CATEGORIZING WEEDS OF CEREAL AND TUBER CROPS FARMING IN NIGER STATE

BY

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DECLARATON

I declare that the work described in this thesis project report represents my original work and has not been previously submitted to any University or similar institution for any degree or certificate.

MICAH SAMSON ADAJI

CERTIFICATION

This thesis entiled "categorizing weeds of cereal and tuber crops farming in Niger state "by M.S. Adaji meets the regulations governing the PGD of computer science of federal university of technology, Minna, and is approved for it's contribution to scientific knowledge and literary presentations.

Prof. K. R. ADEBOYE — Signature----------

PROJECT SUPERVISOR — Date----------

DR. S.A. REJU — Signature.....

HEAD OF DEPARTMENT — Date----------

EXTERNAL EXAMINER — Signature----------

Date----------

DEDICATION

This research work is dedicated to my parents Mr & Mrs Samson K. Adaji who supported me morally and financially through out my schooling year.

ACKNOWLEDGEMENT

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Lastly, I wish to express my deep appreciation to my wife, Mrs M S Adaji and children: Trust, Adaji, and Mavellous Adaji for their maximum co-operation throughout the duration of my course.

May God bless all those who have contributed to my success. Amen.

ABSTRACT

This study investigated and categorised weeds of cereal and tuber crops farming in Niger state.

The objective of this study was to Identiy weeds common to the production of cereals like Maize and sorghum and tuber like Yam and Cassava.

The identified weeds were classified into groups while the morphological features and their associations were described. The result of the work showed that of weed species were common to farming the various crops in Niger state.

It was concluded that a permanent recording of type of weeds of the crops will help in checking the measure caused by weeds.

Effort should be made by the state and local Government to help in the control of weeds of upland farming by providing necessary chemicals and other method like cultural practices.

The information on type of weeds and their description are assembled in an computer programme.

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CHAPTER ONE

1.0 INTRODUCTION

1.1 WEEDS IN CEREAL AND TUBER CROPS

Weeds are an important constraint to crop production, and weed communities evolve in association with the predominant cropping system of region. Identifying them correctly and learning how they spread would be the first step in their control, especially if such control is to be sustainable and viable under conditions experienced by the subsistence farmer in Nigeria. This study is on categorizing weeds of cereals and tuber crop farming in Niger State, where cereal-based and tubers cropping system have been intensified. While farmers in the area are clearly aware of the potential impact of weeds, on yield and kept their fields of well weeded, the cost of weed control remains a concern. Multivariate statistics has been a useful tool in analyzing weed communities and environmental interactions.

Weeds are the most underestimated pests in tropical agriculture. They have influenced human social actions more than other crop pests. One of the explanations given for large family sizes in traditional Nigeria societies and in other developing countries is that they provide labour for crop production, and the main labour-demanding phase of this enterprise is weeding. The presence of weeds in a farmer's field does not evoke sympathy from passers-by as does a sudden destruction of a farmer's crop by an insect or a disease organism. As a matter of fact, the presence of weeds on farmland is regarded as an evidence that the owner of the

farm is a lazy farmer. Weeds continue to take up more of the farmer's time than other crop production inputs most of the cultural practices associated with crop production are directly or indirectly related to the removal of the weeds.

In the Nigeria savannah, the bulk of agricultural production is undertaken by small-scale farmers whose labour-force, management, and capital, originate from the household. The most important and traditional staple food crops in the savannah are sorghum (sorghum bicolor), maize (zea mays) millet (pennisetum Americanum) these are cereals. The tuber crops are yams (Dioscorea spp) and cassava (manihot esculenta).

Despite the recent development of highly intensive cereal and tuber based production systems in the Nigeria savannah, little is known about the relationship between weeds communities and the intensification process. Such information is, however, essential for setting research priorities and for guiding the development of sustainable crop management system that can prevent the increase of obnoxious weeds.

The analysis of the dynamics of weeds populations in cereal and tuber crops is highly heterogeneous small scale production systems of the tropics is a methodological challenge. Adequate statistical tools such as Multivariate statistic, need to be assessed (post 1988, James and muculloch 1990).

Food production is the premier human enterprise and weed control is an integral part of this business. Weeds like

Axonopus compressus (carpet grass) inperatal cylindica (spea grass) mimosa pudica (sensitive plant) pannicum purpureum (Elephant grass), cynododactylon Bahama grass) Ageratum conysoids (goat weed) and panicum maximum (Lownea grass) and their control are problem people face whenever the natural vegetation is disturbed.

1.2 DEFINITION AND NATURE OF THE WEEDS IN CEREAL AND TUBER CROP IN NIGER STATE

Weeds have been defined in several ways, but the most appropriate definition for the purpose of this project work and in general agriculture is "a weed is a plant that in a given situation is more detrimental to agriculture than beneficial". This definition takes into account that weeds under certain circumstances can also be beneficial. They provide grazing for livestock in areas that cannot be cultivated e.g., hills, slopes, or during periods when land is not producing a crops at the same time preventing the land against erosion; certain weeds may serve as food in periods of scarcity while many weeds have important medicinal uses.

It is general knowledge that weed compete with crop plant for light, air, water and nutrient (the same necessary requirement fall all agricultural crops). The full extent of the economic harm which weeds cause, and their direct effect on crop yields are not generally realized. In tropical lands and indeed in upland farms the deprivation of water to cultivate crop is usually the most damaging aspects of weed competition both in the growing crops and in the fallow

periods crops.

