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The Kenaf Fibre Plant and Its Socio-Economic Significance to the Northern Rural Dwellers in Ghana - A Study in Kumbungu District

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Abstract:

Sustainable livelihood is a prime factor for rural dwellers in Ghana. To improve on the economic lives of these people, activities of economic significance within their domain have to be improved upon to generate more income for sustainable growth. A cross-sectional survey was employed in collecting data for the study. Six communities in the Kumbungu districts were surveyed to determine the socio-economic significance of the kenaf plant on their lives. The result revealed various uses of the plant and its important to these rural dwellers, but it also determined that, cultivation and significance is dwindling due to modern replacement of some of its end uses. The researchers identified that, the plant viability can be enhanced and lives of these rural dwellers improved further, if other end uses of the plants with its modern significance can be produced from the plants fibre in particular.

1. Introduction

Kenaf (*Hibiscus cannabinus L*) is a fibre plant native to sub-tropical Africa and Asia. It has been grown in east and central Africa for several thousand years for food and fibre and it has also been used as a textile fibre source for the productions of ropes, twines, bags, rugs, door mats, nets as well as jute substitute in the manufacturing of sacks for the bagging industry (Humphries, 2004).

Kenaf is an annual herbaceous plant with fast growing ability. The growing plant stands tall not largely branched. Under favourite weather conditions and depending on the variety, grow up to a height of 8-14ft and will reach about 18ft sometimes.

The bark of the stem contains a long soft fibre which is useful for cordage and textiles. The colour of the stem of most varieties is green but there are others that are red and purple – stemmed. The shape of the leaf varies considerably and the first few leaves of Kenaf seedlings are not lobed, although some varieties develop post juvenile leaves that are deeply lobed (Jones et al 1995). The root system is very extensive with a deep tap root and wide spreading lateral roots.

Recent development and researches for the past years has reviewed the plants suitability for use in building materials (particle boards of various densities, thickness with fire and insect resistance), absorbents, textile, livestock feed and fibre in new recycled plastics (injected, moulded and extruded) (Webber and Bledsoe 1993).

The length of Kenaf stalk normally ranges from 8-14 feet depending on the length of growing season, average temperature and soil moisture. Other kenaf stalks of superior yielding varieties have been developed by United States Developmental Agency (USDA) to improve on the fibres produce (Cook, et al., 1995).

The plant produces leaves with serrated edges on the stalk and along the branches which are positioned side by side on the stalk and branches. The juvenile leaves on all kenaf seedlings are simple, enlarge and chordate, as the kenaf plant matures, additional leaves are produced, and the newer leaves start to differentiate into the leaf shape variety of that particular cultivar (Jones, et al, 1995; Cook, et al., 1995).

According to Webber and Bledsoe (1993), kenaf is normally cultivated by seeds which can be broad-casted/drilled directly on to the field. The best times of planting varies with the locality, type of cultivar and methods of propagation. This can be accomplished by using standard planting equipment's in a wide range of rows spacing, and can also be planted on raised beds or on flat grounds to allow effective growth and developments.

Kalgren et al. (1991), indicated that the back of the kenaf stalk contains the long fibre stands that are compose of many individual

smaller fibres, normally called the bast fibre. These individual smaller fibres, held together by a lignin, are the building blocks of the bast fibre stands, which are used for a wide range of products such as twine, ropes, door mats, nets among others.

2. Statement of the Problem

The kenaf plant is identified as a major plant needed for sustainable livelihood among the rural dwellers in most parts of the Northern Region. Kenaf is an annual plant that has been grown over the years in many communities within the Kumbungu District in the Northern Region and has played an important role in the lives of the people. The plant in general is useful for food, herb, fuel for cooking and most importantly contains a fibre which is used for several other products such as ropes, door mats and nets-bag for carrying goods for sale to generate income.

