

Economic Analysis of Onion (*Allium cepa L.*) Production and Marketing in District Awaran, Balochistan

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Abstract

The study was carried out in Awaran district of Balochistan during the year 2014. Following the random sampling 60 farmer respondents were selected from the district. The data were elicited through personal interview method. The results of the present study conducted to determine the age group of 21-30 years, 21.66 percent, 31-40 years, 25.00 percent, 41-50 years, 31.66 percent of onion farmer age group. With more than 50 years old farmers, the percentage of onion farmer age group 21.66 percent. Literacy status of the educational level of selected rearers were analyzed and found that 21.66 percent onion farmers were illiterate, 25.00 percent onion farmers were Primary level of education; the 33.33 percent were middle, 16.66 percent of matriculation and 3.33 percent farmers of the bachelor/master education in the study area. In this study the categories were formed for the farming experience of selected farmers were analyzed and found that up to 10 years; they had 41.66 percent, 11-20 years of onion farming experience had 13.33 percent, 21-30 years of onion farming experience possessed 25.00 percent of onion farming. Similarly, farmers with more than 30 years of onion farming experience had 20.00 percent of onion farming. Their family size of 5-10 members, and they had 41.66 percent of the onion farming 11-15 Members and they had 46.66 percent of the onion farming and more than 15 members they had 12.66 percent of the onion farming. The results of the present study conducted to determine the on average per acre spent a total cost of production of Rs. 75050.00 during study this included Rs.18100.00, Rs.9600.00, Rs.28510.00 and Rs.18840.00 on a fixed cost, labor costs marketing costs respectively on capital inputs. Thus the onion growers in Awaran Balochistan area obtained per acre 144 in mound on an average. And revenue per acre earned of Rs. 172800.00 that obtained by the grower of onion. On an average per acre earned during the study, Rs.97750.00 on net income, Rs.172800.00 on gross income and Rs.75050.00 on total expenditure in the Awaran Balochistan. Thus the onion growers in Awaran Balochistan area on a gross income Rs.172800.00 and total expenditure is Rs.75050.00 in Awaran Balochistan area, therefore they availed input output ratio of 1:2.30. A net income per acre earned Rs.97750.00 and total expenditure Rs.75050.00 in Awaran Balochistan area, therefore they availed input, output ratio of 1:1.30 from onion growing in the study area.

Keywords: Onion, Economics Analysis, Production and Marketing

1. Introduction

Onion (*Allium cepa L.*) is one of the most popular vegetable that form of the daily diet. In Pakistan, onion an important commercial crop widely grown is different parts of the country. At present, Pakistan stands seventh largest producer of onion in the world, China is the leading country followed by India (FAO, 2012). Onions produced by Pakistan and India are famous for their pungency and are available round the year. At least 175 countries grow onions. According to the United Nations Food and Agricultural Organizations, there are estimated 6.7 million acres. The world total onion production is 742.51 million tons which is composed by China 205.08 million tons, India 133.72 million tons, United States of America 33.21 million tons, Egypt 22.08 million tons, Iran 19.23 million tons, Turkey 19.00 million tons, Pakistan 17.01 million tons, Brazil 15.56 million tons, Russia 15.36 million tons and Republic of Korea 14.12 million tons (FAO, 2012). Onion is an indispensable item in every kitchen as condiment and vegetable. It is used either in raw form and dehydrated form to add favor and taste to Indian cousins. Since onion has medicinal value, it is used in some pharmaceutical preparation also. It has many uses as, folk remedies and recent report suggests that onion play a part in preventing heart diseases and other ailments. Onion bulb is rich in minerals like phosphorous, calcium and carbohydrate. Onion also contains proteins and vitamin C (Cope, 2005).

Onion is one of the important ingredients used in daily meals all over Pakistan. Onions are used in soups, salads, sauces and for seasoning foods. Onions as a part of diet may play a part in preventing heart disease and other ailments (suggested by medical research). It is rich in phosphorus, calcium and carbohydrates. The green leaves and immature and mature bulbs are eaten raw or used in preparation of vegetables. Onions are used in soups, sauces and for seasoning foods. The small bulbs are pickled in vinegar. Recent research has suggested that onions in the diet may play a part in preventing heart disease and other ailments. Onion bulb is rich in phosphorus, calcium and carbohydrates. The pungency in onion is due to a volatile oil known as allyl-propyl disulphide. Onion is an important crop all over the world. In Pakistan, the major growing areas are, Awaran, Mastung, Kalat, Chagi, Khuzdar and Turbat in Balochistan Hyderabad, Mirpurkhas, Sanghar, Sukkar, Naushero Feroze and Badin in Sindh, Swat in KPK and Kasur, Gujranwala, Sheikhpura, Vehari, Khaniwal, D.G. Khan, and Jhang in Punjab. More than 50 percent of the total production comes from seven districts, namely Awaran, Mastung, Kalat, Turbat, Hyderabad, Mirpurkhas, Sanghar and Swat, (GOB, 2014).

