

Henna (*Lawsonia inermis*): A neglected plant in Ghana

Quainoo, A. K.^{1*}, N. M. Gali, N. M.² and Mahunu, G.K³

¹Department of Biotechnology; ²Department of Agronomy; ³Department of Food Science and Technology, Faculty of Agriculture, University for development studies, Tamale, Ghana.

*All correspondence should be sent to: aquainoo@googlemail.com

ABSTRACT

*Henna (*Lawsonia inermis*) is a neglected plant that has many medicinal and cosmetic uses which features prominently in religious and cultural life of the people of northern Ghana. This research was carried out to investigate the cultivation, processing and utilization of henna in the Savelugu Nanton District of Northern Ghana. The study area covered Leman-fong, Kua-fong and Zuapali all suburbs of Savelugu. Informal interviews and secondary data was used to collect data from henna farmers. Forty (40) henna farmers were randomly sampled and interviewed from the study area twenty four (24) from Leman-fong, nine (9) from kua-fong and seven (7) from Zuapali. Results indicated that henna was cultivated mainly for its leaves, which is processed into henna powder locally called Zablla or Lelle in the study area. Henna farming was mainly done on small scale and grown mainly in back yard gardens. Henna farmers mainly the rural women were also involved in the processing of henna powder. Henna powder was mainly used as cosmetics for decorating brides during weddings, religious and traditional festivities. The henna plant was used for various medicinal purposes with the stem and branches as fuel wood and fencing materials for gardens. However the prospects and utilization of henna has not been given much attention and there is the need for awareness creation and research into various products of the henna plant*

Key words: *Henna, neglected plant, medicinal, cultivation, processing, utilization*

INTRODUCTION

Medicinal plants have played a important role in maintaining human health and improving the quality of human society for several years and have served as valuable purposes (such as medicines, seasonings, beverages, cosmetics and dyes) (Kamal and Jawaid, 2010; Muhammad and Muhammad, 2005). Various plants used for dye extraction are categorized as medicinal. Therefore, multipurpose medicinal plants that poses unique sources of various types of chemical compounds are being extensively investigated.

The henna (*Lawsonia inermis*) plant is at present the subject of important scientific study since it is one such plant that has been known for its multipurpose healing attributes (Kamal and Jawaid, 2010). For instance, the ability of henna inhibit

microorganisms growth probably suggests that it may be valuable in the management of burnt wound infections (Muhammad and Muhammad, 2005). Henna or Hin is a flowering plant and the sole specie in the genus *Lytthracea* (Rao *et al.*, 2005). It is native to tropical and subtropical regions of Africa, southern Asia and northern Australasia in semi-arid zone (Kumar *et al.*, 2005). However, in Ghana henna plant is mainly cultivated in the northern part, where its production and processing methods are considered very indigenous.

Several products are extracted from various parts of henna plant, but the most common extracts are the leaf powder or paste and oil extracted from the fruits, leaves and flowers which are used for cosmetic and medicinal purposes (Mahmoud *et al.*, 1980). The plant is a much branched glabrous shrub or small tree (2-6 m in height), cultivated for its leaves although stem bark, roots, flowers and seeds have also been used in traditional medicine. As a medicinal plant, henna has been used as an astringent, cardio-inhibitory, hypotensive, sedative and employed in the treatment of jaundice, leprosy, small pox and skin infection. Henna extracts show antibacterial, antifungal and ultraviolet light screening activity. (Rahmoun *et al.*, 2013). It also exhibited antifertility activity in animals and may induce menstruation. Despite the medicinal and cosmetic importance of the henna plant, its paste and other extracts has negative effect on the health of users. Kandil *et al.* (1996) reported that henna may induce hemolysis in glucose-6-phosphate (G6PD) enzyme deficient patients and the paste has been found to include silver nitrate, carmine, disperse orange dye and chromium and alleged to cause allergic reactions in hair dressing products and textiles (Chengaiyah *et al.*, 2010; Cox, 1938; Kandil *et al.*, 1996; Singh *et al.*, 2005). The main colouring substance of henna is lawsone, 2-hydroxy-1:4 naphthaquinone (C₁₀H₆O₃, m.p.190° decomp.) and besides lawsone other constituents that can be found include gallic acid, glucose, mannitol, fats, resin (2 %), mucilage and traces of an alkaloid (Chaudhary *et al.*, 2010). Lawsone isolated from the leaves has been proven to have antihelminthic, antibacterial and antifungal properties and may provide other effective but less expensive treatment (Ismail *et al.*, 2016).

Furthermore, these authors (Chaudhary *et al.*, 2010) indicated that the different parts of the plant produce useful chemical compounds. Leaves produce hennatannic acid and an olive oil green resin, soluble in ether and alcohol. Flowers produce an essential oil (0.01-0.02 %) with brown or dark brown colour, strong fragrance and consist mainly of α - and β - ionones; a nitrogenous compound and resin. Seeds have carbohydrates (33.62 %), fibers (33.5 %), proteins (5.0 %), fatty oils (10- 11 %) composed of acids (behenic, arachidic, stearic, palmitic, oleic and linoleic). The unsaponified substance contains waxes and colouring substance. Whiles, the root contains a red colouring substance.

