



Global Advanced Research Journal of Agricultural Science (ISSN: 2315-5094) Vol. 4(8) pp. 434-438, August, 2015.
Available online <http://garj.org/garjas/home>
Copyright © 2015 Global Advanced Research Journals



Full Length Research Paper

Yield of Cotton and the Opinion of Small-Scale Farmers on Cotton Production in Kano and Katsina States, Nigeria

¹Kutama*, A.S, ²Sherif, U., ¹Dangora I.I., ³ Umma, M., and ⁴Salusu A., ⁴Rabiu Musa Kwankwaso.

¹Department of Biological Sciences, Federal University, Dutse. P.M.B 7156-Nigeria

²Department of Biological Sciences, North-west University, Kano. Nigeria

³Department of Biology, Kano University of Science & Technology, Wudil.

⁴College of Advanced & Remedial Studies, T/Wada, Kano.

Accepted 16 August, 2015

Despite the position of cotton in the economy of Nigeria, farmers are nowadays shunning away from its cultivation resulting into a progressive decrease in its production annually. In this study, investigation was made in the 2004 growing season to find out the reasons why farmers in the production area no longer produce the crop in a substantial quantity. During the survey, a sum of 200 questionnaires was administered using cluster sampling technique to farmers in each of the four locations under study. Alongside this, an improved cotton variety, SAMCOT 9 was grown in four locations of the study area up to yield stage to evaluate the possible yield and the possibility of growing the crop within the sub-geographical region. A completely randomized design field experiment with nine replications was conducted in four locations of the study area; Kano north, Kano south, Kano central and Dayi in Katsina, a cotton producing state. Results of the farmers' opinion have shown that the production of cotton is going down because of the absence of lucrative cotton market in the two states. Farmers consistently opined that if reliable and lucrative market is brought to their reach, the production of the crop will increase drastically in the two states. Similarly, the yield of the crop obtained in the two states (728.0, 777.2, 800.2 and 700.0 Kg/ha from Kano north, Kano south, Kano central and Katsina state respectively) indicated that the crop can be grown with success if similar agronomic practices will be employed in the two states.

Keywords: cotton, yield, farmers' opinion, Kano and Katsina states

INTRODUCTION

According to Brubaker *et al.* (1999), of the forty nine known species of the genus *Gossypium*, the most commercially cultivated species is *Gossypium hirsutum* popularly known as upland cotton accounting for more than 90% of the

world plantings. Upland cotton (*Gossypium hirsutum* L.) is an important cash crop in the semi-arid region of Nigeria where most of its bulk is produced by the poor-resource farmers of the region. In this region, the crop, apart from ground-nut, seemed to be the only one that has introduced the small-scale/ peasant farmers of the region to a cash economy (Kumar and Ogunlela, 1985). It is grown in this part of agro-ecological areas because of its peculiar

*Corresponding Author's Email: kutamasak@yahoo.com

demand on the semi-arid biotic features such as sunshine, high temperature, low humidity. Aliyu and Kutama (2007) have demonstrated that cotton plant places a high demand on some weather elements like sunshine and other ecological factors and that these greatly decides and determine where the crop can be grown commercially.

As a cash crop, cotton is not eaten directly but is used in several ways and forms. Traditionally, it is grown as a fiber crop. It is however, harvested as seed cotton and later ginned to separate the seed and the lint. Apart from fiber, the delinted cotton seed can be processed to produce oil, meals and hulls (G.T.R., 2002). The oil is used in a variety of products including vegetable oils, margarine, soaps, and plastics. The seed or meal, flour or hulls are used in food products and animal feed. Research have shown that the perennial shoot of cotton is uprooted, dried and used as fire wood in the localities where the crop is cultivated as a major crop (Lekwa and Nto, 1986). The green leaves also have some medicinal value for, they are boiled in water and taken as infusion for the treatment of yellow eyes or jaundice (Fatima, 2000). This suggests that the economic uses of cotton can favorably be compared with the economic uses of livestock farming in Nigeria. However, despite these great uses of cotton, farmers in northern Nigeria are running away from its cultivation, a feature that remains a threat to Nigeria's economy. Several attempts has been made by researchers to improve cotton production but most proved abortive. And most of the little cotton produced is utilized by the local industries in the country and importation is banned many years ago (Kuchinda *et al.*, 2002). About 25 years ago, Kumar and Ogunlela (1985) estimated that Nigeria will require about 950,000 bales of lint by the year 1990 in place of the 230,000 bales produced annually at that time to become self sufficient. This connotes that about double of the expected yield in 1990 would be required by the year 2010 since the population of the country would be expected to double by that year (Aliyu and Kutama, 2007), while a major expansion of cotton production is however, not envisaged. Considering this, a study was conducted to investigate on the reasons for the neglect of cotton production in Kano and Katsina states during the 2004 growing season. This paper report the results of investigations on the reasons for the neglect of cotton production by the small-scale farmers of the two states and a field trial to determine the crop yield in the two states under the same agronomic practices.