ARNON **(1972)** Pavly Cheuko **1949** showned that the leaf of wild mustard **SINAPIS ARVENSIS** was about **7300 CM2** compare to wheat with a leaf area of **140 CM2** imbalance in leaf area gives an indication that weed could out perform desired crop in the utilization of all the basic requirement for growth. It has been estimated that the water saved by removing/eliminating weeds in a maize field is equivalent to providing an entire irrigation at the time maximum of need (mangelsd or f1966)

The effect of weeds competitions in crops are mainly felt when the crops are still young. A much more rapid growth rate of both the aerial part and the root of many weeds shows that they would have a considerable advantage in depressing and even crowding out the crops among which they are growing. Weeds are naturally endowed with a number of characteristics which increase their survival rate and their ability to complete with crops. They provide enormous quantities of seeds. In many species seed germinate only when condition become conductive. Dormancy (at rest period) is seed means that seeds may remains in "reserve" for longer period, and germinating only when the rest period is broken or when exposed from the reserve. Efficient and effective control of weeds means that knowledge of the weeds their characteristics: morphological differences and life-cycle should be well understood.

1.3 OBJECTIVES OF THE STUDY

1.3 OBJECTIVES OF THE STUDY

The objectives of the study are to identify weeds, to classify weed problems and management practices at the farm level, and to characterize weeds associations and changes in weeds communities in selected farming systems in Niger State, with a view to identify those well adapted to different production systems and those likely to become a major production constraint. This project is designed to contribute to knowledge of these crops in these zones. The approach in this contribution is to have computer documentation of weeds common in upland fields where these crops are grown. At the end of this exercise D-bade will be used to construct the protocol that will result in this output.

CHAPTER TWO

2.1 LITERATURE REVIEW

2.2 TYPES OF WEED ASSOCIATED WITH CEREAL AND TUBER CROPS

Weed control is an age-old practice in agriculture. It is one of the most expensive procedures in crop production and has therefore attracted much attention during the last-century (**Ashtonetal 1991**). To understand the important role of weeds in crop protection, it is necessary to know the type of weeds and their distribution, from where control strategies can be effectively proposed while considerable research attention aimed at reducing its effect on crop yield harmonized.

Earlier works have shown that different crops have their characteristic weeds (Vengris, (**1953**) and Holzner and Numata **1982**). For example, vengris (1953) reported that in various agricultural lands, it is evident that there are characteristic weeds of cereals and tuber crops. The abundance or severity of a new weeds species in any given crop is determined largely by the degree of competition offered by the crop AKOBUNDU, **1987**). For new weed species, their competitive ability would depend upon their morphological characteristics, readiness of seed to germinate easily, rate of seeding growth, extent and nature of roots and top growth (Crafts **1975**). The cultural practices

associated with the growing of crop, together with the rotation effect may be such as to promote or inhibit specific weed growth-crafts, **1975** and AKOBUNDU, **1987**) Craft **(1975)** identified three factors responsible for the common occurence or association of weeds with crops. The factors he enumerate are:

i Tillage, cropping and harvest practices.

ii time of ripening and germination of seeds of both crops and weeds

iii similarities of seed size of both crops and weeds.

In surveys of weed types common in Niger state maize and yam plots, several grasses, broad leaves and sedges were identified (oworu, 1980, Odofin 1980, imeokparia. 1989 and Okafor, 1990). Vengris (1953) on a population study of weeds associated with cereals and tuber crops in the connectcut river valley of massachusetts reported the presence of Digitaria spp Echinochloa spp and striga spp. He further reported variations among these weeds species in the four crop fields.

Holmetal **(1977)**, however, listed the world's most devasting weeds of cereals and tuber crops as cyperus Rotundus L. (purple nutsedge) cynodon dactylon L. (Bermuda grass), Echinochloa crusgalli (Barnyard grass), Eleusine indica Gaerth (Goose grass or fowl foot grass), Sorghum halepense (Johnson grass) panicum maximum (Guinea grass) Eichornia Crassipe (Andress) C.E. Hubbard (congo grass or spear grass) and mimosa pudica (Sensitive plant).

2.3 TYPES OF WEEDS ASSOCIATED WITH CEREAL CROP PRODUCTION [MAIZE AND SORGHUM].

The incidence of the different weeds communities was primarily determined by factors related to soil fertility, as well as cropping system and history. The results suggested, in general, that weed communities become more specialized as land use intensifies and as the cropping system becomes dominated by one or a few related crop species. Maize based cropping systems, with a long history since the introduction of maize production, a high frequency of maize and sorghum intercropping, and a low frequency of non cereal cropping tend to have a high incidence of weeds such as commelina and kyllinga. As soil fertility declines, vernonia and Eclipta became more important. Increase incorporation of no cereals into the cereal-dominated system lowers the weed pressure and reduces the importance of several species such as leucas, olden landia, spermacoce, Ludwigia, celosia and ipomoea. However, other species such as Dactyloctenium aegyptium are likely to increase in importance as non cereal crops increase in frequency against cereals. Several other species, especially Ageratum, Fimbristylis, Mariscus, Acalypha, and Digitaria are widespread and belong to the common weed flore in most fields

Some weed species can have important indirect effect on the sustainablility of the cropping system. Several weeds

species serve as alternative host for pest of crop plant. Seteria barbata, which occurs in 37% of the field and can be an alternative host for maize streak virus (mesfin et al. 1992), while the incidence of nemetodes of the genus Ditylenchus is associated positively with the incidence ofAndropogo gayanus and negatively with porphyrostemma chevalieri in savanna fields (Chindo and weber 1992). Plants of the genus striga are parasitic weeds, which can be extremely damaging to food crops. Many of the 30 -35 known species occur in Nigeria but not all are damaging. To put effective striga control within the reach of nigerian farmers, simple, inexpensive meatureds need to be developed that are tailored to the diversity of Nigeria cropping system.

With greater use of mono cropping, and little or no fallow, population of these parasites have gradually increased and became threats to food production (Doggett 1984; parker and Riches 1993). The striga species of particular economic important are striga hernumshica (Del.) Bank and striga asiatica (L) Kuntze, striga gesnerioides.