Onion is a famous spice commodity grown all over the world and consumed in the various forms. Onion is a major ingredient in Pakistani food and commodity is typically cultivated thrice a year in monsoon, winter and summer. Onion adds taste and flavor to a food and hence it is invariably used in several cuisines and culinary preparations. Onion possesses good medicinal values and is recommended on medical ground also. Onion is processed in various products such as ketchup, chutney, sauce, puree, salsa, dry soup mixture etc. A global review of area and production of onion shows that it is grown in 126 countries over an area of 2.3 million hectares producing 40.0 million tones of dry onion. Sixty-two percent of the world's production is from Asiatic countries. In Pakistan, during 2011-2012, the onion was cultivated on an area of 125.6 thousand hectares with a production of 1640 thousand tons showing 15.4 percent reduction in production over the preceding year 2010-2011 when the onion was cultivated on an area of 147.6 thousand hectares with a production of 1939.6 thousand tons (GOP, 2012).

Onion an important commercial crop widely grown in different parts of the country. At present, Pakistan stands seventh largest producer of onion in the world, China being the leading country followed by India. Onion produced by Pakistan and India are famous for their pungency and are available round the year. At least 175 countries grow onions. According to the United Nations Food and Agricultural Organizations, there are estimated 6.7 million acres. The world total onion production is 742.51 million tons which is composed by China 205.08 million tons, India 133.72 million tons, United States of America 33.21 million tons, Egypt 22.08 million tons, Iran 19.23 million tons, Turkey 19.00 million tons, Pakistan 17.01 million tons, Brazil 15.56 million tons, Russia 15.36 million tons and Republic of Korea 14.12 million tons (FAO, 2012).

Any technological improvement or productivity enhancement in agriculture therefore, not only contributes to overall economic growth but it also provides immediate microeconomic benefit for a large number of rural households. In agriculture, horticultural crops including vegetables have a significant place. These crops not only contribute to the share of agriculture in national economy, but possess a great potential and comparative advantage to compete in the liberalized economy. Vegetables are not only important as protective food and highly beneficial for the maintenance of health and prevention of disease, but these are also a source of livelihood for small farmers and foreign exchange earner for the national economy. Vegetables are a source of income support as well as important for food security of the people of Pakistan (Lohano et al. 2005).

China ranks first in area and second in onion production in the world. The area under onion in India was 804.600 thousand ha and its production was 82 lacks MT in 2010-11. It is grown in three seasons of the year (i) Kharif, (ii) late Kharif and (iii) rabbi. The major onion productions are Maharashtra, Gujarat, Uttar Pradesh, Rajasthan, Orissa, Karnataka, Tamil Nadu, Madhya Pradesh and Bihar. Maharashtra ranks first in onion production with a share of (18%) in terms of productivity. The principal onion growing districts in the Maharashtra State are Satara, Nashik, Jalgaon, Pune, Solapur and Ahmednagar occupy about 94.68 percent of the area under cultivation of onion in the State. Particularly in eastern part of the Satara district of the State Kharif and rabbi onion is highest grown by cultivators in certain pocket only (Barakade et al. 2011).

Onion is most common and important kitchen item cooked as vegetables, used as condiments and salad. The consumption of onion has a high - income elasticity of demand. Thus, increased demand for onion is anticipated with economic development and urbanization. Further, the demand for these vegetables will also increase with population growth. The per capita consumption of vegetables in Pakistan is very low. People in upper income strata consume well above the national calculated average, while the bulk of the rural population and a large percentage of the poorer strata among the urban population consume very few vegetables. Furthermore, Pakistan has a potential to export these products with trade liberalization under the regime of World Trade Organization. Production of vegetables is profitable; nevertheless, it's labor intensive. Thus, it provides income support,

especially for small farmers and employment opportunity for landless laborers in rural areas. Production functions of onion is quite complex since different inputs with different combinations are used. The differences across farms in use of various factors of production and various combinations of factors of production cause changes in crop yields. Use the input level and combinations are different across farms and regions, resulting in different yields. Furthermore, there is a wide gap in yields of experimental stations and farmer fields indicating the suboptimal use of inputs (FAO, 2008).

