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Constraints and Opportunities in the Production and Marketing of Wild Olive in Highland Balochistan: Farmers Perception

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Abstract: According to the survey results, on average the farmers received Rs. 11.67 and 12.17 with the standard deviation of 7.64 and 6.34 per kg of fresh wild olive fruits and Rs. 15.00 and 13.60 were charged per kg with the standard deviation of 8.66 and 6.88 for dry olive fruit in Loralai and Zhob districts. The overall land holding of the sample farmers varies between 46 to 76 acres and average land holding per farmer was found 60.61 with standard deviation of 133.64 (Minimum 3 acres with the Maximum as 600 acres) acres. Out of the total holding, 8.07, 8.86 and 33.87 with the standard deviations of 8.86,133.49 and 19.38 acres were found for irrigated, *Sailaba* and *Kushkaba*, respectively. Rainfed cultivation was observed on a large scale of about 54.31 acres per farmers. Overall the olive forests of the sample location varied from 119.00 to 208.00 km^2. The combined areas of olive forest was found highest (208 km^2) in Loralai followed by Zhob (187 km^2) and Khuzdar (119 km^2). Some of the farmers (20%) were of the opinion that leaves of wild olive trees were used as green tea. During the survey, they (56.67%) mentioned that wood is used as construction material for making doors and roofs. The use in firewood is found common among the villagers of the areas. Half of the farmers (50%) indicated that both, the fruits and leaves of the olive plant are used for animals feeding when the pasture have scared grasses specially in winter. 100% of the farmers were of the opinion that if high yielding varieties were introduced with better marketing, they will minimize other fruits orchards.

Key words: Wild olive, *Olea europea*, production, Balochistan

Introduction

The olive appears to have been native to Asia minor, (Bengtsom, 1958). The tree belongs to family *oleaceae* and comprises 30 genera with 600 species. The plant is xerophitic with about more then 100 years of age. The olive industry is chiefly dependent upon specie of tree the *Olea europea or Europium olive*. Olive oil is widely used in countries, where animals fats are scarce. In Indo-Pakistan sub-continent a wild olive, *olea cuspidata* wall is found with-in the north-west Himalayas and other adjoining hills but cultivated olive *Olea europea* is not grown any where on commercial scale. This plant is locally known as Zytoon. During the mid of last century; a number of grafted olive plant of several varieties have been imported and planted in Kashmir, Simla and Kangra Hills at Harnai, Fort Sandeman (Zhob) in Balochistan, Peshawar, Sawat (NWFP), Rawalpindi, Sargodha and Jhelum (Punjab) districts (Ginai, 1968).

They are recommended for growing under irrigated conditions with suitable pollenizers between an elevation 2000-3000 feet. But could be cultivated from 1000-5000 feet elevation (Naqibullah and Ikramullah, 2001). Variety *Olea cuspidata* is cultivated in Balochistan. Loralai and Khuzdar districts but with no encouraging results, the others varieties such as *Europea sativa* and *Europa oleaster* L. are also found in a wild state (Naqibullah Khan and M. Ikramullah, 2001). At present 12 varieties of olive plant are under experiment at various research stations including Quetta, Zhob, Loralai and Khuzdar, which were imported from Turkey and Egypt. The oil is golden yellow clear and limpid, odorless and edible (York, 1979). Fully ripe olive give the largest yield. Olive oil is one of the most important food oils as it is kept for a long time and became rancid only when exposed to the air (Albert, 1989). Inferior grade have a greenish, tinge and are used for salad making and as lubricants. The poorest grade are obtained by the use of solvents after several pressings. (Facciola, 1990). It was also claimed that refining may remove or destroy the Antioxidants (Awatif, 1997).

The tree is a small ever green 25 to 40 feet in height with leathery entire leaves.. The fruit is black when ripped. A deep fertile soil and a temperature averaging 50 F^0 but never going below 14 F^0 are desirable. Irrigation is often necessary and pruning at third to forth year is necessary (Hartmann *et al.*, 1980). Olive trees need winter rest for 60-80 days and about 500-1000 hours is required in the winter depending upon the average temperature 7 °C. The maximum absolute temperature should not exceed+ 20 °C during November to February when it can tolerate gradual drop of temperature upto- 10 °C but the temperature should not decrease below 4 °C (Latif, 2002) with best soil pH ranged as 7-8.

