



Socio-Economic and Environmental Values of Korarima [*Aframomum corrorima* (Braun) P.C.M. Jansen]

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Abstract – Korarima (*Aframomum corrorima*), is a tropical perennial, shade loving and aromatic herb native to Ethiopia. It is categorized under family Zingiberaceae and the genus *Aframomum*. The agro-ecology of korarima (*A. corrorima*) is characterized by humid or moist forests, slightly shaded, wetter and open places in forests at 1350-2000 m altitude. This study was made on the socio-economic and environmental values of korarima (*A. corrorima*). The paper aimed to provide details on korarima since there is a growing demand in the socio-economic and environmental aspects in Ethiopia, the spice deserved less research and management attention and studying the socio-economic and ecological function of *A. corrorima* was found to be important in promoting its role in human quality of life, national economic support, household income and environmental protection. These issues were addressed through exploration of different studies conducted on *A. corrorima* and by referring various journals. The study indicated korarima (*A. corrorima*) provides a range of socio-economic and environmental benefits for communities. It is one of the spices used to flavour the different culinary tradition in Ethiopia and is an ingredient of spice mixtures. *A. corrorima* is also a renowned medicinal crop from which parts of korarima plant are used as a medicine for treating human and animal ailments. Dried capsule and seeds of korarima also provide a great economic value by supporting local income and used as an export commodity. In addition, *A. corrorima* appeared to be important to preserve the endangered natural forests and in promoting soil conservation. However, challenges like lack of adequate agricultural inputs, problem of marketing and finance, inappropriate capsule collection of korarima, pests and genetic erosion affect the productivity as well as the role of *A. corrorima* in Ethiopia.

Keywords – *Aframomum Corrorima*, Environmental, Socio-Economic, Values.

I. INTRODUCTION

A. Korarima and Their Values

Korarima (*Aframomum corrorima*), which is also named as “false cardamom”, is a tropical perennial, shade loving and aromatic herb (Figure 1). It is characterized by large size and bearing flowers either terminally on aerial leaf shoots or from the ground level [1]. *A. corrorima* is categorized under family Zingiberaceae and the genus *Aframomum*. It commonly grows from 1-2 m high with scaly of large size [2]. *A. corrorima* flowers usually from January to December and the fruits mature 2 or 3 months later [3].

Stigma of the flower in the plant is positioned below or against the base of the thecae of the anther [4].

Korarima (*A. corrorima*) is a native crop to Ethiopia and is well known for its a very widespread utilization in Ethiopian and Eritrean cuisines [5]. It is also the plant that has been used as spices, medicine, an income source and means of soil conservation traditionally [2]. The growing and cultivation of the plant is mainly practiced in the forests of south and south western parts of the Ethiopia such as Gamo Gofa, Debub Omo, Kaffa, Ilubabor, Sidamo and Welega are among others [3].

Korarima (*A. corrorima*) provides a range of benefits for communities that grow the crop. It serves as a spice since dried capsules used for consumption as food seasoning. The plant's seed (usually dried) has been part of daily Ethiopian dish in preparation of curry powder for culinary purposes [5] – [4] – [6]. *A. corrorima* has also medicinal importance as a result it has been used to treat human ailments [2] – [5]. According to [2], korarima which is one of the aromatic medicinal plants, used in traditional medicine by the people of southern Ethiopia. The values of korarima are not only limited to home use and in traditional medicine. Rather, it has an importance in supporting local livelihood and environmental conservation. It provides economic benefits for communities from local and export markets. In addition, it is an important plant for soil conservation since the rhizomes and leaves spread over and cover the ground [1].

Although korarima (*A. corrorima*) is an important crop having a diverse array of benefits to the communities in Ethiopia, it has been one of the most mishandled crops and which a less research attention has been given [7]–[8]. Similarly, there is a growing demand of korarima in the socio-economic and environmental aspect in Ethiopia [9]–[7]–[10]. However, no previous work provides details on the socio-economic and environment values of *A. corrorima* in organized manner. In addition, little has been known about the *A. corrorima* and its various roles outside the country [11]. Studying the social, economic and ecological functions of *A. corrorima* was found to be important as it promotes its role in human quality of life, national economic support, household income and environmental protection [12]. Hence, the overall perspective of this study was to review the socio-economic and environmental values of korarima in Ethiopia.



Fig. 1. Korarima plant and its fruits [10].