In Ghana henna plant is known for its cosmetic importance used to dye the palms of the hand and the sole of the feet for beautification and mostly used during Moslem marriage ceremonies to adore the bride and the bride groom. This tradition is generally adopted by most ethnic groups in the northern part of Ghana. Despite these, its cultivation and processing are mainly carried out on small scale in some part of northern Ghana. This research was therefore carried out to gather

ISSN: 0855-6350

information on the cultivation, processing and its indigenous use of henna in northern Ghana.

MATERIALS AND METHODS

The study was conducted in three communities (Leman-fong, Kua-fong and Zuapali) known for henna cultivation in the Savelugu Nanton District in the Northern region of Ghana. The study area lies within the interior Guinea Savanna of Ghana which falls on latitude 9° 25' 141", longitude 0° 58' 142" and at an altitude of 183m above sea level. The natural vegetation is grasses, shrubs and few trees that are scattered. The rainfall pattern is monomodal and erratic and associated with prolonged drought. The area has the total annual monomial rainfall of about 1022mm which falls mainly between May and September each year. The area has an average minimum temperature of 25 °C and maximum average temperature of 35 °C. During the experiment the Plant House recorded a mean minimum temperature between 22.5 °C and 32.0 °C with relative humidity between 34.8 % and 48.2 %.

Information was gathered through extensive literature survey, field trips and semi structured questionnaire. Information obtained by these approaches include the background of respondents, henna cultivation, harvesting, processing, storage, marketing and the uses of henna leaf powder. Among the forty (40) henna farmers that were randomly sampled and interviewed from the study area; twenty four (24) were from Leman-fong, nine (9) from Kua-fong and seven (7) from Zuapali communities respectively. Statistical package for social sciences (SPSS) and Microsoft excel were used for transformation and analysis of data.

RESULTS AND DISCUSSION

Background of respondents

A total of forty (40) farmers were interviewed with 42.5% and 57.5% being males and females respectively (Table 1). This results implies that henna is gradually being considered important economic crop. Henna is no more considered crop for only women. In previous years women were discouraged from working outside the home, and therefore, they were employed in socially acceptable, lucrative and economically viable work by processing henna.

Majority of respondents were in the age group 41 to 60 and above, who constituted 72.5% of the sampled population. Among this category are females majority who are engaged in the cultivation, processing and marketing of henna as their main occupation.

Table 1: Age and sex distribution of respondents

Age group	No. of Males	Percentage (%)	No. of Females	Percentage (%)
18-30	2	5	2	5
31-40	3	7.5	4	10
41-50	3	7.5	4	10
51-60	5	12.5	6	15
60+	4	10	7	17.5
Total	17	42.5	23	57.5

Cropping system in the study area

Majority of the farmers intercropped henna with tomatoes in their back yard garden. As suggested by Korayem and Osman (1992), henna intercropped with tomatoes reduced tomato root gall formation and the rate of nematode reproduction. Often the henna plants are perennial crops and other crops are planted among them. However, this observation needs to be investigated further to explain the mechanisms of the interaction effects in the biocontrol system. Some farmer plant henna as hedge boundaries around home gardens as live-fencing materials.

Average farm size of respondents

Results indicated that 75% of individual henna farmers in the study area had small farm sizes ranging between one to three acres (Figure 1). This observation confirms the fact that henna is not considered a dominant crop but intercropped with other arable crops.

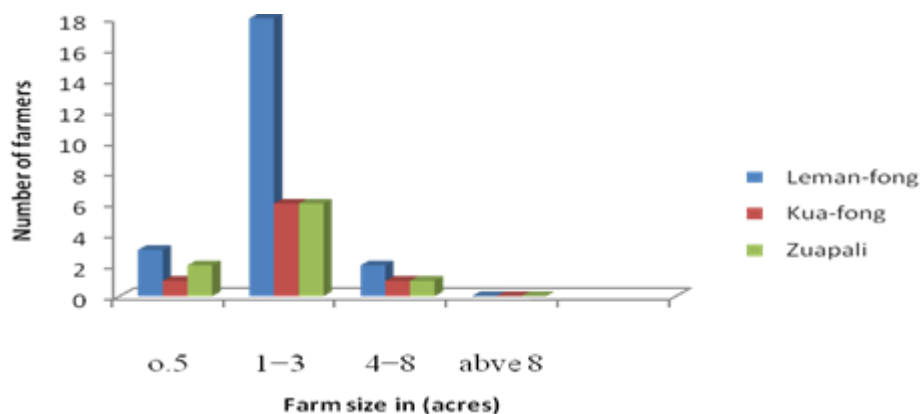


Figure1. Farm size of sampled respondents

PROCESSING OF HENNA LEAF POWDER

The leaves of henna are the main part of the plant used for processing the powder. the processing involves harvesting of healthy and disease free leaves, drying,

ISSN: 0855-6350

pounding of the dried leaves and milling to obtain the green powder (Singh *et al.*, 2005). The extracted powder is then stored in polythene bags, jute sacks, plastic containers and stored in dried condition to prevent mould formation.



