

## Economic Assessment of Henna Production in District Naushahero Feroze, Sindh, Province of Pakistan

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### Abstract

Henna (Mehendi) (*Lawsonia Alba/ Lawsonia sp*) is an important cash and minor crop of Pakistan. After wheat and cotton henna is major crop of district Naushahero Feroze Sindh Pakistan. It ranks at the 3rd position in its acreage and production in study area. The required information and data were collected on pre-tested questionnaire through personal interviews and observations. It was found that almost all the selected henna growers owned their own land they were owner. The data showed the status of grower in study area. The research findings describes that on average age of grower is 51.2 years while on average the total family and educated family size is 5.885 and 3.81 accordingly, on average total land holding of family size is 19.2 and land holding for henna is 4.77 acres. Average price per mounds is 1548 rupees and average production per acre is 36.8 mounds, on average single farmer has productive assets of 449391.67, so on average 184.3 mounds of production, while 283873.3 of income, similarly 124175 of cost and profit of 159698.3 obtained by a family. So the study describe that on average minimum expenditure of family on acre is 20000 and maximum expenditure 750000. Similarly the study describe that on average minimum income of family on acre is 40000 and maximum income 1500000. The study describe that on average minimum profit of family on acre is 19000 and maximum profit 750000.

**Keywords:** Assets, Cash crop, Henna, Total Cost, Total Revenue.

### INTRODUCTION

Henna (Mehendi) (*Lawsonia Alba/ Lawsonia sp*) is a small tropical shrub, whose leaves when dried and ground into a paste, give out a rusty-red color, fit for making intricate designs on the palms and feet. The dye has a cooling property, and no side effects on the skin. Mehendi is extremely suitable for making convoluted patterns on various parts of the body, and a painless alternative to permanent tattoos. Henna is used as paste that is bought in a cone shaped tube and is made into designs for men and women. It is also derived from the Sanskrit word *mendhikā*. The use of mehndi is described in the earliest Hindu Vedic ritual books. It is a heavily sniffed evergreen shrub of about six meters height and bears narrow pointed leaves, clusters of small white or pink flowers and blue barriers (Sastri, 1962, Green, 1995, Catherin, 2006, Hisbani .et al., 2004, Rao et al., 2002 and Basit 2015).

Nowadays it is an important cash and minor crop of district Naushahero Feroze Sindh Pakistan. It ranks at the 3rd position in its acreage and production in study area. There are three main colors red, black, and neutral are derived from the leaves, roots, and branches, respectively. Different parts of the shrub contain some of the powerful dye, Lawson, black and neutral henna, containing reddish tints. The branches of henna are harvested and dried under the open sky and leaves grounded into fine powder and made into a paste, which is used for dyeing the palm of hand, (sometime whole) especially of brides and grooms, Mehndi is as sign of delight. It is also used for moustache, beard and head. Traditionally women used it as decorating their fingers, palms and feet. This shrub is also used as a border to protect crops and orchards from the animals. It can be broadcasted through cutting and seeds. Henna is reported inborn as Middle East, North Africa and Indian subcontinent. It used in Palestine in early historical period, and Roman records indicate that henna used in Jerusalem by Jewish people during the historical period of the birth of Christ when Islam begin in 6-7th centuries AD (Rao et al., 2002, Hisbani .et al., 2004 and Basit 2015).

Henna introduced in Muslims customs from the western and Middle East women's. When Islam expanded quickly into other countries this tradition was also long established and spread widely and it was grown and used in Spain by Christian and moors from the 9th century AD to 1567 when it was outlawed by the Spanish investigation. The countries were part of Islamic world have used henna frequently as part of wedding and Eid celebrations. Henna is most beautiful and suitable ornament and fashion for women and henna night also celebrated by women's. Henna (*Lawsonia inermis L.*), popularly known as Mehndi, has long been used in India and the Middle East countries for coloring palms of hands, soles of feet and finger nails. It is also used for dyeing of hairs, beard and eye brows, for personal beautification. Tails and manes of horses are also sometimes dyed with henna. It is also used for coloring leathers and skins. Recently, there has been an increase in its use as a hair dye in the Western Europe and North America (Sastri, 1962 and Green, 1995).

