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THE FUTURE OF SUNFLOWER (HELIANTHUS ANNUS L.) AS A LIVESTOCK FEEDSTUFF IN NIGERIA.

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SUMMARY

The large animal population in Nigeria calls for the evaluation of other crops for silage so as to complement maize, sorghum and millets which have greater role for human consumption. Moreover, the declining groundnut production since 1973 rosette epidemic and drought calls for an alternative oilseed crop for which sunflower is gaining prominence. This means further utilization of sunflower crop residue and sunflower meal and cake for livestock feeding. Preliminary laboratory evaluation of the by-products of the seed have indicated high nutritive value in terms of crude protein (20-27%), Energy (23-30%) and minerals (4.8-7.8%). The large scale irrigation projects in the country which provide water for irrigation during the cool dry season in the northern part of the country could be used for multiple cropping using sunflower. This could facilitate year round forage production and add to the potentials of sunflower as a future feedstuff for livestock in Nigeria.

INTRODUCTION

Sunflower (Helianthus annus L.) is a tropical as well as sub tropical oil seed crop. It is a non-legiminous crop and derived its name (sunflower) from its response to sun's light and movement. The genus Helianthus contains about 50 species majority of which are wild (Heiser, 1985); Helianthus annus being one of the few domesticated. It was identified as an economical oil seed crop in Russia and after its oil content was genetically improved gained prominence all over the world as an oil seed crop.

Although the crop has established itself very well in temperate regions, its potential is higher in the tropical and sub-tropical zones. Its climatic requirement is similar to that of maize but has greater tolerance to drought and higher altitudes due to deep rooting system which makes it to survive a precipitation as low as 215mm (put, 1963 and as high as 1000mm (Ogurenmi, 1972). It tolerates low fertility soils than maize and could thrive on sandy and alkaline soils.

Sunflower was introduced to Nigeria in the early Seventies as Ornamental crop. However, preliminary trials have been conducted on the crop throughout the country since then to evaluate its potential as an oil seed crop and the results obtained have been very encouraging in both the forest and savannah zones of the country. A lot of acreages are now going under sunflower cultivation especially by the private sector. (Ananymous, 1985).

The wide climatic adaptation suggests tolerance to both hot and cold condition. Optimum temperature range is 10-40oC but could resist far low temperature without substantial damage. In frost/prone areas sunflower tolerates early autumn frost that will comparably kill soyabeans and maize. The crop is not photoperiodic but requires warm, sunny conditions for growth, seed filling and maturation.

As an annual crop sunflower is established by seed on a well prepared seed bed. The seeding rate is determined by the purpose for which the crop is grown. Although germination is excellent (90% and at a temperature as low as 50°C) it is advisable to plant at 2 seeds per hole. The recommended seeding rate is 2.4-3.6kg ha^{-1} or a plant population density of 20-30,000 plants ha^{-1}. For fodder production the seeding rate is 12-15kg ha^{-1} (100-200,000 plants ha^{-1}). Similarly where the seeds have been stored for a long time higher seeding rate should be used even for seed production due to loss in viability. Under extremely low temperature conditions the seedlings may fail to survive after germination and root initiation.

LITERATURE REVIEW

Agronomic Characteristics

Sunflower has been found to be a very good companion crop especially when grown for fodder. It combines very well with field beans and peas. In some localities it is used with legumes as a catch crop thereby substantially increasing the yield of the main crop that follows it. Koinov and Grametikov (1979) in Bulgaria have recorded an increase of 0.6-1.8t ha^{-1} grain yield of barley crop when sunflower and peas were sandwitched between two barley cropping seasons. The advantage sunflower has as a companion crop has to go with its short growing season of 75-85 days if fodder. This will allow for its early harvest after which the companion crop is left for the remaining season thus ensuring efficient labour utilization. Maize, Cowpea, Oats, Peas, late millets, tuberous and pasture crops could be suitable companion crops for sunflower. Even where it is used for grain production, it will mature and be harvested earlier than the companion crops since its low rain fall adaptation will facilitate earlier planting than the companion crop.

The use of sunflower for fodder production has been met with tramendous proccess all over the world. A lot of forage could be harvested where the crop has been grown as a sole crop or in mixture with other crops. The total dry matter yield is however determined by the seeding rate, level of fertilization and time of harvest. Similarly growing it with other crops for fodder tends to give higher annual dry matter yield due to higher growth rate. Under competition, this rapid growth rate and deep branched roots gives the crop an advantage over other crops. Gonel (1977) in East Germany has reported a fresh fodder yield of 57.8-62.1t ha $^{-1}$ when the crop was grown at a seed rate of 25kg ha^{-1} (207,000 plants ha^{-1}) and harvested at "yellow head" stage. This is similar to that (50.8t ha^{-1}) reported by Kostovnir (1977). An additional dry matter yield of 2.29t ha-1 was obtained when

multipurpose nature is a demonstration of its potential as a future feedstuff for livestock. This is further confirmed by the increasing hectarages under sunflower cultivation especially in Kano and Bauchi States.

Although at present sunflower could not be termed as an alternative crop to maize, sorghum and millet in terms of silage making, the role these later crops play as grain crops for human consumption overshadows their use as silage crops. Thus sunflower could complement them in this respect. The short growing season requirements of the crop is a clear indication of its potential for multiple cropping system bearing in mind the gigantic irrigation schemes all over the country which could facilitate several croppings in a year. Even though areas that lack the irrigation facilities and whose agriculture is subjected to weather and climatic flactuations, the drought tolerance and low rainfall requirement of sunflower will facilitate its cultivation in these areas especially since maize and sorghum cannot perform well in such areas. Under such areas sunflower could be an alternative crop to maize and sorghum. The drier northern Nigeria with its characteristics cool dry season from December to middle March provide suitable location for sunflower cultivation during this period where irrigation facilities do exist. Thus sunflower could possibly replace maize and sorghum as silage crop as they do not tolerate low temperature. This will ensure year round feed supply thereby eliminating the major limiting factor to livestock production in these areas. In addition, sunflower could be used as a catch crop during such periods to prepare the land for subsequent cultivation of other crops. In developing countries as Nigeria, sunflower could fit very well into the farming system programmes since increased agricultural production could be achieved with the crop with least cost or technological innovations. This is due to its compatibility with cereals and leguminous crops alike.

The high oil content of the crop is earlier mentioned in a clear testimony of its potential as an alternative oilseed crop and a by-product for livestock feed system bearing in mind the fact that up to now groundnut production is at low level following the 1973 groundnut rosette and drought epidemics which are still in the farmers memory. Sunflower could thus replace groundnut to some extent. On the final analysis, the several ascessions of sunflower introduction into Nigeria could be considered as a gene pool or genetic reserve for providing great opportunity for genetic improvement to increase adaptation to various cultural practices, climatic and soil conditions in the country.

CONCLUSION

It is evidently clear from the foregoing discussion that sunflower has a great role to play in Nigeriam livestock industry principally as a feedstuff. There is thus the need to formulate a policy for the comprehensive evaluation of the crop to ascertain its potentialities. This will invariably increase livestock production in the country hence the nutritional standard of the Nigeria's populace.

Table 1. Estimated livestock population in Nigeria 1000 head.

Year	Cattle	Camels	Pigs	Sheep	Goats	Chickens
1978	11,800	17	1000	11000	24000	100,000
1979	12000	17	1050	11350	24000	110,000
1980	123,000	17	1100	11700	24000	120,000

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