 3). Chickpeas (white) is produced both in irrigated and unirrigated area. Home consumption of chickpeas (white) is 8.75 monds compared to 1.22 monds of chickpea (black) and 3.00 monds of mung bean and lentil 20 A total of 73% chickpeas (black) 3% 80 % of mung bean and 4% lentil is marketed at farm gate instead of delivering to market.

Table 3. Pulses-area, production and price

Pulses	Cropped area (acres)		Production in monds (mds)	Quantity saved for own consumption (mds)	Marketed quantity (mds)	Loss, if any (mds)	Marketed price (Rs/Monds)	At farm gate (F) or delivered to market (M)?
	Irrigated	Unirrigated						
Chickpea (white) (Rabi)								
Chickpea (black) (Rabi)								
Lentil (Rabi)								
Mungbean (Kharif)								
Wheat								
Others								

History of land use change

Table 4 Elaborate the land use change with history and intensions. An average 1.88 parcels are reported. The standard deviation of 30.6 own land and 2 percent of average rented land reported in this area. In last five years an average 12.6 household reported land use changes in the area. Sugarcane and Wheat replaced pulses in many areas because of better production and support price. In Sindh Mung beans is cultivated as third major crop after wheat and chickpea for the land use change over the 5 years. Lentil area of production and yield is declining from last 5 years main reason is low productivity and low market price.

Table 4. LAND USE CHANGE – HISTORY AND INTENTIONS

Particulars	Mean	Standard deviation
Land parcels (No.)		
Cropped area (acres)		
Own land (acres)		
Rented in (acres)		
Rented out (acres)		
Grazing land (acres)		
Land use changes over the last 5 years (%)		
Yes		
No		
Reasons for making the changes (%)		
Declining profitability in mung bean		
Cotton cultivation		
Higher price of sunflower		
Improving soil productivity		
Sugarcane is more profitable		

Response of the households regarding a decline in production of pulse crops

Table 5 Elaborate the responses of the households relating to question, has your production of pulse crops In Larkana District Chickpeas 60 percent of the respondent reported that chickpea cultivation is increased in all tehsils and Mung bean cultivation also positive trends and 70 % of the respondents reported that they grow mung bean as third crop. Production for chickpea reported increased, Mung bean production also increased from average 11 monds to 13 monds per acre and lentil production and acreage response is decreased.

Table 5. Has your production of pulse crops decreased (in terms of yield and area) over the last five years?

		Lentil		Mung bean		Chickpea	
Yes	No						
If yes, what are the reasons for this?							
Reasons							
		Lentil		Mung bean (%)		Chickpea (%)	
		Yes	NO	Yes	NO	Yes	NO
The yield of pulses crop varieties has reduced							
Lack of improved seeds of high-yielding varieties							
The disease problem reduced the yield							
Marketing problems							
Uncertainty of price							
Area decreased							
If Profit from these pulses has declined compared to the replacing crops							

Responses regarding an increase in production of pulses crops over the last 5 years

Table-6. Elaborate the Considering an increase in production of pulses crops over the last 5 years, reports the responses of the households. According to the response from households Chickpea 30% increase in Larkana districts. Sixty percent increased in Mung bean and declining trend in Lentil. Chickpea and mung bean production is increased because of climatic condition, temperature (48 percent) allocation of land area (60) percent. Farmers opinion that if price of pulses increase in the price of pulse average 200 per k.g of Chickpea, 250/k.g mung bean and 190/k.g of lentil.

Table 6. Has your production of pulses crops increased (in terms of yield and area) over the last five years?

		Lentil		Mung bean		Chickpea	
Yes	No						
If yes, what are the reasons for this?							
Reasons							
		Lentil		Mung bean (%)		Chickpea (%)	
		Yes	NO	Yes	NO	Yes	NO
Better land preparation							
Better use of pesticide and fertilizer							
Favorable conditions including temperature							
Improved seed availability							
Irrigation on the time							
Allocation of the larger land area							
Access to weather information							

Plan to make any changes to the use of land during the next 5 years

Table-7. Elaborate the information regarding changes to the use of land during the next five years. According to the respondent 9.3 percent of the respondents reported to make change in last 5 years. In Larkana Rice and Wheat is mainly growing but from last five years trend is changed and now more area is cultivated pulses. In Rice and wheat less attack of pest and higher price. High prices of rice and wheat may household change the trend of cropping pattern

Table 7. Do you plan to make any changes to your use of land during the next five years?