2.4 TYPES OF WEEDS ASSOCIATED WITH TUBER CROPS PRODUCTION [YAM AND CASSAVA]

Spear grass (imperata cylindrica (L) Reaushel), a rhizomatous pernennial grass is the seventh worst weed in the world and rated among the six worst weeds in NIGERIA. It is widely found in the derived and Guinea savannas in Nigeria but little is known about it growth characteristics.

Excessive weed growth is one of the most serious problem facing farmers throughout the country. Several species of weeds that affect the tuber crops are Ageratum Conyzoides, Aspilia Africa, Bidens pilosa, Tridax procumbens and olden landia cormbosa. Weeds are just as varied in their habitant requirements as are crops plant. some are very site specific, others will thrive over a wide range of habitants. Many of the weeds species closely associated with cultivated crops have requirements very similar to those of the crop. These species quickly become minor occupants of a particular site when humans cease to grow crops there. This study is aimed at understanding weed - crop interaction as well as the nature and function of that ecosystem. This will help in understanding the impact of crop production and husbandry practices on the slights in weed flora, particularly the persistence of some weeds in tuber crops. e.g sida Acuta, Commelina Vogellii, Amarantus spinosus, Calapogorium mucunoides, cantrosema pubescans, Euphorbia hirta and Emilia sonclifolia.

CHAPTER THREE

3.1 RESEARCH METHODOLOGY

3.2 MATERIALS AND METHODS

3.2.1 STUDY/SAMPLING FRAME

The study of categorising weeds of cereal and tuber crops was part of an overall intensive field monitoring effort in Niger State. The area has an average annual precipitation of 900-1200mm, which is well distributed over a growing period of 150-180 days and is followed by a pronounced dry season from October to May. Villages were selected based on the nature of the soil and different cropping systems within a zone of high intensity of land use and intensive cereal and tuber cropping in Minna, Suleja and Bida Local Government area of Niger State. However, large differences exist among the fields within villages as some farmers started to adopt new maize and Yam production technologies as long as 10 years ago, where as

some fields were planted to maize and Yam for the first time in 1990. In each village, 10 to 15 field were selected and all management practices performed by the farmer were recorded without any interference.

3.3 SAMPLING TECHNIQUE

Percentage weed cover was estimated with punitee square rectangular frame measuring 80 cm x 40 cm in 30 maize fields under either sole or mix cropping. Sampling times were at 4 and 8 weeks after planting and carried out at 12 places along field diagonals. Weed species were identified from 20 fields at 10 to 14 weeks after planting i.e, several weeks after final field operation had been completed but 3 to 6 weeks before maize harvest.

Ten sample points each occupying the area of 2m length between the row were evaluated along the field diagonals for all weeds species present. Frequency of occurrence and within field incidence were calculated for all genera. Frequency of occurrence was calculated as the percentage of fields where a certain weed species was present. Within field, incidence is expressed as the proportions of the 10 samples that contained the weed species in the field; It varies between 0(no sample contained the weeds) and 1 (all samples contained the weed.) Only those genera with an incidence of 0.5 or about in at least one field were used for the subsequent analysis, as the genera were considered to be of Minor importance in all fields.

Genera were grouped into weed association by clustering

those weeds that had a similar pattern of incidence across fields.

3.4 SAMPLING COLLECTION

We collected and identified a total of 74 species belonging to 60 genera within 20 families in the field. About 40% of all genera observed at the location belong to the families of Asteraceae (10 genera) and poaceae (14 genera) six genera constituting 10% of total weeds species (commelina, Ipomoea, kyllinga, leucas, Dactyloctenium and Digiteria) were found in more than 80% of the fields and 13 genera (Ageratum, vernonia, calosia, commelina,Ipomoea, fim bristylis, Kyllinga, maricus, Acalypha, leucas, Dactyloctenium, Digitaria, and Oldenlandia, or 22% in more than 50% of the fields. Five species of Eragrossis, three species each of vernonia and ipomoea, maricus, cyperus, Cassia, Chloris, se sectaria, Hyptis, Physalis and Oldenlandia were identified in the field while only one specis each was observed for the other genera. Identification of all plants to the species level was not possible as many had not yet flowered. Therefore, the system analysis was limited to the genus level. Of the 38 genera occurring in at least one field at a within field incidence greater than 0.5%, only four (commelina, kyllinga, leucas and digitaria) had a mean incidencies across field above 0.5%. Differences in incidence between fields were partly genera specific and the composition of weed population varied significantly across fields.

3.5 WEED INCIDENCE AND SEVERITY

Most fields had low level of weed cover especially during the early crop growth stages. Weed coverage remain below 12% in most fields up to maize grain filling, although it tended to be higher at this stage in some fields in Minna, Suleja and Bida. The intensification of land use in the study areas has generally resulted in increase effort by farmers toward maximizing the productivity of the most scarce resources, i.e. unit area through intensive crop husbandry practices that maintain weed cover at low level. Most farmers weed their field two to three times. The condition for weed germination and development become more conducive as the season advances, with more reliable rainfall and appropriate temperature. Therefore, the weed infestation increased at (8) eight week after planting. Weed cover at 8 week after planting was associated with soil organic carbon content. Other variables, such as crop canopy and cropping mixture, did not appear to have any effect on weed. Hired labourers tend to weed less thoroughly than the farmers themselves, as payment is done according to the area weeded not to the time used in weeding; a heavy rainfall after weeding allows many weeds to recover and re-establish themselves more easily, especially if the soil has not been carefully shaken off the roots.