Figure 2. Pictures of henna production practice. **A.** Woman harvesting henna leaves **B.** Picture of Henna leaves powder after processing **C.** Packaged henna powder ready for sale **D.** Picture of a market woman engaged in the sale of henna powder.

Causes of underutilization of henna and the need for awareness creation

Seeds remain the major source of planting material for most farmers and the seasonal availability and viability of seeds are challenges for successful plantation establishment. There are no external support services on any aspect of henna. The value chain of henna; from production to marketing are still rudimentary with farmers depending on their own acquired knowledge by practice or passed on to them. The use of henna for cosmetic and medicinal purposes is limited because henna is regarded as a secret and religious commodity set aside for special occasions (Mahmoud *et al.*, 1980). Nevertheless, its medicinal and cosmetic uses which feature prominently in religious and cultural life of the people can also be projected for intense scientific study.

CONCLUSION

Though, henna is a neglected plant in northern Ghana, its production seem promising but the extraction or processing methods need to be improved upon. Global demand is now changing towards the use of non-toxic plant products having traditional medicinal use in development of modern drugs are being emphasized for the control of various diseases. Therefore, it is recommended that research should

be intensified into the cosmetic and medicinal properties, soil and ecological benefits of henna. Moreover, increased henna production can serve as a source of additional household income for the community leading to reduced poverty in the area.

Lastly, the knowledge gathered in this paper can be considered as a preliminary work to begin effective *in situ* conservation, which requires precise and current information on the status of henna plants cultivation and the nature of plant use by local communities.

REFERENCES

- Chaudhary, G., Goyal, S., and Poonia, P. (2010). Lawsonia inermis Linnaeus: a phytopharmacological review. *Int J Pharm Sci Drug Res* **2**, 91-8.
- Chengaiyah, B., Rao, K. M., Kumar, K. M., Alagusundaram, M., and Chetty, C. M. (2010). Medicinal importance of natural dyes a review. *International Journal of PharmTech Research* **2**, 144-154.
- Cox, H. (1938). Hair dyes. I. The chemistry and analysis of henna. *Analyst* **63**, 397-404.
- Ismail, K. A., Ibrahim, A. N., Ahmed, M. A.-F., and Hetta, M. H. (2016). Comparison between the effect of Lawsonia inermis. *Journal of Parasitic Diseases* **40**, 415-422.
- Kamal, M., and Jawaid, T. (2010). Pharmacological activities of lawsonia inermis Linn.: a review. *International journal of Biomedical research* **1**, 37-43.
- Kandil, H. H., Al-Ghanem, M. M., Sarwat, M. A., and Al-Thallab, F. S. (1996). Henna (Lawsonia inermis Linn.) inducing haemolysis among G6PD-deficient newborns. A new clinical observation. *Annals of tropical paediatrics* **16**, 287-291.
- Korayem, A., and Osman, H. (1992). Über nematizide Wirkungen der Henna-Pflanze Lawsonia inermis gegen den Wurzelnematoden Meloidogyne incognita. *Anzeiger für Schädlingskunde* **65**, 14-16.
- Kumar, S., Singh, Y., and Singh, M. (2005). Agro-history, uses, ecology and distribution of henna (Lawsonia inermis L. syn. Alba Lam). *Henna: cultivation, improvement, and trade*, 11-12.
- Mahmoud, Z., Salam, N. A., and Khafagy, S. (1980). Constituents of henna leaves (Lawsonia inermis L.) growing in Egypt. *Fitoterapia* **51**, 153-155.
- Muhammad, H., and Muhammad, S. (2005). The use of Lawsonia inermis Linn.(henna) in the management of burn wound infections. *African Journal of Biotechnology* **4**.
- Rahmoun, N., Boucherit-Otmani, Z., Boucherit, K., Benabdallah, M., and Choukchou-Braham, N. (2013). Antifungal activity of the Algerian Lawsonia inermis (henna). *Pharmaceutical biology* **51**, 131-135.
- Rao, S., Regar, P., and Singh, Y. (2005). Agrotechniques for henna (Lawsonia inermis L.) cultivation. *Henna cultivation, improvement and trade*, 25-27.
- Singh, M., Jindal, S., Kavia, Z., Jangid, B., and Khem, C. (2005). Traditional methods of cultivation and processing of henna. *Henna, cultivation, improvement and trade*, 21-34.