The propagation by means of sexual reproduction is not common although possible (Naqibullah and Ikramullah, 2001) Owing to the heterogeneity and the usual propagation is made by asexual means. Olive fruits are dark green, at first turning to yellow green and finally become dark purple to black (Ferguson *et al.*, 1994). Green olives may be allowed to ferment and all olives are then stored in brin (Baxter, 1986). The thematic concern of this survey was to look for the opportunity of establishing small scale oil extraction plant in the wild olive area. Keeping in view the survey of the areas were conducted with the following objectives:

a To document the present status of wild olive forests
b To identify the potential areas for olive production.
c To study farmers perception regarding cultivation of new olive cultivars.
d To observe chances of oil extraction industry and its benefits to the masses

Materials and Methods

A team comprising of Social Scientists from Agricultural Economics Unit (AERU) and Arid Zone Research Center (AZRC) along with biological scientists from Agriculture Research Institute (ARI) Quetta, conducted a formal survey in Khuzdar, Loralai and Zhob districts of Balochistan The interviews took place in the later part of March 2001. A check list of topics and sub-topics were prepared and circulated among the relevant scientists for their comments.

The PRA tool was applied, villagers and groups of farmers within areas were selected at random with the qualification that part of their enterprise include in wild olive forest. From the study area, 20 groups (each group comprising of five to ten farmers) of sample farmers were randomly selected. Five groups of farmers were interviewed from Khuzdar, five from Loralai and 10 groups of farmers were interviewed from Zhob district of Balochistan. The survey was made both of the hilly areas in the above districts and the Research Station at Loralai, Baghbana (Khuzdar district) including deciduous fruits station Quetta, where different varieties of olive were grown for experimental purposes. More than 13 varieties are under observation at Baghbana and some 12 hundred plants were distributed to farmers in the area. The Government of

Balochistan emphasized on olive production for their oil extraction and installation of industry to raise per capita income through exporting olive oils. The thematic concern of this survey was to look for the opportunity of establishing small scale oil extraction plant in the wild olive area.

Results

Resources held by the sample farmers: A wide variation was found in the farm holding areas. The overall land holding of the sample farmers varies between 46 to 76 acres. The overall average land holding per farmer was found 61.61 with standard deviation of 133.64 (Minimum 3 acres Maximum 600 acres) acres. It was revealed from the survey results that out of the total holding, 8.07, 33.87 and 28.08 with standard deviations of 8.86,133.49 and 19.38 acres were found for irrigated, *Sailaba* and *Kushkaba* respectively. Different sources of irrigation, such as surface wells, tube-wells and karez were found functioning in the areas. Rainfed cultivation was observed on a large scale of about 54.31 acres per farmers (*Sailaba and Kushkaba*) (Table 1).

Table 1: Resources held by the respondents in the study areas of Balochistan

Resources	Khuzdar	Loralai	Zhob	Overall
Total holding (Ac)				
Average	48.00	46.20	75.61	61.61
STD	13.03	38.85	197.14	133.64
Irrigated area (Ac)				
Average	16.67	07.00	05.77	08.07
STD	11.55	05.20	07.34	08.86
Sailaba (Ac)				
Average	18.33	-	207.50	33.87
STD	07.64	-	340.02	133.49
Kushkaba (Ac)				
Average	27.00	44.00	06.50	28.08
STD	16.43	37.55	04.95	19.38
Animals owned (No.)				
Average	28.00	54.00	56.67	46.22
STD	16.85	74.06	59.20	15.84
Combined area of olive forest (Km^2)				
Area	119.00	208.00	187.00	514.00
No. of olive tress/ Km^2				
Average	29.00	3124.00	3400.00	2184.33
STD	15.57	2029.01	2923.09	1871.69

Source: (Shah *et al.*, 2001)

Table 2: Farmers perception about wild olive varieties in the study areas

	Khuzdar	Loralai	Zhob	Overall
Number	Farmers percent			
One Variety	100.0	20.00	50.00	56.67
Two Varieties	00.00	20.00	20.00	13.33
Three Varieties	00.00	60.00	30.00	30.00
Total	100.00	100.00	100.00	100.00

Source: (Shah *et al.*, 2001)

The combined areas of olive forest was found highest (208 km^2) in Loralai followed by Zhob (187 km^2) and Khuzdar (119 km^2) as stated by them whereas the density per km^2 of olive was found highest in Zhob (3400 plants/ km^2) followed by Loralai (3124 trees/ km^2). Khuzdar area found the lowest (29 trees/ km^2). This was due to safeguard their olive forest from cutting in Zhob and Loralai districts while in case of Khuzdar there was no restrictions imposed on cutting of olive trees (Table 1).