Cereal and tuber crops yield its associated with weed cover at 4 and 8 weeks after planting, although these

variables explained only 8% of the overall variance of cereal and tuber crops yields in farmer's field. Even this association has been interpreted with care as farmers tend to reduce weeding activities on those fields that have low yield expectations for any reason, such as nematode attack, parasitic weed, lack of fertilizer or water logging. Thus, the yield losses observed in farmers field may not be completely as a result of weed infestation as other constraint may have cost the farmers to minimize crop management or to abandon the field.

CHAPTER FOUR

4.1 CLASSIFICATION OF WEEDS

Weeds are classified in several ways that include life cycle or life history, habitat, and growth habit.

4.2 LIFE CYCLE OR HISTORY

There are two groups of weeds in the tropics: the annuals and perennials. Annuals are those weeds that complete their life cycles (from seed germination to seed production) in one or two growing season in a calendar year. Such weed die off during the dry season after completing their life cycle. Example of annual weeds are: Ageratum conyzoidal, Acanthosperm hispidum, Amaranthus spinosus, Boerhavia diffusa, Eurphurbia heteropyhlla, Brachiaria deflexa. B. lata and Rollbaellia diffusa or cochinchinesis.

Some of the characteristics of annual weed include an ability to produce large quantities of seeds, a tendency to occur in high density efficient method of seed dispersal, and seed dominant that prevent all seed produce by the weed in one year from germinating at once. Perennials are weeds that will stay alive for more than one calendar year in spite of producing seeds in the growing season which a dry season. Perennial weeds may or may not produce seed at any stage of their growing cycle, but they have the capacity to survive the dry season with the aid of specialise perennating structure. Examples of perennial weeds include imperata cylindrical, Cypodondactylon, Cyperus esculentus, C. rotundus, Chromoleana odorata, perennicum maximum and Talinum triagulane. Many of these

perennating or perennials, such as cynodon dactylon, imperata cylindrica, some species of oxalis, Talinum triangulare and smilax kraussiana, produce seeds and also perennating propagules. Others such as Bryophylum pinnatum, Cyperus, C. rotundus and C. tuberosus have perennating structures that are so well developed that the weeds now have a much reduced dependence on seed production for maintaining the genetic line. Oxalis latifolia does not produce any seed, but depend on its great propensity for rapid production of bulbils and bulbs for it survival.

Perennial weeds resist attempt to eradicate them by manifesting special adoptation for weediness. These adaptations include longevity of tubers, Corms and Bulbs as found in Cyparus esculentus, C. rotundus, Oxalispp. Longevity of rhizomes and stolon, in Cyrodon dactylion, hyperata cylindrica and penium repens ets. Presence of deep roots that make it difficult to destroy the weeds by tillage. e.g chromolaena odorata, Stachytarpheta cayanensis and Icalina tricantha; presence of buds that can sprout from the basal portions of the stem at or below ground level e.g many tussocky perennial grasses that include Andropogon, Hyparrhenia and pennisetum spp; and succelent stems that easily root and grow vegetatively when they are cut into segments during hoe weeding or cultivation. e.g commelina belonghalensis, and Talinum triagulare. Other perennials either have leaf bulbils or are woody roots sprouters which are not killed by simply cutting them down. Some perennials, such as similar kraussiana, combine these persistance qualities with other feature such as thorns.

There are gray area in the division between annuals and perennials in the tropics. Some weeds that are annual may behave as perennials if rainfall is adequate and evenly distributed throughout the year. For example, the annual weed Digitaria horizontalis, which usually roots at the lower nodes, will die off as the end of the rains, but given enough moisture, this weed will behave as a perennial. The same is true of other weeds such as Eleusine indica and paspalum orbiculare. Rainfall and its distribution impose severe tests on which weeds are true annuals and which weeds behave as perennials.

4.3 HABITAT

Classification of weeds on the basis of where they are found (habitat) is unwidely used by agriculturist. This method of classification groups weeds into upland (terrestrial) weeds, aquatic weeds, arable crop weeds, weeds of plantation crops. Consequently some weeds such as chromolaena odorata and paspalum confugatum are classified as weeds of plantation crops, while others such as Ageratum conyzoides, Aspilia Africana, Bidens pilosa, Tridax procumbers and oldenlandia corymbosa are classified as weeds of arable crops. All weeds associated with upland crop are known as upland or dry land weeds. Terrestrial weed are further grouped into agrestal(= weeds of arable or cultivated crops) and ruderal (= weeds of distributed non crop areas such as rubbish heaps, Land fills, paths and roads, compost heaps etc). Holzner(1982) has discussed agrestal and ruderal weeds in detail. Weeds that grow

preferentially in water lodged condition are classified as aquatic weeds. Example of aquatic weeds includes cyperus difformis, kyllinga bulbosa Nymphalotus, and sphenoclea zeylanica.

4.4 GROWTH HABIT

Weeds may be classified on the basis of growth habit into free-living (autotrophic) and parasitic plants. weeds that live as independent organism and manufacture their own food through photosynthesis are known autotrophs. All non parasitic weeds of field crops are autotrophic weeds. Those weeds that grow on living tissues of other plants and derive part or all of their food, water, and mieneral needs from the plants they grow on (host plants) are known as parasitic weeds Parasitism refers to the relationship between organism,(for example a crop and weed or weed and weed) in which one organism is damaged and other benefit from the association. King (1966) reported that parasitic weeds are ditributed in 10 families of flowering plants. Six of this contain the most troublesome parasitic weeds. Parker(1980) reviewed the parasitic weeds that have economic improtant in tropical agriculture and noted that most of them are contained in six families. Parasitc weeds can be group into root parasitic weeds (such as Striga orobanche spp.) and stem parasitic weeds(e.g. cuscuta and loranthus spp). The root parasitic weeds are obligate parasites because they require a host plant for the chemical stimulant necessary for seed germination. The stem parasitic weeds attach themselves to the stem of host plants by means of haustoria and draw minerals

nutrient and water from the host plants. Weeds that produce their own assimilates but depends on the host plant for water and mineral nutrients only are known as hemiparasites Examples are dodder (cuscuta spp) and the mistletoes (oranthus, viscum, Arceuthobium and Tapinanthus spp). The degree of dependance on the host plant varies with age and species of the parasitic weeds. Thus dodder seeds germinate and produce green plants that creep on the soil surface untill they make contact with host plants, to which they then attach themselves. On the other hand, seeds of witch weed (Striga spp) will not germinate untill they receive a chemical stimulus from the root of a host plant. As soon as they germinate they attach themselves to the roots of the host plants and do not emerge above ground for several weeks.