MATERIALS AND METHODS

The trial was conducted in four locations in Kano and Katsina states (Kano north, Kano south, Kano central and Dayi in Katsina state, a cotton producing state) which are considered a representative of the northern Nigeria cotton

zone and with high potential of producing the crop at substantially high quantity.

Two subsequent methods were employed for the purpose of this research. These included field trial to determine the yield of the crop in the study area and the administration of questionnaire to farmers in order to find their opinion as to why cotton production is decreasing and the possible remedy to the problem.

One acre of land was obtained in the different location of the three agricultural regions of Kano state, where cotton is produced in only one of the regions. Another one acre of land was obtained in Katsina state which is a cotton producing state. A completely randomized design field experiment was employed to determine the yield of the crop in the two states. Three locations in Kano state (Kano north, Kano south and Kano central) serving as treatments and one location in Katsina state (Dayi), a cotton growing state as control. Experimental farms were cleared, ploughed and prepared for cultivation during the 2004 growing season.

An improved cultivar specially adapted to north-north/north-west geographical locations of Nigeria called SAMCOT 9 was obtained from fiber breeding unit, Institute for Agricultural Research, Samaru, Zaria, Nigeria, in May, 2004. Planting was done in mid-June at the rate of 4-6 seeds per hole and 45cm apart after fumigating the seeds with 45% copper powder to avoid damping-off pathogens. One week after germination thinning was done leaving only two plants per stand. Cipermethrine in form of cymbush was sprayed three times at two weeks interval. Nitrogen fertilizer in the form of nitrate as well as boronated super phosphate was applied in a ring round each stand at the rate of 110kg/ha and 24kg/ha respectively. Yield parameters were taken at the end of the growing period as follows;

Harvesting commenced immediately when the boll splitted to about one-third of the farm. Harvesting was done three times manually by hand picking. The harvested seed cotton was brought to the laboratory, Department of Science Laboratory Technology, Kano state Polytechnic, for weighing.

The weight of the delinted cotton obtained from each field was measured using spring balance. This was then followed by careful manual ginning to separate the seed from the lint after which the seed and the lint were measured separately to determine their respective weights.

Two hundred questionnaires were administered by the author to small scale farmers in each of the four locations to obtain the opinion of the farmers. The four locations selected were Kano north, Kano south, Kano central and one location in Katsina state. Kano north was the only agricultural zone in the state that produces cotton. Kano south and Kano central do not produce cotton while Katsina state was a cotton growing state. In each selected zone, one major town was chosen based on the potentiality

Table 1. Yield of seed cotton, lint and seed (Kg/ha) in Kano and Katsina states, 2004

Planting site	Weight of seed cotton	weight of lint	weight of seed
Kano north	728.0	202.3	500.5
Kano south	777.2	279.9	477.3
Kano central	800.2	278.3	501.3
Katsina	700.0	325.5	450.2
Average			
Standard	1000.0	336.0	670.0
LSD (5%)	2.312	2.145	4.132

of agricultural production annually. In Kano north, Gwarzo town in Gwarzo local government was chosen, Dawakin-kudu town in Dawakin-kudu local government from Kano central, and Kiru town in Kiru local government area was chosen. In Katsina state, Dayi town in Malumfashi Local Government was chosen. In each location, town heads were consulted first who assisted in gathering the farmers. 200 farmers, both cotton and non-cotton, were contacted from at least 5 major villages around the major town selected so that at least 40 farmers were selected at random from each major village. Farmers who were not literate to fill the questionnaires were interviewed based on the questions in the questionnaire. Cluster sampling technique of randomization was adopted in the administration of the questionnaires.

The data obtained on the total yield and yield components were subjected to Analysis of Variance (ANOVA) and the various means were separated using LSD at 5% level of probability on a GENSTAT software program.

RESULTS AND DISCUSSION

Yield of cotton

Yield of seed cotton obtained in the different locations was significantly ($P < 0.001$) different between the planting sites (Table 1). Although there is little ecological difference between the different planting sites, the variation in the yield might be due to little variation in the amount and duration of rainfall received, temperature fluctuation, and other abiotic factors of the environment. The onset of rain and the duration or length of the growing season have been identified to have an important bearing on the date of sowing, rate of growth and final yield of cotton (Kutama and Aliyu, 2007). This is evident in an earlier report of Siva Kumar (1989) who demonstrated that if rain starts early in a given location, it may be safe to plant cultivars recommended for medium season calculated for that area/location. In another report, Kumar and Ogunlela

(1991) estimated the wet season (May-October) potential productivity of 22,000 Kg dry matter/ha at Samaru to be due to a round-up rain. They showed that in the 1982 wet season at Samaru, July sown cotton exceeded June sown cotton with respect to various growth and yield components. They attributed this to the fact that the crop received a heavy shower of 43 mm on October 4, which considerably benefited the late-sown cotton.

Earlier report of Pretince (1972) demonstrated that although cotton can tolerate a wide range in annual precipitation, the distribution of this rainfall is the controlling factor in the production of the crop. Results of this study have shown that the total seed cotton yields were generally low in all the planting sites when compared to the yield results obtained on maximum yield plots by some researchers. This could be attributed to the early ending of rainy season in September, 2004.