Pakistan is bestowed with a very rich land resources base and is predominantly an agricultural country, where 48.41 percent population of the country is related with this sector directly or indirectly. Pakistan's geographical area is 79.61 million hectares, out of which 28.80 million hectares are being cultivated presently. Another 11.19 million hectares have been surveyed and classified as cultural waste, which can be brought under plow by ensuring irrigation, availability of fertilizer, insecticides and pesticides, and credit facilities, etc. Agriculture alone contributes to about 24 percent to our gross domestic product (GDP) and is the largest single contributor to gross national product. Agriculture is backbone of our economy, it can safely be remarked that economic development of Pakistan is fundamentally a function of agriculture development (GOP, 2004).

Onion production was found much higher in rabbi season compared to that during Kharif season. Market price of input that was prevailing at the time of their use was considered for working out of cost of cultivation. The gross return was calculated on the basis of market price of the produce at the time when the produce is ready for sale. Net returns Rs. Per hectare was calculated by deducting the cost of cultivation from the gross income. Awaran District of Balochistan was created as a separate district on 11 November 1992 and its approximate population is 200,000 head. The Awaran district is considered as the poorest district in the province. During 2011, the area under onion production in Awaran was 2665 hectares and the district onion production was 53300 tons. The proposed study will be carried out on the economic analysis of onion crop production in District Awaran, Balochistan Province (Shah et al. 2011).

1.1 Material and Methods

This study is based on primary data collection from a survey of onion producers, market intermediaries in producing and consumption market. Awaran district Balochistan was selected for this study because it is considered the main onion crop region in the province. The onion price data were collected from the markets. The survey was conducted followed by interviews.

Sample Size

A sample size of 60 respondents was selected through random sampling.

Data Collection

As described above, the data was collected from district Awaran Balochistan, Villages and respondents from this area were randomly selected.

Questionnaire Development

Interview schedule was based on a well designed questionnaire. Comprehensive information was obtained face to face from the farmers involved in onion farming and the onion business and documented by the interviewer. A questionnaire was prepared in the English language while the interview with respondents was done in local language i.e. Broui and Balouchi. Different features were covered in the questionnaire.

Statistical analysis

Collected data had both quantitative and qualitative information. For data analysis Microsoft Office Excel software package and SPSS package were used.

Descriptive Statistics

The data was categorized according to the study objectives, analyzed statistically and represented in tabular form. Statistical techniques that were used during data analysis are given below:

Averages

Averages were calculated by applying following formula:

$$\text{Average} = \frac{\sum X_i}{n}$$

Where;

$\sum X_i$ = sum of independent variables

N = number of observations in data

Percentages

The percentage is the proportion of fraction articulated in hundredth. It was computed by

$$\text{Percentage} = F / N * 100$$

Where;

F = Respondents of desired class

N = Total number of respondents

Estimation Methods

Data were analyzed by developing equations for estimating fixed costs, variable costs, total cost of production, total revenue, net revenue Input-Output ratio and benefit cost ratio. A brief description of each term is given as follows:

Estimation of Land Inputs

For estimation of land inputs for onion on the sample farms, the following formula was used.

$$Liu = (As \times Cr) + As \times Rie / As.$$

Where;

Liu = Land input per unit of onion.

As = Area sown under onion.

Cr = Contract rent per unit / acre.

Rie = Rate of irrigation expenditures. as follows:

Estimation of Labour Cost

The extent of labour inputs for various cultural operations involved in onion production was estimated by applying the following formula:

$$Liu = (Mn \times Hc) + (Mwd \times Wr) + (Bwd \times Hc) / As.$$

Where;

Liu = Labour input per unit of onion.

Hc = Hiring charges.

Mn = Machine work hour.

Mwd = Man work day.

Wr = Wage rate

As = Area sown.