B. Agro-ecology of Korarima

Ethiopia possesses agro-ecological zones which are favorable for production of spices. The Ethiopian cardamom (*A. corrorima*) is one of the spices which is indigenous to the country and grows in the wild [13]. It is also the crop that makes components of home garden plants widely planted by communities in South Ethiopia [14]. It is found in humid or moist forests, slightly shaded, wetter and open places in forests at 1350 - 2000 m altitude [3]. According to [15], from long term evaluation results attained, korarima, was found well adapted to the hot-humid and lowland agro - ecologies of Southwestern Ethiopia. Similarly, the same study found as korarima can also adapt well in mid altitude areas such as Jimma zone, Dawuro and Wolayita zones. Under small - scale production, it could be successfully intercropped with other horticultural crops like enset, banana, and/ or coffee. The technology of this intercropping proved well adapted to most parts of Western and Southwestern Ethiopia [15].

Cardamom prefers agro-ecological areas with humus-rich forest covered soils for its better and productive growth

[15]. The variation in agro-ecological aspect of production areas affects the physical and chemical characteristics of korarima. Some of the agro-ecological factors include agro-climatic conditions existing in the area of production and soil types [9] - [10]. According to [10], soil factor was one of the variables affected the chemical composition of korarima during the study in Basketo and Kafa areas, in Ethiopia. This led to the Basketo product to show a higher essential oil content and high percentage proportion for six of the major chemical constituents (i.e. for 1,8-cineole, sabinene, β -pinene, limonene, geraniol, and neryl acetate) as the korarima growing soils of the two areas significantly differed in five of the twelve measured variables.

II. SOCIO-ECONOMIC VALUES OF KORORIMA

Korarima provides various benefits for communities in Ethiopia. Some of these include importance in food preparation, medicinal values, economic benefits, etc. The major socio-economic values of korarima in some parts of Ethiopia are given in Table I.

Table I. The major socio-economic values of *A. corrorima* in different locations in Ethiopia

Place	Use types	References
Wolaita Zone, Damot Gale	Food preparation, medicine and spice	Agize et al., 2016
Basketo District	Spice, medicine and income	Woldeyes, 2011
Kafa Zone	Spice, medicine and income	Woldeyes, 2011
West Shoa, Ambo	Food preparation	Zuberi et al., 2014
Tepi and Masha areas	Income	Gebreazgabher and Negash, 2015

A. Korarima as a Flavoring Spice

Cuisine is an essential part of culture [16]. It has become a prime element in the cluster of traits popularly understood as ethnicity, and thus the popular usage of the phrase ethnic food. In Ethiopia, it means that complicated social dynamics and processes associated with the emergence of a

national culinary tradition commonly described as spicy food [17]. Korarima is one of the spices used in a daily Ethiopian dishes. The seeds are used to flavour coffee, local food, special kinds of bread, butter and all kinds of sauces [18]. It is also an ingredient of berbere, mitmita, awaze and other spice mixtures [11]. Korarima seeds are ground and

usually mixed with other spices before they are used to flavor all kinds of sauces locally called 'wot' [7]. Although korarima is consumed as a spice, it may also be used as a source of antioxidants, and the ariloid flesh around the seed is edible [18].

B. Medicinal Values of Korarima

Medicinal plants and traditional medicine are important components of the health caring systems in most developing countries. In Ethiopia, nearly 80% of human population and 90% of livestock rely on traditional medicine [19]. *A. corrorima* is a renowned medicinal crop of Zingiberaceae family. Parts of korarima plant are used as a medicine for treating humans and cattle [8]-[3]. According to [20], korarima seeds, pods, leaves, rhizomes and flowers are used in southern Ethiopia as traditional medicine for human and animal ailments caused by unknown agents; and particularly used to treat any part of the animal body upon swelling. In addition, korarima seeds are widely used medicinally as a tonic, laxative, carminative and purgative drug, and they are added to food for preservative purposes [18].

C. Economic Values

The commercial products of korarima are capsules or seeds. Capsules of korarima which are distinguished by their different flavor are larger in size and dark reddish brown, brownish black or grayish black and coarsely ribbed. While seeds of korarima are dark and have a menthol-like tastes [9]. Dried capsule of kororima has a great value in local economy and used as an export commodity. Ethiopia was well-known for its significant exports of Small Cardamom capsules to the international market in the past [21]-[18]. In addition, korarima had also been explained as the most attention-deserving spice because of its socio-economic importance in the study conducted in Basketo and Kaffa districts. Woldeyes, in his study during 2011 found as korarima was the main income generating spice to the Basketo and Kafecho households, with the most commercialized spice of the areas, and also that with the longest market chain [10]. Despite the great economic values of korarima, the production of this spice remained less developed and traditional [22].