Items	No.	Percentage
Plan to make any changes during the next five years?		
Yes		
No		
If yes, type of changes		
Crop rotation		
More area to sugarcane and wheat due to higher output prices and less disease risks		
Production of maize and rice		
Production of sunflower due to better price incentives		

Table-8-Main constraints to increasing production of pulses species

Although a large number of constraints in increasing production of pulses are discussed with the respondents, prone to diseases and pest attacks and lack of a support price are the important constraints on an ascending order as reported in pulse farmers in Larkana. Most of the farmers answered response regarding land is suitable for the cultivation of pulses in Larkana. The farm gate price is very low for chickpeas, Mungbeans and lentil. No policy for support price for pulses in Pakistan. The yield of lentil is very low four to five mounds per acre. Yes in last two years yield is variable in chickpeas and lentil. The local market is about 12k.m away from farms. Certified and good quality of seed is not available in and Larkana. According to base line survey pulses required much labor in harvesting the crop. Weeds can be controlled by using cultural control and farmers having not weeding problem. In few cases blight pest damage chickpeas. Few farmers of lentil complain about diseases. There is no proper storage is available in Larkana and farmers complains about the loss of pulses during local storage. In Sindh specially no proper Agriculture extension services are working for the benefits of farming community

Table 8. What are the main constraints to increasing your production (in terms of yield or area) of your pulses species?

Constraints	1	2	3	4	5	Don't know
A. The land is not suitable						
B. The pulses price is too low						
C. Lack of a support price						
D. The yield of pulses is too low						
E. The yield of pulses is too variable between years						
F. Lack of a local market for selling pulses						
G. It is difficult to obtain certified seed of suitable varieties						
H. Pulses require too much labour input						
I. It is too difficult to control weeds in pulses crops						
J. Pulses are too prone to insect pests						
K. Pulses are too prone to diseases						
L. Pulses are too difficult to harvest						
M. Pulses are too difficult to thresh without losses						
N. It is too difficult to dry the grain						
O. It is too difficult to store the grain without losses						
P. It is difficult to obtain extension advice						
Q. Other:						
R. Other:						
S. Other:						

1. Not at all 2. Not very 3. Neutral 4. Somewhat 5. Very much

Gender Roles in Crop Management Practices

In Table-9. Land preparation, Drilling, Irrigation application Broadcasting sparing, weeding and pesticides

activities are solely done by men while cleaning, picking, weeding and harvesting are performed by women in pulses production. Activities performed by both men and women include harvesting, weeding, drying and collecting pulses crops (Table 9).

Table 9. Gender role in pulses production

Activities solely performed by Men	Percentage	Activities solely performed by women	Percentage	Activities performed by both men and women	Percentage
Broadcasting seed		Cleaning		Harvesting	
Drilling, broadcasting		Picking		Weeding	
Drilling		Weeding		Collecting pulses	
Irrigation application		harvesting		Cleaning pulses	
Preparation of land				Drying	
Weeding					
Spraying					

Percentage can be above 100 due to multiple responses

Table 10. Elaborate the information regarding activities performed by women in Livestock management practices. In Larkana 70 percent of the women involve in livestock management activities Those reporting involvement of women in livestock management also provide information on the type of the activities performed by women. 43percent of the women involve in drinking water, grazing and cleaning their beds to the animals.

Table 10. Activities performed by the women in Livestock management

Particular	Frequency	Percentage
Activities performed by the women in livestock management		
Yes		
No		
If yes, type of activities		
Milking		
Cleaning		
Preparing fodder/feed		
Grazing		
Drinking water to animals		

Trend for net returns from pulses crops over the last 5 years

Table-11. Information regarding the trend for the net return of chickpea (white) production remains mixed with no value addition. 80 percent of the respondents reported that production of black chickpea declines in the area. Increasing trends in the mung bean reported (50%). In lentil declining trend were reported by the respondents. Average net return from Chickpea white, Rs.12000, Black Rs.9000 . Mung bean Rs.120000 and Lentil Rs.4000 reported. Cleaning and drying is the process to increase value of mung bean produce.

Table 11. If you can remember, what was the trend for your net return from pulse crops over the last 5 years?