Estimation of Capital Inputs

The following formula was used to compute per unit (acre) cost of the capital inputs.

$$Cipu = (Qs \times Pr) + (Of \times Pr) + (Qi \times Pr) / As.$$

Where;

Cipu = Capital inputs per unit of onion.

Qs = Quantity of used.

Pr = Price per unit of input.

Qf = Quantity of fertilizer.

Qi = Quantity of insecticides / pesticides.

As = Area sown.

Marketing Cost

The marketing cost was estimated by using the following formula:

$$Mc = Qm (Rl + Tr + Oc + Rui) / As$$

Where;

Mc = Marketing cost.

Qm = Quantity of produce marketed.

Rl = Rate of loading.

Tr = Transportation rate.

Rui = Rate of unloading of onion.

As = Area sown.

Estimation of Returns

The estimation of returns was developed by using the following formula:

$$VP = (Qs \times Pr) / As$$

Where;

VP = Value of Product.

QS = Quantity Sold.

Pr = Price per unit onion.

As = Area sown

Total Cost of Production

Total cost of production was estimated by using the following formula:

$$TC = TFC + TVC$$

Where;

TC = Total Costs of Production

Net Returns

Net returns were estimated by using the following formula:

$$NR = TI - TC$$

Where;

NR = Net Returns

TI = Total Income

TC = Total Cost

Input-Output Ratio

The input-output ratio was estimated by using the following formula:

Where;

$$IOR = \text{Input-Output Ratio}$$

Cost-Benefit Ratio

Cost-Benefit Ratio was estimated by using the following formula:

Where

$$CBR = \text{Cost Benefit Ratio}$$

RESULTS

This study is based on primary data, which was collected from onion growers in district Awaran Balochistan.

The study is described into three subsections:

1. Current Status of onion in world and Pakistan
2. Socio-economic characteristics
3. Physical productivities and net returns on onion growers

Current Status of Onion

World Onion Production

Table 1: World leaders in Onion Production (2012-13)

Ranking	Country	Production (Million tonnes)	% Share
1	China	24.76	28.68
2	India	15.93	18.45
3	USA	3.36	3.89
4	Iran	2.50	2.90
5	Egypt	2.30	2.66
6	Turkey	2.14	2.48
7	Russia	2.12	2.46
8	Pakistan	1.94	2.25
9	Netherlands	1.54	1.78
10	Brazil	1.52	1.76

Source: FAOSTAT, 2014

Pakistan Onion Production

Pakistan produced about 1701.1 tonnes of onion during 2012-13. The average yield of onion in the country is 13.6 t/ha which is rather low and could be attributed to poor planting densities, low use of fertilizer, weed infestation and use of inferior quality seed. Lack of plant protection measures further aggravates the situation in lowering yields and depressing quality. Though subjected to annual variations, overall area and production of onions in Pakistan have shown an increasing trend during the past 10 years.

Table 2: Area Production and Average Yield of Onion in Pakistan (2003-04 to 2012-13)

Year	Area(000, ha)	Production(000, tonnes)	Yield(tonnes/ha)
2003-04	109.0	1449.0	13.2
2004-05	127.8	1764.9	13.3
2005-06	148.7	2055.7	13.2
2006-07	131.4	1816.5	13.3
2007-08	153.1	2015.2	13.5
2008-09	129.6	1704.1	13.6
2009-10	124.7	1701.1	13.6
2010-11	147.6	1939.0	13.9
2011-12	129.5	1704.1	13.7
2012-13	124.8	1701.1	13.6

Source: Agricultural Statistics of Pakistan, Government of Pakistan, Islamabad (2014)

Socio-Economic Characteristics

Age

Age is a very important demographic factor which influences the efficient allocation of resources' it shows the ability to do work, efficiency, willingness to make progress and attitude towards various social and economic aspects of life

Table 3: Distributions of the Onion Farmers According to their age

Age	No of Farmers	Percentage
21-30 Year	13	21.66
31-40 Year	15	25.00
41-50 Year	19	31.66
More then 50 year	13	21.66
Total	60	100

Table-3 shows the association of the age of the respondents with the percent of onion farmer age group. In age group of 21-30 years, 21.66 percent, 31-40 years, 25.00 percent, 41-50 years, 31.66 percent of onion farmer age group. With more than 50 years old farmers, the percentage of onion farmer age group 21.66 percent.