During the time they are underground, they are totally dependent on the host for survival (obligate), but once they emerge above ground they produce green tissues and begin to manufacture their own assimilates. Striga plant still depend on the host plant for water and mineral nutrition . Seeds of the mistletoe have to germinate on a host plant, but depend on the host only for water and mineral nutrients.

Broomrapes (orobanche spp) are example of total parasites. They lack chlorophyll and depend on their host for assimilates, water mineral nutrition. Striga is found usually associated with cereal crops maize, sorghum, rice and some grasses especially andropogum gayenus. All these information assembled does not help in crop husbandry. There are no place to do this than in a computer enviroment.

CHAPTER FIVE

5.1 PROGRAM DESIGN

Program design consists of the series of instruction necessary for the logical step wise presentation of the problem. The approach to this design is to have a computer documentation of weeds commmon to upland fields where these crops are grown. i.e the weeds associated with cereal and tuber crops farming in Niger state. (The cereals considered are maize and sorghum,while yam and cassava are considered for tuber crops).

5.2 DESIGN OF PROFORMA AND PROGRAMME IN ALIGHNMENT WITH THE PROFORMA.

This general format will present a standard design from which will follow a step by step procedure for acquiring the needed information record of field crops, the family, species, local name, location/habitat, the life cycle of weeds(wether Annual,Bi-annual or perennial) and morphological features(e.g. Root,stem,leaf,flower and fruit or seed descriptions).

Computer instructions will be devoloped to provide information related to the above. It will be assembled in computer documentation for storage and easy retrieval when the execution of the problem is desired.

Family and species are group of weeds with a common Characteristics and a common source e.g. Family name(Gramineae) Species(Andropogon virginicus).

Local name and habitat: This is the procedure of identifying weeds and the place it is found e.g. Commelina Communis(Day

flower),found in moist field,Nurseries,and open woods.

Life Cycle of weeds:- There are those weeds that complete their life cycle(From seed genertation to seed production) in one or more growing seasons in a calendar year,such weeds die off during the dry season after completing their life cycle e.g Annual or perennials.

The morphological features involves Root,Stem,leaf flower and seed e.g Brachiariaplatyphylla(broad leaf Sign) Root-rooting at lower nodes to the two-feet tall

STEM:- Recycling,nodding,Smooth body. Leaf:-leaf blades relatively shortwith and Smooth.Flower:-Racemens two-Six,usually Three-five perculiar angle of terminal racementeds to distinguish this genus.

Seed:- Smooth, Three-lobed seed pod.

5.3 TESTING PERFOMANCE OF PROGRAMME

This is a test run to provide an out put/stored information in the computer system which will lead to a hard copy being printed out at a later time. Detailed information on the proforma will have been filled out at the end of the execution stage of the programme.

5.3 CONCLUSION

It is apparent that categorising weeds of cereal and tuber crops farming in Niger State has become an important practice that it now represents a large volume of business, and is rapidly expanding to meet the demand for more completely mechanised weeds control for agriculture and society in general.

It is now imperative that higher adoption of categorising weeds as an alternative for better weed control should be encouraged among the farming communities in other to boost food production. However, to douse the apprehension for weeds, a systematic and consistent education on identifying weeds should be embarked upon by the researcher and peasant farmers.

Finally, more research attention should be focused on categorising weeds of cereals and tuber crops lots and other leguminous crops that are consumed by man and animals. Most of this information should be assembled in the computer.

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@0, 10 say CATEGORIZING WEEDS OF CEREAL AND TUBER"
@1, 14 say  CROPS FARMING IN NIGER STATE"
procedure addrec4
use CROP
repeat20=.T.
do while repeat20
MYP=0
yesno=' '
mserial='                              '
clear
@2,20 say "GENERAL WEED CLASSIFICATION DATA ENTRY
FORM"
@3,20 say
"============================================="
@4,1 say "CROP NAME:  " GET mserial
read
mserial=upper(mserial)
MSERIAL=LTRIM(MSERIAL)
MSERIAL=RTRIM(MSERIAL)
go top
locate for CCROP=mserial
if eof()
@5,1 say "CROP'S WEED:" get WEED
@7,1 SAY "FAMILY:     " GET FAMILY
@9,1 SAY "SPECIES:     " GET GENSPEC
@11,1 SAY "ENGLISH NAME:" GET ENGNAME
@13,1 SAY "HAUSA NAME :" GET HAUSA
@15,1 SAY "YORUBA NAME:" GET YORUBA
@17,1 SAY "IBO NAME :" GET IBO
@19,1 SAY "NUPE NAME:" GET NUPE
@21,1 SAY "GWARI NAME:" GET GWARI
@3,40 SAY "IGALA NAME:" GET IGALA
@5,35 SAY "LOCATION/HABITAT:" GET LOHABITAT
@7,40 SAY "LIFE CYCLE"
@8,49 SAY "[1] ANNUAL"
@9,49 SAY "[2] BIANNUAL"
@10,49 SAY "[3] PERENNUAL"
@11,49 SAY " " GET MYP
@13,40 SAY "ROOT:" GET ROOT
@15,40 SAY "STEM:" GET STEM
@17,40 SAY "LEAF:" GET LEAF
@19,40 SAY "FLOWER:" GET FLOWER
@21,40 SAY "SEEDS:" GET SEEDS
```