Pakistan produce lot of henna, Punjab and Sindh are the only major henna-producing states. In Sindh,

henna is cultivated in Tharoshah (Naushero Feroze district) and Mehar in Dadu. It is planted in the month of June, July, August and September. There are two methods of sowing, the one is broadcasting of seed on plain land and second is transplanting of henna nursery on ridges. In 2003-04, the production of henna in Sindh was 86 mounds/hectare on average. With 60 per cent share in the total henna production of the state. The trade of dried henna leaves in the Tharushah and Mehar city regulated market (the only regulated market of henna in the state). Deep, fine sandy or medium-textured, well-drained soil is considered best for henna cultivation. As a dye crop it requires hot, dry and sunny weather conditions for higher dye content and proper maturity of leaves. It is mainly cultivated as a rain fed -kharif season crop in the semi-arid areas, with average annual rainfall of about 450 mm (Rao et al., 2002, Hisbani .et al., 2004 and Basit 2015).

Mehndi is also applied during the various vratas or fasts, such as Karwa Chauth, observed by married women. Even gods and goddesses are seen to adorn Mehndi designs. A large dot in the center of the hand, with four smaller dots at the sides is an oft seen Mehndi pattern on the palms of Ganesh and Lakshmi. However, its most important use comes in a Hindu Wedding. So this study is planned to conduct detailed investigation to understand the henna production and economics of this crop to guide the farmers, extension field staff and policy makers (Sastri, 1962, Kahlon and Karam, 1992, Green, 1995, Kavia, and Verma, 2001, Rao et al., 2002).

#### *objectives*

To study present status of land holding and production in study area.

To determine the average per unit (acre/hectare 40kg/kg) cost of production incurred by henna growers in study area.

To suggest the policy measures for sustainable henna production.

#### *MATERIALS AND METHODS*

The economics of any crop gives a true picture not only on the receipts expenses and net income that that accrues to the farmers from their followed enterprise but also enable them to use their resources in such a way so as to get maximum returns, the data and information on income, costs and returns from the material needed for this study. Primary data was used in the present study, and the study was carried out through convenient sampling method. A questionnaire was designed, pre-tested, and used for interview of 60 henna growers. Simple random sampling was used to select a representative sample and the data was collected through personal interviews. The collected data was tabulated, analyzed, and interpreted to meet the objectives of this study.

#### *Source of data*

Primary data was used in this study which were obtained from henna growers. A total of 60 farmers Information was obtained with of well-structured questionnaire through interviews include resource inputs and output henna production and their socioeconomic characteristics like age, education, household size etc.

#### *Sampling*

Taluka Bhria and Taluka Kandiaro were selected as the representative areas for sampling and convenient sampling was used. Analysis is carried out by using primary data on input-output quantities and prices from 60 land owners. The data was collected from 06 villages of Taluka Bhria and Taluka Kandiaro. Ten farmers from each village were selected.

#### *The Questionnaire*

The questionnaire for the survey was designed to select for details about field operations for henna cultivation on the farms in the study area. Information concerning, farms size (hectares/acres), source of irrigation, age, education etc. were collected. The output and input data were obtained on per farms and per acre basis in the study.

Percentage = Total observed no / Total no \* 100

TC = TFC + TVC

NR = TR - TC

TR = P \* TPP

NR = TR - TC

P = GI - E

When as

TC = Total cost

TFC = Total Fixed Cost

TVC = Total Variable cost

P = Profit

GI = Gross Income

E=Expensive  
 NR = Net return  
 TR=Total revenue

### RESULTS

Production is a process whereby some goods and services called inputs are transformed in to other goods and services called outputs. Production of agriculture commodities not only results through the transformation of various inputs into outputs but it is also subject to the physical, natural and socio economic condition of the area. It is therefore necessary to have a brief account of the socio-economic indicators like family size, educational level etc. as prevailing in the study area, and to account the production practices as well returns in physical and revenue terms.

