SOME SOIL NUTRIENT COMPOSITION FAVOURING THE GROWTH OF TYPHA GRASS IN KEBBI AND KATSINA STATES, NIGERIA.

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ABSTRACT

This study was carried out by surveying all the water bodies of two states where Typha grass exists. Soil auger was used to take soil samples randomly from five different locations in both Kebbi and Katsina state. at the depths of 0-5cm, 5 10cm, 10 15cm. Soil nutrient was analyzed for the mineral composition of the two States at different season and soil depths. The result showed that, soil depth between 5-10cm has the highest percentage of nitrogen, phosphorus, calcium and magnesium during dry season. The nutrient composition of soil from the two states followed the same pattern during wet season.

INTRODUCTION.

Typha grass can be found in wetland, sedges and meadows along moving streams, rivers banks and lake edges. The plant is found in areas of fluctuating water level, such as road sides, ditches and reservoirs (Morton 1975). It is an erect perennial freshwater aquatic herb which can grow up to 3 or more meters in height. The leaves are thick ribbon like structure which have a spongy cross-section exhibiting air channels.

The subterranean stem arises from thick creeping rhizomes. Flower structure is a dense, fuzzy, cylindrical spike on the end of stem, with a gap 1-3 cm of naked stem between the upper, male portion (stamina) and lower, female (Pistillate) portion. Typha spp. is a clonal monocotyledon with sword-like leaves that grow vertically from the shoot base. The leaves are made of aerenchyma tissue and a large portion of biomass allocation is directed toward sexual reproduction(Mal,et al. 1997). At maturity the spike bursts under dry condition releasing the fruits. The fruits have bristly hairs that aid in wind dispersal. When the fruits come in contact with water, the pericarp opens rapidly, releasing the seed.

The fruits often fall to the ground in dense mats. Vegetative reproduction occurs through an extensive rhizomes system which is responsible for the maintenance and expansion of existing stands (Shekhov, 1974).Studies conducted on Typha germination suggests that seeds germination can be 100 percent in slightly flooded condition (Smith, 1967). The studies revealed that its basic requirements are wet pure sand, peat, clay and loamy soil. It also requires higher percentage of nitrogen. Best germination of Typha grass is obtained under non-saline condition and germination decrease with increase in salinity. Absence of light completely inhibited seed germination of Typha grass (Gulzar, 2002).

Typha grass causes a variety of problems in Nigeria that are broadly similar to those caused by Typha grass elsewhere in the world (Morton, 1975). Earlier studies (NIFFR, 2000) revealed that, this plant caused problems in Hadejia|Jama`are, Jigawa state, and Kano state. In Nigeria. Such problems includes interfering with water from flood lands; impeding the movement of boats for transport, fishing and recreation among others .It also interferes with various methods of catching fish; competing with rice in paddy systems, leading to degrading of water quality by adding taints and odours to the water, thus, decreasing dissolved oxygen content. It also alters the flora and fauna of aquatic ecosystems as well as a reduction in light penetration within the aquatic system.

The aim of this study is to evaluate Environmental factors which favours growth of Typha grass in Kebbi and Katsina state with the aim of determining its current status. Results of this study is expected to provide appropriate recommendations to solve problems posed by Typha grass on the water bodies so that, optimal uses of the lakes and rivers in this two states may be enhanced.And also to provide information on seasonal variation in the plant morphology and minerals composition.

MATERIALS AND METHODS.

This study was carried out by surveying all the water bodies of the two states where Typha grass exists.(Kebbi state: Gulmbe, river, Sabiyal river and Bunza rive) (Katsina state:kwana Are Dam, Daura Dam and jibiya Dam.) Soil auger was used to take soil samples randomly from five different locations in both Kebbi and Katsina states, at the depths of 0-5cm, 5cm 10cm, 10cm 15cm. The soil samples were put into

polyethylene bags and labelled according to their depth. Then soil samples were air dried to stop microbial activities before taken to laboratory. The soil was analyzed at the University of Ibadan using (AOAC Method 2000).

RESULTS.

Soil nutrient figure 1, 2, 3, and 4, showed the mineral composition of the two states at different season and soil depth studied. Figure 1 showed that soil depth between 5-10cm has the highest percentage of nitrogen, phosphorus, calcium, magnesium and potassium during dry season compared to other depth. It also follow the same pattern during wet season for the two states.

DISCUSSION.

The mineral composition of the two states indicated higher concentration of minerals at soil depth 5-10cm. Only potassium which, is also found at 10-15cm depth. This may be due to leaching.