```
@0, 10 say CATEGORIZING WEEDS OG CEREAL AND TUBER"
@1, 14 say  CROPS FARMING IN NIGER STATE"
procedure addrec4
use CROP
repeat20=.T.
do while repeat20
MYP=0
yesno=' '
mserial='                    '
clear
@2,20 say "GENERAL WEED CLASSIFICATION DATA ENTRY
FORM"
@3,20 say
"============================================="
@4,1 say "CROP NAME:   " GET mserial
read
mserial=upper(mserial)
MSERIAL=LTRIM(MSERIAL)
MSERIAL=RTRIM(MSERIAL)
go top
locate for CCROP=mserial
if eof()
@5,1 say "CROP'S WEED:" get WEED
@7,1 SAY "FAMILY:      " GET FAMILY
@9,1 SAY "SPECIES:      " GET GENSPEC
@11,1 SAY "ENGLISH NAME:" GET ENGNAME
@13,1 SAY "HAUSA NAME :" GET HAUSA
@15,1 SAY "YORUBA NAME:" GET YORUBA
@17,1 SAY "IBO NAME :" GET IBO
@19,1 SAY "NUPE NAME:" GET NUPE
@21,1 SAY "GWARI NAME:" GET GWARI
@3,40 SAY "IGALA NAME:" GET IGALA
@5,35 SAY "LOCATION/HABITAT:" GET LOHABITAT
@7,40 SAY "LIFE CYCLE"
@8,49 SAY "[1] ANNUAL"
@9,49 SAY "[2] BIANNUAL"
@10,49 SAY "[3] PERENNUAL"
@11,49 SAY " " GET MYP
@13,40 SAY "ROOT:" GET ROOT
@15,40 SAY "STEM:" GET STEM
@17,40 SAY "LEAF:" GET LEAF
@19,40 SAY "FLOWER:" GET FLOWER
@21,40 SAY "SEEDS:" GET SEEDS
```

```
append blank
read
IF MYP=1
REPLACE LIFECYCLE WITH "ANNUAL"
ENDIF
IF MYP=2
REPLACE LIFECYCLE WITH "BIANNUAL"
ENDIF
IF MYP=3
REPLACE LIFECYCLE WITH "PERENNUAL"
ENDIF

replace CCROP with mserial

else
@22,20 say "record already exist"
endif
@23,10 say "MORE RECORD (y/n)?" get yesno
read
yesno=upper(yesno)
if yesno<>"Y"
store .F. to repeat20
endif
enddo
return


procedure modrec4

use CROP
repeat21=.T.
do while repeat21
MYP=0
yesno=' '
yesno2=' '
mserial='          '
clear
@0,20 say "GENERAL WEED CLASSIFICATION DATA AMENDMENT
FORM"
@1,20 say
"================================================"
@2,10 say "CROP NAME:" get mserial
read
```

```
mserial=upper(mserial)
MSERIAL=LTRIM(MSERIAL)
MSERIAL=RTRIM(MSERIAL)
go top
locate for CCROP=mserial
if .not. eof()
@5,1 say "CROP'S WEED: " + WEED
@7,1 SAY "FAMILY:      " + FAMILY
@9,1 SAY "SPECIES:      " + GENSPEC
@11,1 SAY "ENGLISH NAME: " + ENGNAME
@13,1 SAY "HAUSA NAME : " + HAUSA
@15,1 SAY "YORUBA NAME: " + YORUBA
@17,1 SAY "IBO NAME : " + IBO
@19,1 SAY "NUPE NAME: " + NUPE
@21,1 SAY "GWARI NAME: " + GWARI
@3,40 SAY "IGALA NAME: " + IGALA
@5,35 SAY "LOCATION/HABITAT: "+ LOHABITAT
@7,40 SAY "LIFE CYCLE: "+LIFECYCLE
@9,40 SAY "ROOT: " + ROOT
@11,40 SAY "STEM: " + STEM
@13,40 SAY "LEAF: " + LEAF
@15,40 SAY "FLOWER: "+ FLOWER
@17,40 SAY "SEEDS: " + SEEDS
@21,40 say "AMEND THIS RECORD (y/n)?" get yesno2
read
if upper(yesno2)="Y"
clear
@0,20 say "GENERAL WEED CLASSIFICATION DATA amendment
FORM"
@1,20 say
"============================================="
@5,1 say "CROP'S WEED:" get WEED
@7,1 SAY "FAMILY:      " GET FAMILY
@9,1 SAY "SPECIES:      " GET GENSPEC
@11,1 SAY "ENGLISH NAME:" GET ENGNAME
@13,1 SAY "HAUSA NAME :" GET HAUSA
@15,1 SAY "YORUBA NAME:" GET YORUBA
@17,1 SAY "IBO NAME :" GET IBO
@19,1 SAY "NUPE NAME:" GET NUPE
@21,1 SAY "GWARI NAME:" GET GWARI
@3,40 SAY "IGALA NAME:" GET IGALA
@5,35 SAY "LOCATION/HABITAT:" GET LOHABITAT
@7,40 SAY "LIFE CYCLE"
@8,49 SAY "[1] ANNUAL"
```

```
@9,49 SAY "[2] BIANNUAL"
@10,49 SAY "[3] PERENNUAL"
@11,49 SAY " " GET MYP
@13,40 SAY "ROOT:" GET ROOT
@15,40 SAY "STEM:" GET STEM
@17,40 SAY "LEAF:" GET LEAF
@19,40 SAY "FLOWER:" GET FLOWER
@21,40 SAY "SEEDS:" GET SEEDS
read
IF MYP=1
REPLACE LIFECYCLE WITH "ANNUAL"
ENDIF
IF MYP=2
REPLACE LIFECYCLE WITH "BIANNUAL"
ENDIF
IF MYP=3
REPLACE LIFECYCLE WITH "PERENNUAL"
ENDIF
@22,20 say "Record successfully amended"
endif
else