Despite the fact that Kenaf is useful in these diverse ways, its production level is declining gradually in these communities. The plant as well as its products are losing their value compared to the past years when it was in high demand. As such, the study will find out the reason why kenaf, a hitherto buoyant plant has reduced in production and utilisation and explore how this plant can be promoted once again to improve on and support the diversification of income generation of families in the Kumbungu district.

3. Objective

The main objective set for this study is to determine the course of the reduce usage of the kenaf plant in recent time and assess ways by which its cultivation and usage can be revived for the economic benefits of the communities in the Kunbungu district.

4. Methodology

4.1. Research Design

The researchers employ survey design using cross-sectional survey where the data collection is carried out at randomly. This enables the researchers to determine the conditions that exist in the cultivation, production, usage and marketing of the kenaf plant in one way or the other within the study areas.

A total sample size of 525 people was selected from the six communities, comprising 200 females and 325 males. The sample size was selected from the active labour force within the communities who are engaged in cultivation or/and production and usage of the kenaf plant.

Due to the heterogeneity of the population under study, stratified random sampling method was used in selecting equal female representation from the six communities as they play vital roles in the production of the plant. The sample size selected for each community reflects the total population of that community with 35% female representation of each selected sample size. Semi-structured questionnaire was designed and used to collect data from farmers and producers of kenaf plants. Trained research assistances with in-depth knowledge in the local dialect helped in the administration of the questionnaires by reading and explaining the contents to the respondents and their preferred answers ticked or written. This approach also enhanced the retrieval of the questionnaire at the end of the interview section. The analyses were carried out using bar charts to represent the results.

5. Results and Discussion

Based on the data gathered from the communities, 168 out of 525 people that represents the sample population make use of the leaves of the kenaf plant especially for food preparation; 240 of the respondents extract the fibres for other end uses, the stalks left all behind after fibre extraction as by-products were confirmed to be used as energy for cooking by 57 of the respondents while 60 of the respondents stated they use the seeds for livestock feed preparation and herbal medicine for treating illnesses. The result is illustrated in figure 1.

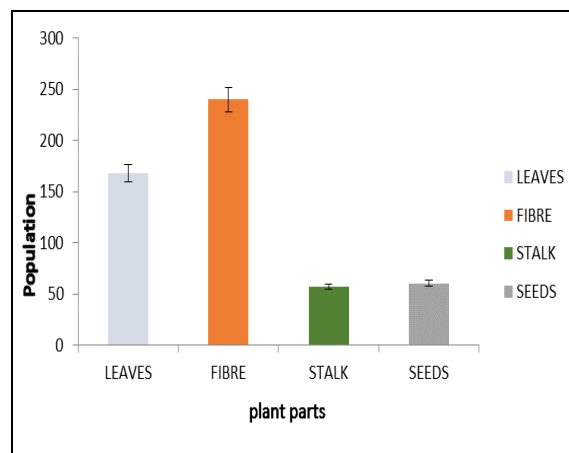


Figure 1: Various Uses Associated with the Kenaf Plant within Some Communities in the Study Area
Source; Field Work-June, 2015

From Figure 1, it was revealed that one hundred and sixty-eight (168) respondents representing 31.4% use the leaves in varied ways which include; cooking family meals, medicine, sell's as vegetable and used as silage in the lean season to feed livestock. Two hundred and forty (240) participants representing 45.7% of the respondents use the extracted fibres from the kenaf plant to produce door mats, ropes, mats, weaving nets and loose fibres for tying thatches on buildings. The stalk left after fibre extraction from the plant is used as fire wood and for gun powder production as stated by fifty-seven (57) respondents representing 11.4% of the sample population. On the other hand, sixty (60) respondents that is 11.4% use the seed to produce medicine and mixed with livestock feeds. It is therefore evidence that the plant is extensively used in various communities within the study area for various purposes. A follow-up question asked by the researchers want to find out the various uses that the kenaf plant can be put into in the various communities. The results turn out that; one hundred and eighty (180) respondents uses parts of the plant for cooking due to the vitamins, minerals, protein and lipids that it contains as reported by Mohamed et al (1995) to supplement their diets. One hundred and ninety-five (195) representing 37.1% says it is used for rope to tie animals, food stuff, and bind goods together for easy transportation especially into the market, one hundred and five (105) respondents representing 20% use the plant for medicine to treat snake bite, ruminant under difficult labour for easy delivery. Forty-five (45) respondents representing 8.6% stated plant parts are also used for the preparation of some products such as gun powder, door mats, as fire wood for cooking, roofing homes and weaving mats among others. This is shown in the chart as presented in figure 2.