Education

Education in its general sense is a form of learning in which the knowledge, skills, and habits. The education system in Pakistan is generally divided into five levels: primary (grades one through five); middle (grades six through eight); high (grades nine and ten, leading to the Secondary School Certificate or SSC); intermediate (grades eleven and twelve, leading to a Higher Secondary (School) Certificate or HSC); and university programs leading to undergraduate and graduate degrees.

Table 4: Distributions of the onion farmers according to their education level

Education level	No of Farmers	Percentage
Illiterate	13	21.66
Primary	15	25.00
Middle	20	33.33
Matriculation	10	16.66
College/University	02	3.33
Total	60	100.00

Table-4 shows education level 21.66 percent onion farmers were illiterate, 25.00 percent onion farmers were Primary level of education; the 33.33 percent were middle, 16.66 percent of matriculation and 3.33 percent farmers of the bachelor/master education in the study area.

Farming Experience

Farmer are also responsible for maintaining the site, ensuring it is kept clean and tidy at all times and that it complies with the relevant health and safety regulations.

Table 5: Distributions of the onion farmers according to their farming experience

Farming Experience	No of Farmers	Percentage
Upto 10 Years	25	41.66
11-20 Years	08	13.33
20.30 Years	15	25.00
Above 30 Years	12	20.00
Total	60	100.00

Table-5 shows the respondents having farming experience of up to 10 years; they had 41.66 percent, 11-20 years of onion farming experience had 13.33 percent, 21-30 years of onion farming experience possessed 25.00 percent of onion farming. Similarly, farmers with more than 30 years of onion farming experience had 20.00 percent of onion farming.

Family size

A fundamental social group in society / typically consisting of one or two parents and their children. Two or more people who share goals and values, have long-term commitments to one another, and reside usually in the same dwelling place.

Table 6: Distributions of the onion farmers, according to their family size

Family Size	No of Farmers	Percentage
10-15 Members	25	21.66
11-15 Members	28	25.00
More then 15 Members	07	12.66
Total	60	100.00

Table-6 shows about the family size of the respondent. Their family size of 5-10 members, and they had 41.66 percent of the onion farming, 11-15 Members and they had 46.66 percent of the onion farming and more than 15 members they had 12.66 percent of the onion farming.

Farm Size

A farm is an area of land. It is the basic production facility in food production. Farms may be owned and operated by a single individual, family, community, corporation or a company.

Table 7: Distributions of the onion farmers according to farm size in the study area

Farm Size	No of Farmers	Percentage
Upto 10 Acres (Small)	17	28.33
11.30 Acres(Medium)	29	48.33
Above 30 Acres (Large)	14	23.33
Total	60	100.00

Table-7 shows about the number of small onion farm were 28.33 percent, 48.33 percent and 23.33 percent were medium and large onion farm in the study area.

Farmer Status

A farmer is a person engaged in agriculture, raising living organisms for food or raw materials. A farmer might own the farmed land or might work as a laborer on land owned by others, but in advanced economies, a farmer is usually a farm owner.

Table 8: Distributions of the onion farmers according to farmer status in the study area

Farmer Status	No of Farmers	Percentage
Owner	19	31.6
Rent	41	68.4
Total	60	100.00

Table-8 shows that there were 31.6 percent onion farmers who have ownership and the remaining 68.4 percent are those, who have hired their onion farms on rent.

Health Status

Table 9: Distributions of the onion farmer's health status of dependent in the study area

Health Status	No of Farmers	Percentage
Good	12	20.00
Better	22	36.66
Poor	15	25.00
Very Poor	11	18.33
Total	60	100.00

Table-9 shows that onion farmer there were 20.00 percent were health condition is good of respondents, 36.66 percent were health condition is better, 25.00 percent were poor health.

Planting Time

Planting time plays an important role in the growth and yield of any crop. During the survey it was noted that growers usually plant their crop earlier for getting better market prices. However, it was also reported that early crop is a risky one in terms of germination of seed.

Table 10: Distributions of the onion farmer's Planting time in the study area

Planting Time	No of Farmers	Percentage
June	32	53.33
July	28	46.66
Total	60	100.00

Table-10 shows that onion crop there were 53.33 percent respondents planted in month of June and 46.66 percent planted in month of July

Onion varieties

Table 11: Distributions of the onion farmer's varieties in the study area

Onion Varieties	No of Farmers	Percentage
Phulkara	44	73.33
Swat-1	7	11.66
Sariab Red	9	15.00
Total	60	100.00

Table-11 shows that phulkara varieties under cultivation majorities 73.33 percent of the respondent were cultivated. 11.66 percent farmers were Swat – 1 variety grown and 15.00 percent had Sariab Red variety cultivated of the onion farmer's in the study area.