Opinion polls

Results of the questionnaire administered have indicated that cotton is grown in only two zones (Kano north-west and Katsina state) at a substantial level by small-scale farmers. Of all the farmers contacted, 94% grows cotton in Kano north-west and 88% in Katsina state (Table 2). According to the growers, market is the major factor that encourages the farmers to grow cotton. This is true going by the report of Lekwa and Nto (1986) that cotton is produced in the northern Nigeria cotton zone where the market forces lead to the establishment of cotton board. Cotton board was established at Funtua town in Katsina state long ago to stand as center for cotton marketing, processing and forwarding of cotton products and the areas neighboring this state therefore are at advantage.

On the other hand, the non-cotton growing farmers were found to be more concentrated in Kano central (100%) and Kano south west (78%). Most farmers in this areas complained bitterly of no market in their vicinity and cotton is a cash crop. Therefore, absence of market was the major constraint to the production of cotton in that area. Similarly, few farmers (8%) in Kano south and 2% from

Table 2. Response of small-scale farmers on the production of cotton in Kano and Katsina states, 2004

Zone/ Area	No. of growers	Reasons for growing cotton given by farmers		
		Govt.comittment	presence of Market	Friend influence
Kano north	188	00	180	8
Kano south	44	00	35	9
Kano central	00	00	00	00
Katsina state	176	00	176	00

N=200, where N is the number of questionnaires administered to the farmers without differentiating between growing and non-cotton growers.

Table 3. Opinion of farmers not growing cotton in Kano and Katsina states, 2004

Zone/ Area	No. of non- growers out of 200	Reasons for not growing cotton given by the farmers			
		No Govt. committment	No Market	ignorance	Financial Problems
Kano north	12	4	8	-	-
Kano south	156	15	121	8	12
Kano central	200	24	162	10	4
Katsina state	24	4	14	3	3

N=200, where N is the number of questionnaires administered to the farmers without differentiating between growing and non-cotton growers.

Kano central complained of financial constraint. According to them, cultivation of cotton unlike ground-nut and other cereal crops demand a lot of farm input and therefore one should have enough financial back-up in order to commence the production. However, some few farmers in the same zones expressed complete ignorance of how the crop is grown and therefore suggested that government should intervene by supplying certified seeds and training the farmers on how to cultivate the crop.

CONCLUSION

It is pertinent from the results that cotton can be grown even in areas where the crop is not grown either due to lack of market or due to ignorance of its agronomic practices. The yield of the crop obtained in this trial is relatively low compared to the yield obtained from maximum yield experiments by some workers. This can be improved by adopting new agricultural techniques that are aimed at improving crop production. Also, the production of

the crop can be improved by establishing reliable and lucrative market in different parts of the study area.

REFERENCES

- Aliyu BS, Kutama AS (2007). Assessing The Potentials of Growing SAMCOT 9 Cotton Variety In Kano State. *Science World Journal*, 2(1):23-26.
- Brubaker CL, Seelanan T, Stewart JM, Craven LA, Wendel JF (1999). Molecular Systematics Of Australian *Gossypium* Section Grandycalyx (Malvaceae). *Systematic Botany*, 24, Pp183-208
- Fatima H (2000). Some Medicinal Plants Used in Hausa Ethno-medicine. Unpublished *M.Sc. seminar paper* (2000). Department of Biological Sciences, Bayero University, Kano. P8-9.
- Gene Technology Regulator, (G.T.R.) (2002). Biology and Ecology of Cotton (*Gossypium Hirsutum*) In Australia, Pp3-12
- Kuchinda NC, Onu I, Echekwu C (2002). Sowing Date And Insecticide Trials With Selected Multi-Adversity Resistant Cotton Varieties In The Northern Guinea Savanna Of Nigeria. *Journal of Sustainable Agriculture*, 20(1): 6-10.
- Kumar V, Ogunlela VB (1985). Improving Cotton Production In Nigeria Through Agronomic Practices. *IAR Bulletin*. Fiber Breeding Unit Seminar Paper (1985).

438. Glo. Adv. Res. J. Agric. Sci.

- Kumar V, Ogunlela VB (1991). Potential Productivity of Cotton As Affected By Various Limiting Factors. Department Of Agronomy, I A.R. Samaru, Zaria *Seminar Paper* Pp,16-21.
- Kutama AS, Aliyu BS (2007). Comparative Study On The Effect Of Soil Composition On The Vegetative Growth Characters Of Cotton (*Gossypium hirsutum*) In Kano And Katsina State. *Biological and Environmental Sciences Journal For The Tropics*, 4(1):191-194
- Lekwa G, Nto C (1986). *Cotton Soils of Nigeria And Their Management*. Federal Ministry of Agriculture and Land Resources, Kaduna, Nigeria Pp120-131.
- Pretince AN (1972). Differential Sensitivity of Boron In Cotton In The Northern States Of Nigeria, *Cotton Grow. Rev.*49: 350-353
- Siva-Kumar J (1989). Agro-Climatic Aspects of Rainfed Agriculture In The Sudano- Sahelian Zone. *Soil Crop, And Water Management In The Sudano-Sahelian Zone* (ICRISAT) Pp 17.