Table: 1 General Characteristics of henna Growers

Descriptive	Sum	Average	Max	Min
Age	3069	51.2	72	22
Family Size	941.33	5.883	12	2
Educated Family	600	3.81	9	0
Land Holding	3072	19.2	100	2
Land Holding Henna	762.66	4.77	25	1
Price/M	2477.33	1548.33	1600	1400
Production/A	5888	36.8	45	25
P Assets	71902666.67	449391.6667	3500000	0
Total Cost	4000000	25000	30000	18000
Total Production	29491	184.3	1000	25
Total Income	45419733	283873.3	1500000	40000
Total Cost	19868000	124175	750000	20000
Total Profit	25551733	159698.3	750000	19000

The table 1 describe whole picture of henna grower family that on average age of grower is 51.2 years while on average the total family and educated family size is 5.885 and 3.81 accordingly, on average total land holding of family size is 19.2 and land holding for henna is 4.77 acres. Average price per mounds is 1548 rupees and average production per acre is 36.8 mounds, on average single farmer has productive assets of 449391.67, so on average 184.3 mounds of production, while 283873.3 of income, similarly 124175 of cost and profit of 159698.3 obtained by a family. So the study describe that on average minimum expenditure of family on acre is 20000 and maximum expenditure 750000. Similarly the study describe that on average minimum income of family on acre is 40000 and maximum income 1500000. The study describe that on average minimum profit of family on acre is 19000 and maximum profit 750000.

### 2. Reasons for Growing henna Crop

The henna growers of the study area were asked about the reason of planting of henna crop, 25% respondents viewed that it property productive and high price, whereas 33% were of the opinion that sugarcane increase income and remaining 16% good for environment hence they are decided to planting the henna crop as presented in Table-2.

Table: 2.Views of henna growers about planting of henna in study area

Views	Response	%
To make property productive	15	25
To high price	15	25
Good for environment	10	17
Increase income	20	33
Total	60	100

### 3. Major marketing constraints of henna growers in study area.

There are lot of problems were faced by the growers in the study area among them main three problems are described in below table 3.

<i>A. Economic problems</i>		
Item	No. of respondent	Percentage %
1.Lack of capital	13	21.66
2. High prices of inputs	12	20.00
3.Low price of out put	19	31.66
4. Late payments	10	16.66
5. Lack of recourses etc	6	10.00
Total	60	100
<i>B. Technical problems</i>		
Item	No. of respondent	Percentage %
1.Lack of scientific Knowledge	25	41.67
2. Land preparation	12	20.00
3. Seed	8	13.33
4. Pesticide	5	8.33
5. Inadequate irrigation	6	10.00
6. Natural calamity etc	4	6.67
Total	60	100
<i>C. Social problems</i>		
Item	No. of respondent	Percentage %
1. Theft of henna	20	33.33
2. Cutting	15	25.00
3. Other	16	26.67
4. Transportation etc	9	15.00
Total	60	100

The results show that henna grower faces economic, technical and social problem respectively. In economic problems growers faces Lack of capital, High prices of inputs, Low price of output, late payments and Lack of recourses with 21.66%, 20.00%, 31.66%, 16.66% and 10.00% respectively. In technical problems growers faces Lack of scientific Knowledge, Land preparation, Seed, Pesticide, Inadequate irrigation and Natural calamity with 41.67 %, 20.00%, 13.33%, 8.33%, 10.00% and 6.67 respectively. In social problems growers face theft of henna, cutting of henna, others and Transportation with percentage 33.33%, 25.00%, 26.67% and 15.00% respectively.

Table: 4. Education Level & Source of Irrigation

<i>Education level</i>	<i>No</i>	<i>%</i>
Primary	11	18
Secondary	10	17
Higher	27	45
Illiterate	12	20
Total	60	100
<i>Source</i>	<i>No</i>	<i>%</i>
Tub well	6	10.00
Canal	40	66.67
Both	14	23.33
Total	60	100

4. Education Level & Source of Irrigation: The education level of selected growers was in order of 18 were primary (5-years), 17 were secondary (12-years), 45 were higher educated (14-16years), 20 percent respectively of sample respondents were illiterate. There are two sources of irrigation water: underground water through boring and canal water found from the field areas. Some farmers having their own tube well because they have not approached canal irrigation systems. Results show that majority 66.67 percent growers used canal irrigation source in the study area. Whereas, 23.33 percent growers used both (tube well and canal water) and 10 percent used tube well water respectively.