Crop	Net return trend (I=increasing, D=decreasing, M=mix)			Average net profit per acre (average from last 5 years)	Do you process/ add value before selling?		If Yes to value add, how? (Type of Value addition)
	I	D	M		Yes	No	
Chickpea(white)							
Chickpea(black)							
Lentil							
Mung bean							

Perception regarding the factors hindering favorable decision about value addition of pulses at farm level

Table-12. Reported the large number of constraints of the household in. Larkana area poor agronomic practices and high transportation cost are the critical factors hindering favorable decision about value addition of pulses at the farm gate. Price fluctuation, low price of output, lack of information, lack of financial incentives and poor market information are other important constraints. According to the response of price fluctuation 95 percent of the farmers agreed that price uncertainty, low price output 70 percent of the farmers responded that low price output in Lentil and 56 percent responded to low price out in Chickpeas and Mungbeans. Lack of information 99 percent farmers strongly agreed no innovation and value added information receive from any sector. 70 percent pulse farmers strongly agreed about lack of skills. Ninety percent of the farmers strongly agreed about lack of improved varieties. Access to market 88 percent responded strongly agreed that market is too far from farm. Small land holding/small pulse production 80 percent strongly agreed that most of the farmers having one to 2 acres piece of land holding and also production response is very low. Nearly 100 percent of the farmers agreed Lack of access to modern technology used for value addition. High cost of storage 90 percent of the pulse farmers agreed that storage cost is too high and only available in Larkana city. 79 percent agreed that poor agronomic practices mostly traditional practices were used. and it increase transpiration cost. Lack of finances for value adding activities such as grading, packing etc. 90 percent strongly agreed that lack of technological innovation in grading and packing. 99 percent strongly agreed that Lack of financial incentives specially institution credit facilities were not available for these small scale farmers. Eighty percent strongly disagreed about poor quality of products. 90 percent strongly agreed about poor trading and selling. 85 percent agreed that no Government intervention and support to the pulse farmers.

Table 12. Perception regarding the factors hindering favorable decision about value addition

Sr. No.	Factors	Response
1	Price fluctuation	
2	Low price of output	
3	Lack of Information	
4	Lack of skills	
5	Low yield of Pulses	
6	Lack of Improved varieties	
7	Poor access to market	
8	Small landholdings/small pulses production	
9	Lack of access to modern technology used for value addition	
10	High cost of Storage	
11	Poor agronomic practices	
12	High transportation costs	
13	Lack of finances for value adding activities such as grading, packing etc.	
14	Lack of financial incentives	
15	Poor quality of products	
16	Poor trading	
17	Delay selling	
18	Govt. Support	
19	High land preparation cost	
20	Complex harvesting / High cost of harvesting	
21	Any other	

Scale: 1= Strongly Disagree, 2= Disagree, 3= Neutral, 4= Agree, 5=Strongly Agree

Varieties of pulses reported by the households

Table 13 shows varieties of pulses grown on the farmers' farms. For chickpeas, Local, , Bhakkar and Suhrab are the varieties grown at the farmers' fields whereas Local and NIAB-21 are the commonly reported varieties for mung bean by the chosen households. In Lentil local variety is used.

Table 13. Name of the varieties of pulses that you have grown in your farm

	Variety 1	Variety 2	Variety 3
Chickpea (white) (Rabi)			
Chickpea (black) (Rabi)			
Lentil (Rabi)			
Mung bean (Kharif)			

Table-14 shows that data regarding Crop rotation is an important activity for improving soil fertility. According to the results 91 percent of the respondents reported that crop rotation improve the soil fertility. 40 percent of the respondents reported that it deduce the risk of diseases.. Fodder for livestock is considered another benefits farmers enjoy from crop rotation. Among these benefits, improved soil quality is found the most important attribute of crop rotation with the score of 1.6, very close to 1 (the most important among all attributes).

Table 14. Apart from pulses production, which of the following benefits would you attribute to your pulse crops in crop rotations? (%)

	Yes	No	For those ticked as 'Yes', please rank in order of importance, where 1 is most important.
Improved soil quality			
Increased yields or reduced costs in following crops due to nitrogen fixing			
Reduced pest and disease incidence in following crops			
Fodder for livestock			
Other benefit (please specify)			

Sowing methods in pulses production

Table-15 Elaborate the sowing methods are using by the pulse growers, drill sowing is commonly reported method among the chosen households (44%) followed by drill plus broadcasting and broadcasting respectively.

Table 15. Sowing method used for Pulses cultivation

Sowing method	Frequency	Percentage
Drill		
Broadcasting		
Drill and broadcasting		

Source of irrigation of grown pluses

Table-16 shows that Land area under rain-fed source is 1% acre, 2 acres are under canal irrigation system, 30 acres are irrigated with tube-well is used to irrigate 31 acres particularly in the rain-fed area where chickpeas production is common. WAPDA and diesel are two important sources of electricity employed by the chosen households in the project area of Larkana.