Fixed Cost

Fixed costs are expenses that are not dependent on the level of goods or services produced. They tend to be time-related, such as tax, rents being paid per month/year, and are often referred to as overhead costs. This is in contrast to variable costs, which are volume-related.

Table 12: Per acre expenditure incurred on fixed costs in the study area

Particulars	Mean
Land tax	300.00
Rent of land(per/acre)	17800.00
Total	18100.00

Table-12 indicated that on an average per acre onion growers spent for land tax and rent of land Rs. 18100.00 in the study area.

Cost of Production

Cost of production of any crop includes all types of cost i.e. fixed cost, variable cost & marketing cost etc. The production costs of onion were estimated as sum of the costs incurred on land preparation, purchase of seedling, farm yard manure (FYM), urea, pesticide and di ammonium phosphate (DAP), irrigation and other labor charges.

Labour Inputs

A labour input refers to all outlays incurred to engage labour for production. Labour inputs were employed for all cultural operations during the period of onion cultivation in study area. These operations

are, leveling, sowing and inter-culturing, application of fertilizer harvesting, weeding and picking.

Table 13: Per acre expenditure incurred on Labour Inputs in the study area

Particulars	Quantity (No)	Rate (Rs.)	Total Cost (Rs./acre)
Nursery Sowing	4	300.00	1200.00
Transplanting	3	300.00	900.00
Hoeing and Weeding	3	300.00	900.00
Pesticide/Chemicals Application	2	300.00	600.00
Spacing	2	300.00	600.00
Urea Application	1	300.00	300.00
Irrigation Application	3	300.00	900.00
FYM, Application	5	300.00	1500.00
Digging/Harvesting	9	300.00	2700.00
Total			9600.00

Table-13 shows that the selected onion growers in Awaran Balochistan on an average per/acre area onion spent a sum of Rs. 9600.00 labour inputs which includes Rs. 1200.00, 900.00, 900.00, 600.00, 600.00, 300.00, 900.00, 1500.00, 2700.00 on Irrigation, Thinning Rs.1761.33, WeedingRs.700.00, Chemicals /Spray trees Rs. 672.96, soaking Rs.613.58, Machine operating costs Rs. 5600.00, Paint trees Rs. 954.00, Application of FYM, Rs. 689.88, picked fruit/Cutting/ harvesting, Rs. 1897.02 respectively.

Capital Inputs

Capital input measures the services derived from the stock of physical assets used in production. The assets included are fixed structures, inventories and land.

Table 14: Per acre expenditure incurred on Capital Inputs in the study area

Particulars	Quantity (No)	Rate (Rs.)	Total Cost (Rs./acre)
Seed (Kg)	64	115	7360.00
Urea(Bag)	1	2450	2450.00
Di Ammonium Phosphate DAP(Bag)	1	6500	6500.00
Farm Yard Manure FYM(Trolley)	3	2500	7500.00
Pesticide /Chemicals(Bottle)	5	700	3500.00
Miscellaneous	_____	_____	1200.00
Total			28510.00

Table-14 shows that the selected onion growers in Awaran Balochistan on an average per acre of onion spent a sum of Rs. 28510.00 that included Rs. 7360.00, Rs. 2450.00, Rs. 6500.00, Rs.7500.00, Rs.3500.00, and Rs.1200.00 on Seed (Kg), Urea(Bag), Di Ammonium Phosphate DAP(Bag), Farm Yard Manure FYM(Trolley), Pesticide /Chemicals (Bottle), Miscellaneous per acre respectively.

Marketing Cost

Table 15: Per acre expenditure incurred on marketing cost in the study area

Particulars	Quantity (No)	Rate (Rs.)	Total Cost (Rs./acre)
Cost of Bag	288	25	7200.00
Transportation(Rs.10/bag)	288	30	8640.00
Commission Charges	_____	_____	3000.00
Total			18840.00

Table-15 shows that the selected onion growers in Awaran Balochistan area on average per acre spent a sum of Rs. 18840.00; this included Rs. 7200.00 for cost of bags, Rs. 8640.00 for transportation and Rs. 3000.00 for commission charges per acre.