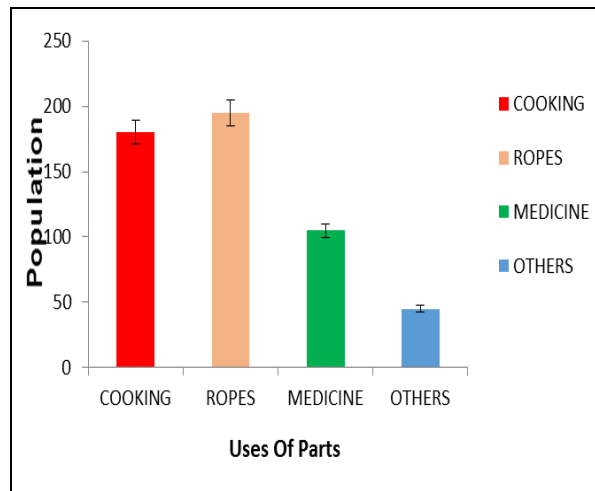


Figure 2: Usable Parts of the Kenaf Plant in the Study Areas
Source; Field Work-June, 2015

In other to ascertain the economic viability of the plant, the researchers want to know if products of the plant in any form sells well in the market to earn a living.

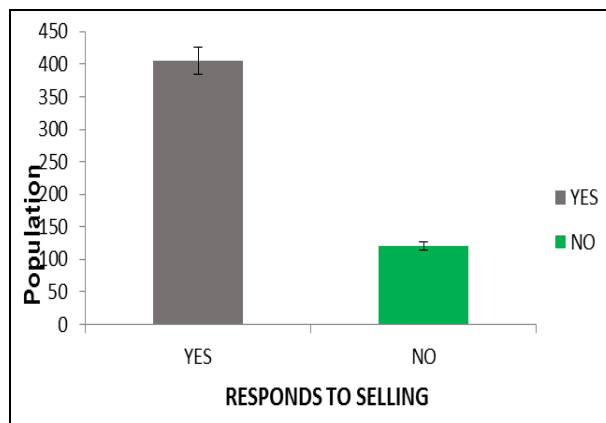


Figure 3: Marketability of the Plant in the Local Market
Source; Field Work-June, 2015

The study discovered that four hundred and five (405) of the respondents representing 77.14% expressed that varieties of products from the kenaf plant sells with average demand in the marketplace. One hundred and twenty (120) respondents representing 22.8% stated marketing of the product is not a lucrative venture since they use the products produce domestically and share among families and friends. From this analyses although, the potentials of the kenaf plant turns to be high, not all participants agreed to the

lucrative of the plant. There is therefore the need for further work to be done to improve on the use of the kenaf plant within the Northern region.

Do earnings from the sales of kenaf plant products help to improve on your financial status in any ways? This was a follow-up question asked by the researchers to determine the economic strength provided by this plant and its products to the people within the study area. It was revealed that incomes generated from the sale of products of this plant help households improve on their livelihoods.