@21,10 say "record not exist"
endif
@23,10 say "MORE RECORD (y/n)?" get yesno
read
yesno=upper(yesno)
if yesno<>"Y"
store .F. to repeat21
endif
enddo
return



procedure delrec4

use CROP
repeat24=.T.
do while repeat24
MYP=0
yesno=' '
yesno2=' '
mserial='          '
```

```
clear
@0,20 say "GENERAL WEED CLASSIFICATION DATA DELETION
FORM"
@1,20 say
"=============================================="
@2,10 say "CROP'S NAME:" get mserial
read
mserial=upper(mserial)
MSERIAL=LTRIM(MSERIAL)
MSERIAL=RTRIM(MSERIAL)
go top
locate for CCROP=mserial
if .not. eof()
@5,1 say "CROP'S WEED:" + WEED
@7,1 SAY "FAMILY:      " + FAMILY
@9,1 SAY "SPECIES:      " + GENSPEC
@11,1 SAY "ENGLISH NAME:" + ENGNAME
@13,1 SAY "HAUSA NAME :" + HAUSA
@15,1 SAY "YORUBA NAME:" + YORUBA
@17,1 SAY "IBO NAME :" + IBO
@19,1 SAY "NUPE NAME:" + NUPE
@21,1 SAY "GWARI NAME:" + GWARI
@3,40 SAY "IGALA NAME:" + IGALA
@5,35 SAY "LOCATION/HABITAT:"+ LOHABITAT
@7,40 SAY "LIFE CYCLE :"+LIFECYCLE
@9,40 SAY "ROOT:" + ROOT
@11,40 SAY "STEM:" + STEM
@13,40 SAY "LEAF:" + LEAF
@15,40 SAY "FLOWER:"+ FLOWER
@17,40 SAY "SEEDS:" + SEEDS
@21,40 say "DELETE THIS RECORD (y/n)?" get yesno2
read
if upper(yesno2)="Y"
DELETE
@22,20 say "Record successfully DELETED"
endif
else
@21,10 say "record not exist"
endif
@23,10 say "MORE DELETION (y/n)?" get yesno
read
yesno=upper(yesno)
if yesno<>"Y"
store .F. to repeat24
```

```
endif
enddo
PACK
RETURN


procedure REPO4

use CROP
repeat30=.T.
do while repeat30
PPT=' '
MYP=0
yesno=' '
yesno2=' '
mserial='          '
clear
@0,20 say "GENERAL WEED CLASSIFICATION REPORT FORM"
@1,20 say "======================================="
@2,10 say "CROP'S NAME:" get mserial
read
mserial=upper(mserial)
MSERIAL=LTRIM(MSERIAL)
MSERIAL=RTRIM(MSERIAL)
go top
locate for CCROP=mserial
if .not. eof()
@10,10 SAY "SENDING REPORT TO PRINTER (y?n)?" GET PPT
READ
IF UPPER(PPT)="Y"
SET DEVICE TO PRINTER
ENDIF
CLEAR
@0,20 say "GENERAL WEED CLASSIFICATION REPORT FORM"
@1,20 say "======================================="
@2,10 say "CROP'S NAME:" + mserial
@5,1 say "CROP'S WEED:" + WEED
@7,1 SAY "FAMILY:      " + FAMILY
@9,1 SAY "SPECIES:      " + GENSPEC
@11,1 SAY "ENGLISH NAME:" + ENGNAME
@13,1 SAY "HAUSA NAME :" + HAUSA
@15,1 SAY "YORUBA NAME:" + YORUBA
@17,1 SAY "IBO NAME :" + IBO
@19,1 SAY "NUPE NAME:" + NUPE
```

```
@21,1 SAY "GWARI NAME:" + GWARI
@3,40 SAY "IGALA NAME:" + IGALA
@5,35 SAY "LOCATION/HABITAT:"+ LOHABITAT
@7,40 SAY "LIFE CYCLE :"+LIFECYCLE
@9,40 SAY "ROOT:" + ROOT
@11,40 SAY "STEM:" + STEM
@13,40 SAY "LEAF:" + LEAF
@15,40 SAY "FLOWER:"+ FLOWER
@17,40 SAY "SEEDS:" + SEEDS
SET DEVICE TO SCREEN
else

@21,10 say "record not exist"
endif
@23,10 say "MORE REPORT (y/n)?" get yesno
read
yesno=upper(yesno)
if yesno<>"Y"
store .F. to repeat30
endif
enddo
return
```

□

```
SET TALK OFF
SET BELL OFF
SET STATUS OFF
SET SCOREBOARD OFF
SET TITLE OFF
SET HEADING OFF
SET CURSOR OFF
MMENU=.T.
SET COLOR TO W+/B
SET PROCEDURE TO CROP
CLEAR

ITEM1="ADDING RECORDS           "
ITEM2="MODIFY EXISTING RECORDS "
ITEM3="DELETE EXISTING RECORDS "
ITEM4="GENERATE REPORTS         "
ITEM5="EXIT TO DBASE            "
TEMPITEM=ITEM1
@5,35 SAY "[ MAIN MENU ]"
@6,25 TO 20,60 DOUBLE
@8,30 SAY ITEM1
@10,30 SAY ITEM2
@12,30 SAY ITEM3
@14,30 SAY ITEM4
@16,30 SAY ITEM5
SET COLOR TO W+/GR
@8,30 SAY ITEM1
TEMPY=8
TEMPITEM=ITEM1
REALY=8
DO WHILE MMENU
AA=INKEY()
IF AA=13
set cursor on
SET COLOR TO W+/B
IF REALY=14
STORE .F. TO MMENU
ENDIF