Farmers perception about wild olive varieties: The wild olive were belonged to the variety *Olea cuspidata*, but the farmers perception about the varieties found in wild form was on the basis of fruit color which pertain to different stages of maturity. The variety colour may be a physiological effect. because the whitish fruit is some what saltish in taste and does not contain the required pulp as fully matured fruit. Thus according to the coloration of the fruit the varieties were distinguished. It could be said with confidence

Table 3: Use of wild olive fruit and its by-products in the study areas

Use	Khuzdar	Loralai	Zhob	Overall
	Farmers Percent			
Use of fruits				
Source of oil	00.00	00.00	00.00	00.00
Feed for animal (B)	40.00	20.00	10.00	23.33
Human consumption(C)	40.00	20.00	00.00	20.00
Use for disease	20.00	00.00	00.00	06.67
B + C	00.00	60.00	90.00	50.00
Use of leaves				
Fodder (A)	00.00	40.00	90.00	43.34
Medicine (B)	40.00	00.00	00.00	13.33
Tea (C)	20.00	20.00	00.00	13.33
Market	00.00	00.00	00.00	00.00
A + C	00.00	00.00	10.00	03.33
A + B + C	20.00	00.00	00.00	06.67
B + C	20.00	40.00	00.00	20.00
Use of wood/branches				
Timber (A)	00.00	00.00	00.00	00.00
Fire wood (B)	20.00	20.00	20.00	20.00
Construction(C)	00.00	20.00	00.00	06.67
Marketing	00.00	00.00	00.00	00.00
A + B	20.00	00.00	20.00	13.33
A + C	00.00	00.00	00.00	00.00
B + C	60.00	60.00	50.00	56.67
A + B + C	00.00	00.00	10.00	03.33

Source: (Shah *et al.*, 2001)

Table 4: Farmer's perception about wild olive grafting, fruitening and plantation in the study areas

S.No	Khuzdar	Loralai	Zhob	Overall
	Farmer's percent			
Like grafting				
Yes	40.00	60.00	70.00	56.67
No.	60.00	40.00	30.00	43.33
If like grafting				
With high yielding varieties	60.00	60.00	50.00	56.67
Local varieties	00.00	00.00	20.00	06.67
Don't like	40.00	40.00	30.00	36.66
Cultivation of plants in the field				
By Cutting	00.00	00.00	00.00	00.00
By Seeding	20.00	40.00	20.00	26.67
By Root Plants	20.00	10.00	10.00	13.33
Not Cultivated	60.00	50.00	70.00	60.00
Type of soil for plants				
Loamy	00.00	00.00	00.00	00.00
Sandy (B)	00.00	20.00	20.00	13.33
Calcareous (C)	40.00	60.00	80.00	60.00
B + C	60.00	20.00	00.00	26.67
Fruiting age				
Below 10 years	20.00	00.00	20.00	13.33
More than 10 years	80.00	100.00	80.00	86.67
Age of tree emergence				
12 Months	40.00	40.00	60.00	46.67
18 Months	40.00	00.00	10.00	16.67
More than 2 years	00.00	20.00	30.00	16.66
More than 5 years	00.00	20.00	00.00	06.67
Don't know	20.00	20.00	00.00	13.33

Source: (Shah *et al.*, 2001)

Table 5: Average sale price of wild olive fruit and its by-product in local markets

	Khuzdar	Loralai	Zhob	Overall
Olive price/kg (Fresh)				
Average	00.00	11.67	12.17	11.92
STD	00.00	07.64	06.34	00.35
Olive price/kg (Dry)				
Average	00.00	15.00	13.60	14.30
STD	00.00	08.66	06.88	00.99
Wild olive wood price/kg				
Average	02.56	02.06	02.03	02.22
STD	01.05	01.14	00.92	00.30

Source: (Shah *et al*., 2001)

Table 6: Farmers perception about, extraction plants, better marketing, high prices and high yielding varieties of olive in the study areas

	Khuzdar	Loralai	Zhob	Overall
Opinion	Percent farmers			
Installation of Extraction plants	100.00	100.00	100.00	100.00
Better marketing for olive	100.00	100.00	100.00	100.00
High price of olive	100.00	100.00	100.00	100.00
High yielding varieties	100.00	100.00	090.00	097.00

Source: (Shah *et al*., 2001)

that whitish fruits are mainly found on the plant grown on eroded soil. Thus water stress as cause of whitening could not be ignored (Table 2).

Use of wild olive fruits and its by products: Some of the farmers (20%) were of the opinion that leaves of wild olive trees were used as a green tea. During the survey the farmers were inquired for the usage of wild olive stems and branches, they (56.67%) mentioned that as the wood is stronger and not effected by the termites (*Demic*), thus it is used as construction material for making doors and roofs. The use in firewood is found common among the villagers of the areas (Table 3). Half of the farmers (50%) indicated that both, the fruits and leaves of the olive plant are used for animals feeding when the pasture have scared grasses specially in winter (Table 3). The farmers were also of the view that fruits as it contain higher percentage of oil, thus could be dealt as the best source of fattening of animals when used dry Twenty percent of the farmers were of the view that the people of areas consume it when the fruit is fully matured. They stressed that consumption removes constipation and contribute in blood purification, so plays a prominent role in curing the Malaria.