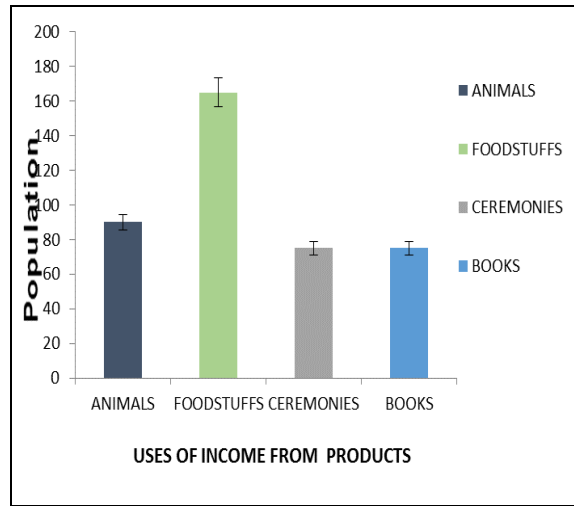


Figure 4: Uses of Income Acquired from the Kenaf Plant Products
Source; Field Work-June, 2015

From the responses as illustrated in figure 4 revealed that ninety (90) people representing 22.2% use the income gain from the sales of the products to purchase animals such as poultry, goats, sheep for rearing and domestic use. One hundred and sixty-five (165) representing 40% use the income to buy foodstuffs such as maize, guinea corn, beans and vegetables for household consumption. Seventy-five (75) respondents representing 18.5% use the income gain on ceremonial occasions such as out-dooring of baby, wedding, funerals, whilst others spend it on cola nuts, cigarette and alcohol. The remaining seventy-five (75) representing 18.5% stated they spend the money on basic and educational needs of their families.

The researchers wanted to find out if the cultivation of the plant is dwindling or improving base on its economic viability. From the chart in figure 5, the results indicate a decline in the cultivation of the plant in various communities within the study area.

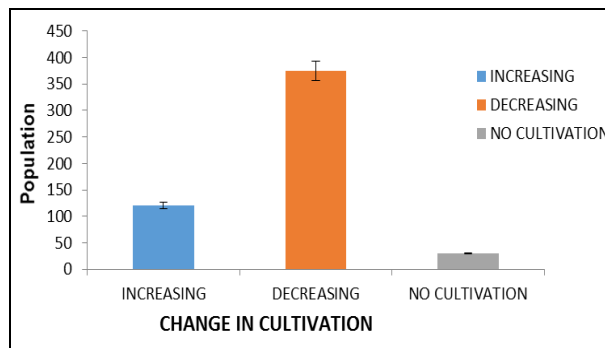


Figure 5: Changes in the Cultivation Pattern of the Kenaf Plant
Source; Field Work-June, 2015

The survey conducted revealed that, about 22.8% representing one hundred and twenty (120) respondents observed an increase in the kenaf production, three hundred and seventy-five (375) representing 71.4% accounted they have observed a decrease over the past few years, while thirty (30) respondents representing 5.7% observed no cultivation at all. There is the need therefore to determine the course of decline in the production processes of the kenaf plant.

Further question was asked to determine factors that affect the cultivation of the plant if any and how they can be addressed. From the responses given, infertile soil and herbicides spraying activities are seen as the main challenges to cultivation declines in one way while the low demands of the plant products and other related issues were also mentioned as contribution factors too.

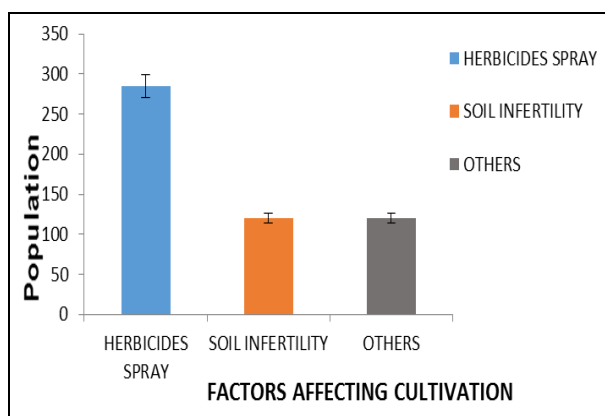


Figure 6: Factors affecting the cultivation of the kenaf plant
Source; Field Work-June, 2015