IF REALY=8
DO ADDREC4
ENDIF
IF REALY=10
DO MODREC4
```

```
SET TALK OFF
SET BELL OFF
SET STATUS OFF
SET SCOREBOARD OFF
SET TITLE OFF
SET HEADING OFF
SET CURSOR OFF
MMENU=.T.
SET COLOR TO W+/B
SET PROCEDURE TO CROP
CLEAR

ITEM1="ADDING RECORDS           "
ITEM2="MODIFY EXISTING RECORDS "
ITEM3="DELETE EXISTING RECORDS "
ITEM4="GENERATE REPORTS         "
ITEM5="EXIT TO DBASE            "
TEMPITEM=ITEM1
@5,35 SAY "[ MAIN MENU ]"
@6,25 TO 20,60 DOUBLE
@8,30 SAY ITEM1
@10,30 SAY ITEM2
@12,30 SAY ITEM3
@14,30 SAY ITEM4
@16,30 SAY ITEM5
SET COLOR TO W+/GR
@8,30 SAY ITEM1
TEMPY=8
TEMPITEM=ITEM1
REALY=8
DO WHILE MMENU
AA=INKEY()
IF AA=13
set cursor on
SET COLOR TO W+/B
IF REALY=14
STORE .F. TO MMENU
ENDIF

IF REALY=8
DO ADDREC4
ENDIF
IF REALY=10
DO MODREC4
```

```
ENDIF
IF REALY=12
DO DELREC4
ENDIF

IF REALY=14
DO REPO4
MMENU=.T.
ENDIF

IF REALY=16
MMENU=.F.
ENDIF


set cursor off
SET COLOR TO W+/B
CLEAR
ITEM1="ADDING RECORDS           "
ITEM2="MODIFY EXISTING RECORDS "
ITEM3="DELETE EXISTING RECORDS "
ITEM4="GENERATE REPORTS         "
ITEM5="EXIT TO DBASE            "

TEMPITEM=ITEM1
@5,35 SAY "[ MAIN MENU ]"
@6,25 TO 20,60 DOUBLE
@8,30 SAY ITEM1
@10,30 SAY ITEM2
@12,30 SAY ITEM3
@14,30 SAY ITEM4
@16,30 SAY ITEM5
SET COLOR TO W+/GR
@8,30 SAY ITEM1
TEMPY=8
TEMPITEM=ITEM1
REALY=8



ENDIF


IF AA=24
```

```
REALY=REALY+2
IF REALY>16
REALY=8
ENDIF

IF REALY=8
REALITEM=ITEM1
SET COLOR TO W+/B
@TEMPY,30 SAY TEMPITEM
SET COLOR TO W+/GR
@8,30 SAY REALITEM
TEMPITEM=ITEM1
TEMPY=8
ENDIF

IF REALY=10
REALITEM=ITEM2
SET COLOR TO W+/B
@TEMPY,30 SAY TEMPITEM
SET COLOR TO W+/GR
@10,30 SAY REALITEM
TEMPITEM=ITEM2
TEMPY=10
ENDIF

IF REALY=12
REALITEM=ITEM3
SET COLOR TO W+/B
@TEMPY,30 SAY TEMPITEM
SET COLOR TO W+/GR
@12,30 SAY REALITEM
TEMPITEM=ITEM3
TEMPY=12
ENDIF

IF REALY=14
REALITEM=ITEM4
SET COLOR TO W+/B
@TEMPY,30 SAY TEMPITEM
SET COLOR TO W+/GR
@14,30 SAY REALITEM
TEMPITEM=ITEM4
TEMPY=14
ENDIF
```

```
IF REALY=16
REALITEM=ITEM5
SET COLOR TO W+/B
@TEMPY,30 SAY TEMPITEM
SET COLOR TO W+/GR
@16,30 SAY REALITEM
TEMPITEM=ITEM5
TEMPY=16
ENDIF

ENDIF


IF AA=5
REALY=REALY-2
IF REALY<8
REALY=16
ENDIF

IF REALY=8
REALITEM=ITEM1
SET COLOR TO W+/B
@TEMPY,30 SAY TEMPITEM
SET COLOR TO W+/GR
@8,30 SAY REALITEM
TEMPITEM=ITEM1
TEMPY=8
ENDIF

IF REALY=10
REALITEM=ITEM2
SET COLOR TO W+/B
@TEMPY,30 SAY TEMPITEM
SET COLOR TO W+/GR
@10,30 SAY REALITEM
TEMPITEM=ITEM2
TEMPY=10
ENDIF

IF REALY=12
REALITEM=ITEM3
SET COLOR TO W+/B
@TEMPY,30 SAY TEMPITEM
```

```
SET COLOR TO W+/GR
@12,30 SAY REALITEM
TEMPITEM=ITEM3
TEMPY=12
ENDIF

IF REALY=14
REALITEM=ITEM4
SET COLOR TO W+/B
@TEMPY,30 SAY TEMPITEM
SET COLOR TO W+/GR
@14,30 SAY REALITEM
TEMPITEM=ITEM4
TEMPY=14
ENDIF

IF REALY=16
REALITEM=ITEM5
SET COLOR TO W+/B
@TEMPY,30 SAY TEMPITEM
SET COLOR TO W+/GR
@16,30 SAY REALITEM
TEMPITEM=ITEM5
TEMPY=16
ENDIF

ENDIF

ENDDO
set color to w+/b
SET PROC TO
clear
SET CURSOR ON
SET TALK ON
SET BELL ON
SET STATUS ON
SET SCOREBOARD ON
SET TITLE ON
SET HEADING ON
```