Total Cost of Production

TCP defined as sum of fixed cost plus variable costs make the total cost of production

Table 16: Per acre total cost of production in the study area

Particulars	Mean
Fixed Cost	18100.00
Labour Cost	9600.00
Capital Inputs	28510.00
Marketing Cost	18840.00
Total	75050.00

Table-16 shows that the selected onion growers in Awaran Balochistan area on average per acre spent a total cost of production of Rs. 75050.00 during study this included Rs.18100.00, Rs.9600.00, Rs.28510.00 and Rs.18840.00 on fixed cost, labour costs marketing costs respectively on capital inputs.

Physical Productivity

The yield when expressed in terms of physical weight is known as physical productivity. It is generally expressed in terms of unit weight of production obtained. In other words physical productivity of onion farm is the same as the total yield obtained of other crop by farmers.

Table 17: Per acre physical productivity in the study area

Particulars	Mean
Onion	144 mounds
Total	144 mounds

Table-17 shows that the selected onion growers in Awaran Balochistan area obtained per acre 144 in mounds on an average.

Revenue productivity

The value of farm production of gross profit it refers to money income accruing to the farmers from the sale of their production. It is calculated by multiplying the physical productivity (yield) obtained with the price, it is sold.

Table 18: Per acre revenue productivity in the study area

Particulars	Mean
Onion(Rs.1200.00 per Mound) wholesale market	172800.00
Total	172800.00

Table-18 shows that the selected onion growers in Awaran Balochistan area on revenue per acre earned of Rs. 172800.00 that obtained by the grower of onion.

Net returns

Net return is gross profit remains cash operating expenses and depreciation cost of machinery and equipments costs could be obtained by subtracting the gross revenue from cash operating expenses. Net income Averages output or gross income after subtracting all farm expenses.

Table 19: Per acre net return in the study area

Particulars	Mean
Gross Income (Rs) A	172800.00
Total Expenditure (Rs) B	75050.00
Net return (Rs) A-B=C	97750.00

Table-19 shows that the selected onion growers on an average per acre earned during study, Rs.97750.00 on net income, Rs.172800.00 on gross income and Rs.75050.00 on total expenditure in the Awaran Balochistan.

Input – Output ratio

The input-output ratio is calculated by dividing total income with the total cost of production.

Table 20: Per acre input-output ratio in the study area

Area sown	Gross Income(Rs.)	Total Expenditure(Rs.)	Input-output ratio
Acre	(A)	(B)	A/B=C
1	172800.00	75050.00	1:2.30

Cost Benefit ratio

The cost benefit ratio refers to net returns as compared to the cost of production. It is calculated by dividing net returns with cost of production.

Table 21: Per acre cost benefit ratio in the study area

Area sown	Net income(Rs.)	Total Expenditure(Rs.)	Input-output ratio
Acre	(A)	(B)	A/B=C
1	97750.00	75050.00	1:1.30

Table-21 shows that the selected onion growers on a net income per acre earned Rs.97750.00 and total expenditure Rs.75050.00 in Awaran Balochistan area therefore they availed input output ratio of 1:1.30 from onion growing in the study area.

Discussion

In this study, identified a number of factors that believed would be influential in determining the onion farming area in district Awaran Balochistan sustainability. The results indicate that proposed model provides an acceptable fit on the data.

Ahmad et al. (2008) in their study the primary data from 80 onion producers of Hattian Bala area of district Muzaffarabad and observed that the cost of seedlings proved to be the highest operational cost i.e. Rs.3200/-per acre, followed by Rs.2400/- on farm yard manure (FYM) and Rs.1600/- on land preparation per acre. The 7 percent respondents, who sold their produce to wholesale market, spent Rs.2880/- per acre on transportation and Rs.2016/- on bags wholesale market was Rs.16554/- as compared to Rs.9970/- sold to beopari. Net return in case of wholesale market and beopari was Rs. 22758/- and Rs.22142/- respectively. The reason for the higher return by selling in wholesale market was better price received by the producer. Likewise input-output ratio in both cases was calculated as 1: 2.37 and 1: 3.22.

The results of present study conducted to determine the age group of 21-30 years, 21.66 percent, 31-40 years, 25.00 percent, 41-50 years, 31.66 percent of onion farmer age group. With more than 50 years old farmers, the percentage of onion farmer age group 21.66 percent.