In the two states calcium, nitrogen and phosphorus constitute the highest concentration of the minerals at 0-5 cm depth. This might be as a result of extensive use of fertilizers by farmers in the two states which might have been leached by rain to Typha infested areas. The same observation was reported by Singh *et. al.* (1976) that sometimes the chemical fertilizer applied by the farmer may not be useful to the plant rather it gets leached or washed away by rain water to lowland areas.

From the study it is recommended that the best time for controlling Typha grass is during wet season. That is the time when the grass does not bear flowers.

The soil nutrient studied at different depths in the two states showed that calcium and nitrogen have the highest percentage for the two seasons studied. This may be associated with the fact that during the wet season farmers use chemical fertilizer in their farms which gradually wash away into to Typha infested area. Therefore this study recommended that, excess use of chemical fertilizer by the farmer should be minimized if possible organic manure should only be used only.

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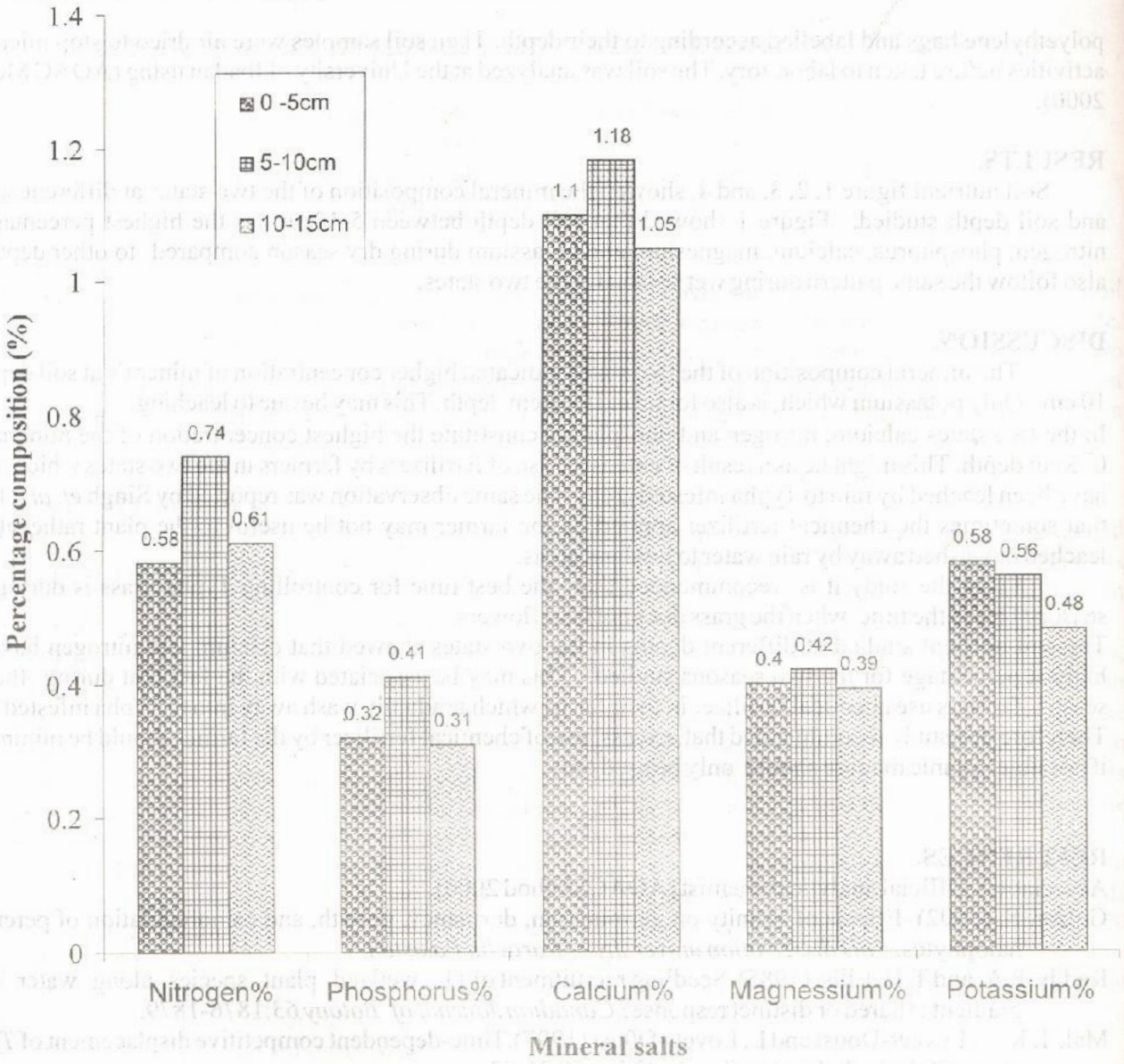