Total cost: Total Cost is simply the summation of the several types of costs (Ronald, 1996). So total cost is addition of variable and fixed costs.

Table: 5 Average per acre cost by henna growers.

Cost Components	Minimum	Maximum	Average
Land development	2000	3000	2500
Input costs	12000	18000	16000
Labour costs	2000	6000	4000
Other	2000	3000	2500
Total	18000	30000	25000

The averages per acre costs presented in Table-5, the results revealed that henna farmers incurred an average per acre cost of Rs.25000. The table further indicates that the cost in the study area ranged between Rs.18000 to Rs.30000.

6. *Revenue productivity*: It refers to money income accruing to the farmers from the sale of their crops they produce. It is calculated by multiplying the physical productivity (yield) obtained with the price it is sold.

Table: 6. Revenue productivity on family size.

Components	Maximum	Minimum	Average
Gross income (A)	1500000	40000	283873.3

The above table 6 describe the revenue productivity of grower, which describes that the maximum family production is 1500000 and minimum family production is 40000 respectively, while on average family income is 283873.3 respectively.

*Cost of production*

Components	Maximum	Minimum	Average
Total cost of production (B)	750000	20000	124175

8. *Net farm income*

Net farm income could be obtained by subtracting the gross revenue from cash operating expenses (James, and Bryant, 1963). Net income actually represents the reward of the entrepreneur for producing a specific crop. Net income Averages output or gross income after subtracting all farm expenses. Net income is calculated to judge the efficiency of farm business as a whole. In order to measure the economic efficiency of henna per hectare net return were computed by subtracting average per hectare cost from average per hectare income obtained by the sample of growers.

Table: 8. Average per family net income realized by the growers in study area.

Components	Maximum	Minimum	Average
Gross income (A)	1500000	40000	283873.3
Total cost of production (B)	750000	20000	124175
A-B=C	750000	20000	159698.3

The average per acre net income is presented in Table. 6 Results reveal that henna farmers earn an average per acre net returns of Rs. 159698.3. The table further indicates that the net returns in the study area ranged between Rs. 750000 to 20000 by a family.

**DISCUSSION**

Mehendi (*Lawsonia Alba*) is a small tropical shrub, whose leaves when dried and ground into a paste, give out a rusty-red pigment, suitable for making intricate designs on the palms and feet. The dye has a cooling property, and no side effects on the skin. Mehendi is tremendously suitable for creating intricate patterns on various parts of the body, and a painless substitute to permanent tattoos as said by (Sastri, 1962, Green, 1995, Catherin, 2006, Hisbani .et al., 2004, Rao et al., 2002 and Basit 2015). The study was carried out with the objective to investigate land holding and education level of henna farmers, cost of production, yield per mounds, of henna growers in study area (Sastri, 1962, Catherin, 2006, Hisbani .et al., 2004, Rao et al., 2002 and Basit 2015). A sample of 60 henna growers was selected by convenient sampling technique (Hisbani .et al., 2004, Rao et al., 2002 and Basit 2015). The required information and data were collected on pre-tested questionnaire through personal interviews and observations. It was found that almost all the selected henna growers owned their own land they were owner. The data showed the status of grower in study area. on average age of grower is 51.2 years while on average the total family and educated family size is 5.885 and 3.81 accordingly, on average total land holding of family size is 19.2 and land holding for henna is 4.77 acres. Average price per mounds is 1548 rupees and average production per acre is 36.8 mounds, on average single farmer has productive assets of 449391.67, so on average 184.3 mounds of production, while 283873.3 of income, similarly 124175 of cost and profit of 159698.3 obtained by a family. So the study describe that on average minimum expenditure of family on acre is 20000 and maximum expenditure 750000. Similarly the study describe that on average minimum income of family on acre is 40000 and maximum income 1500000. The study describe that on average minimum profit of family on acre