Table 16. Source of irrigation of grown pulses

Source of irrigation	Area irrigated (acres)
Rain-fed	
Canal	
Tube-well	
Sprinkler	
Drip	
Other	
Source of electricity (%)	
WAPDA	
Solar system	
Diesel	

Main sources of harvesting or post-harvest losses of pulses

Table-17 shows the various sources losses during harvesting or post-harvesting are reported by the chosen households. Among those sources, rain and storm during harvesting causes huge harvesting or post-harvest losses in pulses while wastage during drying is reported the second most important source of loss. Post and pre-harvesting losses average 2 percent in the selected households

Table 17. If you have experienced any harvesting or post-harvest loss of pulses, what are the main sources of such loss?

Source of losses	Percentage
Rain and storm during harvesting	
Wastage during drying	
Harvesting and threshing process	
Faulty picking process	1

Storage of pulses before selling

Table 18 Elaborate the percentage of households storing the amount of pulses before selling it in the market and or at farm gate. Only 3 percent of the households reported storage of pulses before selling it. The number of reason for not storing the pulse, high cost of storage in reported area. Only 600k.g of White chickpea is stored last year Black chickpea 0. Mung bean 3 percent and Lentil zero. The maximum period of storage is an average of 5-6 month.

Table 18. Do you store any pulses on your farm before selling it?

	Percentage	
Storage before selling		
Yes		
No		
If yes, on average, typically quantity of pulses stored and storage time		
	Average amount stored per year (kg)	Typical storage time (months)
Chickpea (white)		
Chickpea (black)		
Lentil		
Mung bean		

Information about inputs and pulses production where pulses are sold

Table-19 Elaborate the location of Seed and fertilizer market is located at average 14.5 km from the residence of households and cost per bag is Rs40.2% households used own vehicle for transportation and 98% of the total produce is sold in this market with an average price of Rs128 per kg. Local and wholesale markets are other two important markets for which the households reported some activities.

Table 19. Information mention about Inputs and pulses production, where do you sell it to

Sale location	Distance you travel to the buyer (km)	Cost you pay for transport (per bag)	Transport method - own vehicle (V) or carrier (C) %		Total Production Selling % Quantity	Price Rs/Kg
			V	C		
Seed and Fertilizer Market						
Pesticide Market						
Local (village level)						
Wholesale market						
Processor (Daal Factory)						
Retail market						
Consumer						
Export market (overseas)						
Other_____						

COMMUNITY PARTICIPATION

Table-20. Shows the community participation 4 percent of the households reported participation in some organization like SRSO is involve in different pulses farmers in community services in Larkana. organize community participation for farmers. The respondents reported that they represent respective households as member. SRSO also Organizing seminar and workshops for the rural farmers.

Table 20. Are any of your family members organized in community or farmer groups? 2% members of community organization. If yes:

Group Name	Who represent your family	Household role /position in the group (Chair, member or other)	Who organizes the group

Table-21-shows that only 1% households participated and got training/extension support on pulses production, value addition and marketing while the majority of the households reported no training or agri extension services. Information on pulses production and new varieties was provided in such training activities .

Table 21. Has any member of your family got any training/extension support on pulses production, value addition and marketing? Yes 4% No 96%. If yes:

What was the training/support about?	Who participated from your family?	When was that happened?	Who was the organizer?

Role of institutions

Table 22- provides information on the role institutions in pulses production. Out of 43 recipients of farm machinery services, 60% households are found using the information. Such information is mostly received on 3 months basis by the respondent himself. Out of total respondents, 30% respondents rate the quality of the support service as high while 20% households rate the quality of support service as reasonable. Information on other institutions is also provided.

Table 22. Role of Institutions

Institution	Do you access to this institution/ information? (%)		Did you use this? (%)		How often did you receive this information/use 1. Every two week 2. once in a month 3. 3 months 4. 6 month 5. Once a year	What was the source of this services/information? 1. Own 2. Cast/Neighbor/friend 3. Government agency 4. Workshop/meeting/posters 5. Media(Phone, Tv, Newspaper/internet) 6. Other _____	How would you rate the <u>quality</u> of the support service for High Reasonable Poor
	Yes	No	Yes	No			
Farm Machinery							
Extension on crop & livestock department							
Weather forecast							
Market Information							
Crop Insurance							
Private input supplier companies							
Research Institutes/NGOs							
Agricultural University							

Source of financing for bearing cost of production

Table 23- shows that 80 households use different sources of financing for bearing cost of production. 80 percent of the pulse growers are receiving finances from non institutional sources and 50 percent from

middle man and 30 percent from friends and local Banyans and 20% from institutional sources. ZTBL and micro finance bank are formal sources of financing for bearing cost of production of pulses and other crops.