Literacy status of the educational level of selected rearers were analyzed and found that 21.66 percent onion farmers were illiterate, 25.00 percent onion farmers were Primary level of education; the 33.33 percent were middle, 16.66 percent of matriculation and 3.33 percent farmers of the bachelor/master education in the study area.

In this study the categories were formed for the farming experience of selected farmers were analyzed and found that up to 10 years; they had 41.66 percent, 11-20 years of onion farming experience had 13.33 percent, 21-30 years of onion farming experience possessed 25.00 percent of onion farming. Similarly, farmers with more than 30 years of onion farming experience had 20.00 percent of onion farming. Their family size of 5-10 members and they had 41.66 percent of the onion farming, 11-15 Members and they had 46.66 percent of the onion farming and more than 15 members they had 12.66 percent of the onion farming.

The results of present study conducted to determine the onion crop there were 53.33 percent respondents planted in month of June and 46.66 percent planted in month of July. And phulkara varieties under cultivation majorities 44 percent of the respondent were cultivated. 11.66 percent farmers were Swat – 1 variety grown and 15.00 percent had Sariab Red variety cultivated of the onion farmer's in the study area.

The results of onion growers in Awaran Balochistan on an average per/acre area onion spent a sum of Rs. 9600.00 labour inputs which includes Rs. 1200.00, 900.00, 900.00, 600.00, 600.00, 300.00, 900.00, 1500.00, 2700.00 on Irrigation, Thinning Rs.1761.33, Weeding Rs.700.00, Chemicals /Spray trees Rs. 672.96, soaking Rs.613.58, Machine operating costs Rs. 5600.00, Paint trees Rs. 954.00, Application of FYM, Rs. 689.88, picked fruit/Cutting/ harvesting, Rs. 1897.02 respectively. And input cost an average per acre of onion spent a sum of Rs. 28510.00 that included Rs. 7360.00, Rs. 2450.00, Rs. 6500.00, Rs.7500.00, Rs.3500.00, and Rs.1200.00 on Seed (Kg), Urea(Bag), Di Ammonium Phosphate DAP(Bag), Farm Yard Manure FYM(Trolley), Pesticide /Chemicals (Bottle), Miscellaneous per acre respectively.

The results of present study conducted to determine the on average per acre spent a total cost of production of Rs. 75050.00 during study this included Rs.18100.00, Rs.9600.00, Rs.28510.00 and Rs.18840.00 on fixed cost, labour costs marketing costs respectively on capital inputs.

Thus the onion growers in Awaran Balochistan area obtained per acre 144 in mound on an average. And revenue per acre earned of Rs. 172800.00 that obtained by the grower of onion. On an average per acre earned during study, Rs.97750.00 on net income, Rs.172800.00 on gross income and Rs.75050.00 on total expenditure in the Awaran Balochistan.

Thus the onion growers in Awaran Balochistan area on a gross income Rs.172800.00 and total expenditure is Rs.75050.00 in Awaran Balochistan area therefore they availed input output ratio of 1:2.30. A net income per acre earned Rs.97750.00 and total expenditure Rs.75050.00 in Awaran Balochistan area therefore they availed input output ratio of 1:1.30 from onion growing in the study area.

Conclusions

The present research study on Economic analysis of onion production and marketing in study area was conducted to investigate the average status of onion production in district Awaran Balochistan province, average per acre cost of production, physical and revenue productivity, net return, input output ratio, cost benefit ratio, issues and constraints, faced by onion growers and to suggest policy measures for sustainable onion production. Hence, the farmers are not getting potential benefits from their onion crop. It is also to mention that due to fast growing inflation in the country, the cost of onion production, even calculated a year ago, would not serve the purpose. Thus, it is quite imperative to calculate production costs of onion on yearly basis till the stability in the capital and recurring costs. The economic analysis review indicates that cost of onion production is in a continuous change due to inflation and the prices of inputs are continuously changing. The fast changing

scenario in costs on inputs used in onion, services rates and capital costs demands a regular study on the economic parameters of onion production. The main problem reported by the selected onion growers was on farms shortage of irrigation, low quality of seed and pesticides, market distance low price of cotton crop received, poor farm market road, costly inputs and exploitation of local traders. The onion is an important commercial crop in study area, therefore its cultivation may be increased. Yet the growers are confronting with many problems due to which per acre yield is declining.

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