In figure 6, two hundred and eighty-five (285) respondents representing 54.4% reported that the spraying of herbicides on farms these days to destroy weeds has negative effects on the kenaf plant, that is affecting its germination and growth because the plant is also destroyed like other herbs/weeds. One hundred and twenty (120) thus 22.8% insisted that the reduction is as a result of soil infertility due to continues production on the same land over the past years. On the other hand, 22.8% representing one hundred and twenty (120) respondents mentioned other factors that affect the plant adversely such as inadequate rainfall in recent times, pest and diseases; limited care, lack of new anthracnose-resistant varieties; low patronage of its products by consumers.

As a way of addressing the challenges, they suggested the practice of mono cropping, a stop to herbicide spraying and others such as good farm practices, introduction of high yielding kenaf species among others.

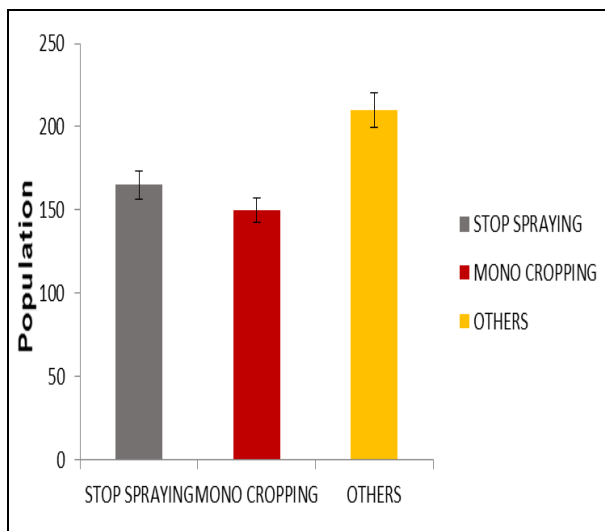


Figure 7: Consideration for improvement
Source; Field Work-June, 2015

From the figure 7 about 31.4% representing hundred and sixty-five (165) respondents reported that, stopping the use of weedicides to kill weeds will bring back the once vibrant kenaf plant cultivation. One hundred and fifty (150) respondents which represented 28.5% revealed that, mono-cropping of kenaf plants will help avoid poor harvest and increased yield of plants within these communities. About 40% representing two hundred and ten (210) respondents mentioned cultivation of new varieties; large scale farming, clearing weeds with farm tools, fertilizing, early planting, new products development and good marketing strategies could bring kenaf production back to life to improve on the lives of the people who once depended on its products and production activities in the off farm season to make a living.

Generally, the finding has revealed the challenges encountered by the people in the Kunbungu District in relation to the decline of this plant cultivation and its product usage which adds money to their pocket and improve the livelihoods of their families.

6. Conclusion and Recommendation

Evidence deduced from the study showed that kenaf plant in general is profitable and has noticeable contributions and benefits to the socio-economic development of the rural people in areas where they are cultivated in Ghana. The plant offers great prospects to the people, as they use the leaves and seeds in food and feed preparation for both animals and humans and as medicinal plant to cure

illnesses. The stalk is a good source of fire wood and production of gun powder while the fibres are used for making ropes, door mats, nets among others.

The plant therefore gives a social and economic value to the people. However, the study also showed that, though the plant is useful, it would be more profitable if there is some training on new technologies to widen the products that are produced with the plant. There is the need also for technical support to be provided to increase the productivity of the plant to keep these communities in business especially during the off farming season.

The research team recommends that more research should be made into the production of kenaf plant to come out with simple, efficient and effective methods of making the fibres produce from the plant more effective and provide modern fashionable items that can be of value to the consumer to increase the demand for the plant products.

7. Acknowledgements

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8. References

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