Table 23. Source of financing for bearing cost of production: Yes 69% No 31%, if yes then

Type	Yes (%)	Type	Yes (%)	Type	Yes (%)
Own Investment	85	Informal		Formal	
		Family / Relatives		ZTBL	
		Friends/Fellow farmers		Commercial Banks	
		Village Dealer		If yes Name =	
		Merchant wholesaler		Micro Finance Bank	
		Commission Agent		If yes Name	
		Factories/Daal Mills			
		Retailers			
		Any conditions for getting finances		interest based finance	

Ownership of farm machinery

Table-24. Shows the information regarding machinery, Tractor is an important farm asset and it is reported by 20% households. Similarly disc plough or plough is available with 10% households. Pesticide hand sprayers is found among 2% households. Seed drill, trolley and rotavator are other important farm assets reported by the chosen households.

Table 24. Do you have other farm machinery?

Farm Asset	Yes (%)	Farm Asset	Yes (%)	Farm Asset	Yes (%)
Bio Gas Plant	0.4	Pesticide hand sprayer	32	Tractor mounted sprayer	4
Trolley (big/small)	13	Disc plough/Plough	30	Solar System	4
Rotavator	19	Harvester	6	Tractor	35
Thresher	5	Grader	0.4	Seed Drill	23

Cost of production and marketing

Table 25- shows cost of production of mung bean and chickpeas along with marketing of these two pulses by the households. In addition to higher cost of production, we see very little process of improving value of pulses as there is no grading of pulses by the households. Although storage and packaging is reported, the amount is not promising for the purpose.

Ranking of major problems in production and marketing of pulses

Various problems hinder production and marketing of pulses in the selected district. Weather conditions, high cost of inputs and availability of good quality seed are found the most important problems reported by the households with a score of 2.7, 2.9 and 3.0 respectively. Weeds and blight are other problems in production and marketing of pulses (Table 26).

Table 26. Rank (1 for top) major problems in production and marketing of pulses

Sr. No.	Name	Rank
1	Availability of good quality seed	
2	Blight	
3	Weather conditions	
4	Weeds	
5	High cost of inputs	

Supported need by the households to increase pulses area and production

Table 27 shows various types of supports needed by the government to encourage farmers to increase pulses land area. The most commonly reported need to be provided by the government is in the form of subsidy on farm inputs followed by support price for pulses and access and availability of improved seed varieties.

Table 27. Support needed by government to encourage pulses area

Support needed	Percentage
Direct finance and support price	
Access and availability of improved seed	
Irrigation system access	
Subsidy on farm inputs	
Support price and subsidy on farm inputs	

Support required increasing pulses area and production

Table 28 shows various kinds of support services required by the farmers. Financial support to farmers especially small ones is the most required as reported by 20%. Access to quality and low cost farm inputs is other one for increasing pulses area and production. It is usually observed that with bumper crop production, price of the produce declines. This also happens with pulses producing farmers. In such situation, farmers require support service in the form of protection from the adverse effect of declining prices when pulses production is relatively higher compared to the previous years.

Table 28. What support you require to grow more pulses production and area

Support required for more pulses areas	Percentage
Access to quality low cost farm inputs	15
Access to extension services	1
Effective sprays for pests and weeds	
Incentives on farm machinery	
Financial support to small farmers	
Floor price	
Improved seed	
Compensation on grain loss	
Improving level of land	
Provision of irrigation facilities like sprinkler	
Support on farm inputs	
Support to farmers when prices of pulses decline	

Conclusions

Government should initiative interventions with Agri. Research and extension department to improve the quality of seed and give some support price to pulse farmers.

Availability of good quality of seed, channels of distribution access to the market. 80 households use different sources of financing for bearing cost of production. 80 percent of the pulse growers are receiving finances from non institutional sources and 50 percent from middle man and 30 percent from friends and local Banyans and 20% from institutional sources. ZTBL and micro finance bank are formal sources of financing for bearing cost of production of pulses and other crops.

Suggestions for improving values of pulses

Although farmers suggest different ways to improve value of pulses, access to finance is the most commonly reported by the households (45%). Incentive on irrigation system particularly in the rain-fed areas of the district is the second important way to improve value of pulses at farm gate level. Irrigation system can perform better in the rain-fed area when supported with solar system and sprinkler irrigation system. So small farmers can benefit of the latest irrigation method for improving pulses production. Improved and new seed, better infrastructure, access to low cost farm inputs and access to strong and effective agricultural extension services are other important suggestions for improving value of pulses.

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