Farmers perception about wild olive grafting, fruitening and plantation: They added that the grafting with high yielding varieties can increase oil percentage. When the planting method was inquired, the majority (60%) of the farmers were found of having no experience but some (26.67%) of them stated that it could be grown through seed as we have seen the young plants are grown where the seed were fallen by heavy rainfall. Thus their perception was claimed more cultivation of olive by seeding (13.33%) instead of twigs layering which was so un-common in the study areas (Table 4).

The area farmer were having different opinion about the emergence of olive trees. More than half of the farmers (60%) were of the view that the plant when sown by the seed emerges in 18 months but if the twigs are layered, it takes about 12 months to emerge as a plant. Thus perception was based on their experience on observations for wild olive Thus 96.67% of the farmers were claimed that it could take 10-12 years from its emergence to fruiting (Table 4).

Marketing of wild olive fruits: The fruit is marketed locally and not on the others parts of the country Price variation in fresh and dry fruits has been noticed. According to the survey results that on average the farmers received Rs. 11.67, 12.17 with the standard deviation of 7.64 and 6.34 per kgs of fresh wild olive fruits in Loralai and Zhob districts respectively. When marketed locally it was also recorded that Rs 15.00, 13.60 per kg with the standard deviation of 8.66 and 6.88 rupees for dry olive fruit in Loralai and Zhob districts respectively (Table 5), which discourage its production. The olive fruit market could be raised by better regularization and installation of extraction plant and simultaneously grafting with high yielding varieties in the areas.

Farmers perception about new cultivars, extraction plants, better marketing and high prices of olive: Farmers were inquired how their planting decision would be altered if the Govt. install extraction plants provide better marketing facilities, high price for olive fruits and high yielding varieties were made available, 100 % of the farmers were of the opinion that they would replace other orchards as the fruits need more irrigation water and heavy expenses on pest control (Table 6).

Discussion

The farmer as an illetrate person claimed varieties on the basis of colour of the fruit. In his ideas the fruits, which are whitish in colour belongs to separate variety as distinguished from the variety having black fruit. The wild variety grown in the hilly areas of Hamalyas and other adjoining hills, belong to one variety, olea cuspidata (Ginai, 1980).

The common practice for usage of fruit olive is that they give the fruits and leaves to their livestock for fastening and as the wood is hard (Ginai, 1968). They use it for shelter or fire wood. The author agree with the farmer perception that as it contain 21.8 - 25.7% of oil (Ginai, 1968), thus it is a best source of oil. As regard to the removal of constipation, it might be as the literature claims that olives contain a bitter glucoside and needs processing before it becomes palatable (Albert, 1989) and be used for malaria control. Propagation could be made through seed and grafting (Ginai, 1968 and Naqeebullah, 2001). As the seed takes a long period to break dormancy thus grafting with high yielding variety is the only solution of the problem. Thus we agree with the perception.

As the olive oil extraction plant has not been installed in the area, therefore it is marketed locally. Replacement of other orchard relates to the income through olive oil it could be agreed as the olive plant needs less cost on its management.

References

Albert, F. H., 1989. Economic Botany, TMH edition TATA, Mc Graw Hill, Publishing Company New Dehli, pp: 29: 428-29.

Awatif, I.I., 1997. Studies on the production and quality of pure Olive Oil. Egypt. J. Agric. Res., 76: 1998.

FAO, 2000. Olive Cultivation in Balochistan. Representation from a Seminar held in Quetta, Balochistan, Pakistan.

Facciola, S., 1990. Cornucopia: A Source book of edible plants. Kampong Publications, 1990. pp: 141-143.

Ferguson, L., G.S. Sebbett and G.C. Martin, 1994. Olive Production Manual. University of California, Division of Agriculture and Natural Resources. Publication, 3353.

Ginai, M. A.,1968. Atreatise on Horticulture, Bureau of Agriculture Information, Publication Division, Department of Agriculture, Government of West Pakistan, Lahore, pp: 450

Hartmann, H.T., K.W. Opitz and J.A. Beutall, 1980. Olive Production California University of California, Agriculture Sciences' Leaflets, pp: 2474.

Furguson, L., G.S. Sibbett and G.C. Martin, 1994. (Olive Production Mannual), University of California, Division of Agriculture and Natural Resources Publication, 3353.

Latif, R., 2002. Olives. Zarat-e-Balochistan, for the month Jan, Feb, Mar., 2002. pp: 21-23.

Naqibullah and M. Ikramullah, 2001. A leaflet: Zaitoon Ki Kasht Published by the Publicity Department, Agric. Extension, 2001, pp: 1-6.

Shah, N.A., A. Ahmad, M. Saleem and S.M. Khair, 2001.Olive Survey conducted, March 2001. Agricultural Research Institute, Sariab, Quetta, Balochistan, Pakistan.

York, G., 1979. A.B.C's of Home cured green ripe olive. University of California, Agriculture Sciences' publication, Leaflets, 21131.