A. corrorima production formed an additional source of income in south-west Ethiopia as a significant amount of income was being retained from it [10]. Growers of korarima earn a substantial income when its seeds reach high prices in local as well as export markets [8]. The dried fruit mixture of different clones is sold on almost every Ethiopian market in the production areas; fresh capsules are sold too, rarely only the seeds [9]. During (2012/2013) farm gate prices of dried and locally processed, *A. corrorima* capsules was 100 to 130 ETB per kg and when it came to the central market more than 40% price increase were very common. This implied that the crop was economically important and indicated the need of intervention in the development of production and post-harvest package for sustainable use and conservation [6]. Moreover, the production of spices paly a great role in improving the livelihoods of specifically women, as often women are involved in collecting, cultivating and selling the smaller amounts of *A. corrorima* [13]. This spice could be

developed into an important commercial product if necessary attention is given to its research on its different aspects [8].

D. Environmental and Conservation Values of Korarima

Korarima (*A. corrorima*), is one of the cherished spices that occurs in the natural ecosystems together with natural forest and is also collected from the forests [14]-[15]. As *A. corrorima* requires a shady environment and moisture soil for its growth, the production of *A. corrorima* can be an incentive to preserve the endangered natural forests in the South Ethiopian region [15]. Similarly, *A. corrorima* covers the ground and protects the soil from erosion in hilly areas [11]. According to [10], korarima production has a role in conservation of landscape elements. It promotes forest management since farmers avoid cutting trees which involve *A. corrorima*. In addition, korarima has conservation benefit that goes beyond the garden. When it is cultivated on wetland, it forms a dense cover on the ground thereby avoiding excess evaporation and consequent drying of streams. Hence, korarima appeared to be an important crop to keep the natural environment and at the same time obtain additional form of income [13].

III. CHALLENGES AFFECTING THE VALUES OF KORARIMA

A. Lack of Adequate Inputs

The production of *A. corrorima* in Ethiopia has been affected by poor access to agricultural inputs such as fertilizer and planting materials [6]. In addition, absence of improved varieties and weak agronomic practices are also major production constraints in the country [1].

B. Problem of Marketing and Finance

Problem of marketing information and other marketing facilities are widely prevalent due to absence of appropriate policies and procedures for the purpose of increasing marketing efficiency related to korarima in Ethiopia. Similarly, the production of *A. corrorima* is constrained by variability of market with seasonal condition, financial access problem to promote production, problem of price setting and problems related to weighing or scale [6].

C. Improper Collection of Capsules

Inappropriate capsules collection of korarima is leading to low quality products. The capsules are harvested mostly at immature green stage due to the competition among competitive spice collectors from the natural forest and wild animals (monkeys, squirrels, snakes) [23].

D. Pests

Insect pests were known to affect the production of korarima. According to the study of [5], in southwestern part of Ethiopia, different insect pests of korarima were identified including the green stink bug (*Acrosternum*. spp), korarima flower thrips (*Sciothrips*. spp), mottled tortoise beetle (*Chelymopha*. spp) and cardamom white fly (*Dialeurodes*. spp). They were widely distributed and recorded with high infestation rate across the surveyed areas.

E. Genetic Erosion

The genetic diversity of korarima is being affected due to threats in its natural habitat. The humid mountain forest of southwestern Ethiopia which is known by possession korarima diversity has been destroyed at an increasing rate [24]. In addition, medicinal plant biodiversity including korarima are facing depletion due to manmade and natural calamities [19]. To reduce the problem of genetic loss of korarima and destruction of its diversity, collecting germplasms from different geographic locations and conserving them at in-situ and ex-situ conservation sites is the best strategy important for conservation and sustainable utilization [8].

IV. CONCLUSION

Korarima (*Aframomum corrorima*), is one of the aromatic herbs native to Ethiopia. It provides various benefits for communities. Korarima is used as a spice in a daily Ethiopian dishes and flavours the different culinary tradition in Ethiopia. It is also among the known medicinal plants that help to treat human and animal ailments. The dried capsule and seeds of korarima has a significant economic value since it supports local income and used as an export commodity. In addition, *A. corrorima* is also important to preserve the endangered natural forests and promote soil conservation. However, challenges like lack of adequate agricultural inputs, problem of marketing and finance, inappropriate capsule collection, pests and genetic erosion affect the productivity as well as the role of *A. corrorima* in Ethiopia.

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