is 19000 and maximum profit 750000. The outcomes show that henna grower faces also economic, technical and social constraints. In economic constraints growers faces Lack of capital, High prices of inputs, Low price of output, late payments and Lack of recourses with 21.66, 20.00, 31.66, 16.66 and 10.00 percent respectively. In technical constraints growers faces Lack of scientific Knowledge, Land preparation, Seed, Pesticide, Inadequate irrigation and Natural calamity with 41.67, 20.00, 13.33, 8.33, 10.00 and 6.67 percent respectively. In social constraints growers face theft of henna, cutting of crop, other and Transportation with percentage 33.33, 25.00, 26.67 and 15.00 respectively. So the average per acre minimum total family cost is 36000 and total single family cost 20000 on a henna crop which is less comparatively from Hisbani .et al., 2004, Rao et al., 2002 and Basit 2015. Average price per mounds is 1548 rupees and average production per acre is 36.8 mounds, on average single farmer has productive assets of 449391.67, on average single farmer have incurred 25000 rupees on his farm. Similarly on average single farmer has obtained 413.17 mounds, 640105 income, incurred cost 272941.3 and profit 367163.33 by total family and 184.3 mounds, 283873.3 income, 124175 incurred cost and profit 159698.3 of by single family is higher than Hisbani .et al., 2004, and Basit 2015.

### *CONCLUSION*

Henna crop is productive and cost efficient crop in the study area. It is a perennial plantation crop with economic life-span of 25 years. It is a highly capital intensive crop as it requires about Rupees 25871 total family/acre and 26050 single family/ acre for creation. On an average, it provides a maximum net return of about 2000000 total family and 75000 single family, minimum net return of about 38000 total family and 18000 single family per acre. Therefore henna cultivation has been found profitable and economically viable and provides a sustainable income to the farmers study area. Introduction of some improved. Automatic machines and implements for hoeing, weeding and harvesting, etc. can bring down the labor cost and consequently will provide higher returns to farmer. Findings also reveal that henna cultivation in Naushero Feroze has great potential because of better economic returns. The crop has tremendous scope for further expansion as the big growers intend to enhance area under this crop because, once this crop is established its production remains for longer period without initial costs.

### *Suggestions*

To increase per hectare yield further, and consequently the income of farmer, the following suggestion should be followed.

There are no recommendations available to guide the grower for the efficient use of chemical fertilizer. Growers use fertilizer on their own. There is a lack of interest among the concerned department to do research on high potential crops. Weeding is necessary as these compete with plants for minerals, nutrients, water and light. Weeds utilize food nutrients for their growth and the yield is reduced. Proper spacing helps in the development of healthy crops. Harvesting at the right stage of maturity is necessary to achieve better quality and quantity.

Credit facilities may be extended and the procedures be further simplified,

Chemicals/fertilizers, insecticides and pesticides may be provided at cheaper rates.

Seed of quantity and high yielding varieties be supplied on cheaper rates.

Technical assistance to farmers be extended.

Quick and cheap transport facilities be provided to farmers at farm gates. Pukka roads should be constructed to facilitate the transport.

Owner want to get free from tenants because this crop can easily be supervised with the hired labor as compared to other seasonal crops grown in the area

Technical information and Technical assistance should be disseminated and extended to farmers by Agriculture Extension and Research Sindh, department of agricultural education extension and short courses, Sindh Agriculture University / agricultural research Sindh Tandojam and Pakistan Agriculture Research Council.

Agricultural extension farms services should be extended by the Sindh agriculture university Tandojam and concerned departments.

Its processing and marketing system has been established in the nearby towns, wherefrom wholesalers buy the produce from the field, hence farmers do not pay for packing, transportation and other costs for marketing. Timely and adequate use of chemical fertilizer, pesticide and irrigation are important to achieve better crop yield. Availability of one variety and traditionally managed operations are main factors which limit henna productivity in the study area. There is no credit facility for henna growers which hinders their performance. It is, therefore, suggested that the provision of seasonal credit through institutions such as the commercial banks and Zarai Taraqiati Bank may be started among growers and processing factories.

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