Figure 1. Mineral composition of soil from Katsina State at different depth during dry season

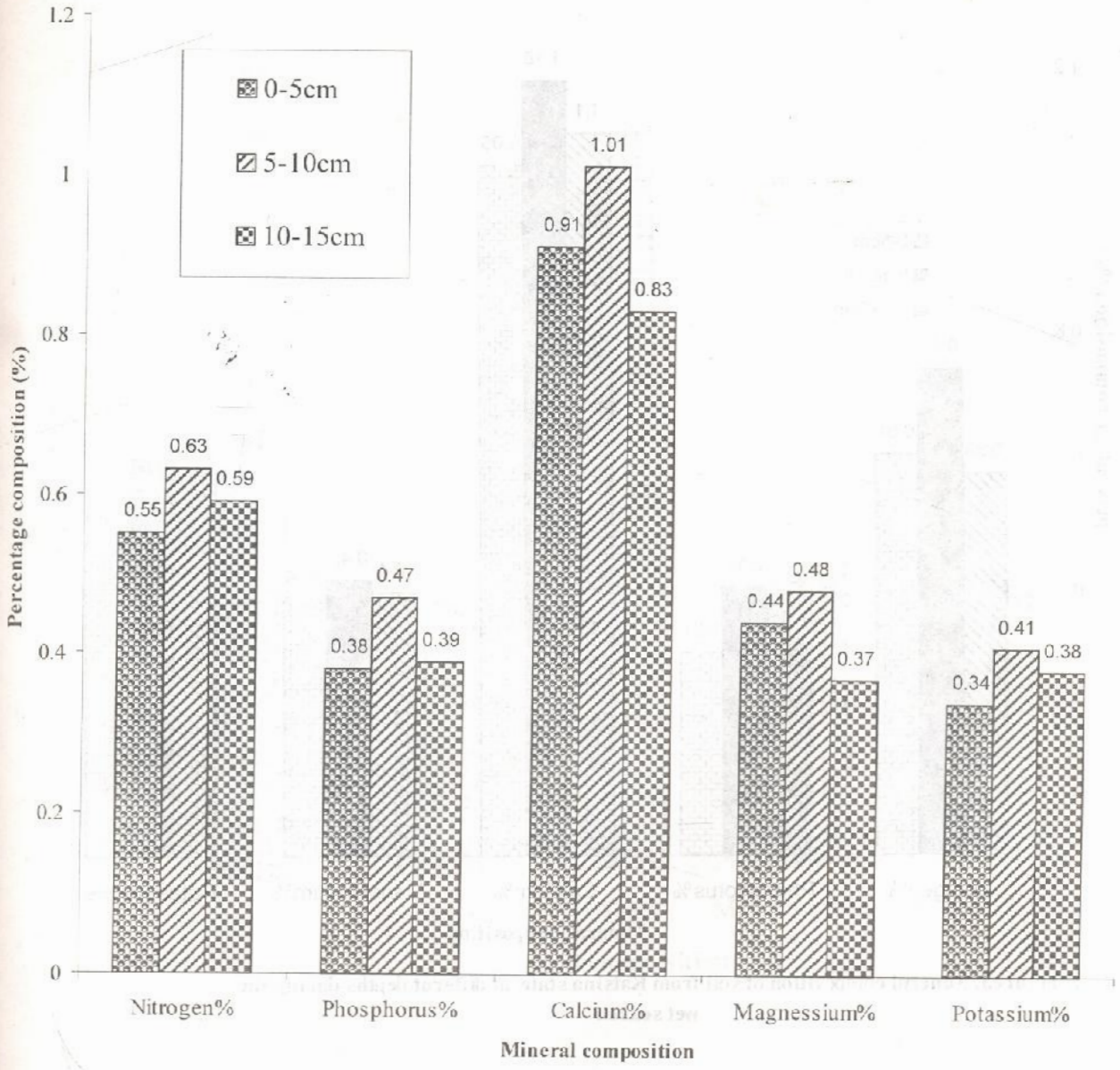

Figure 2. Mineral composition of soil from Kebbi state at different depths during the dry season

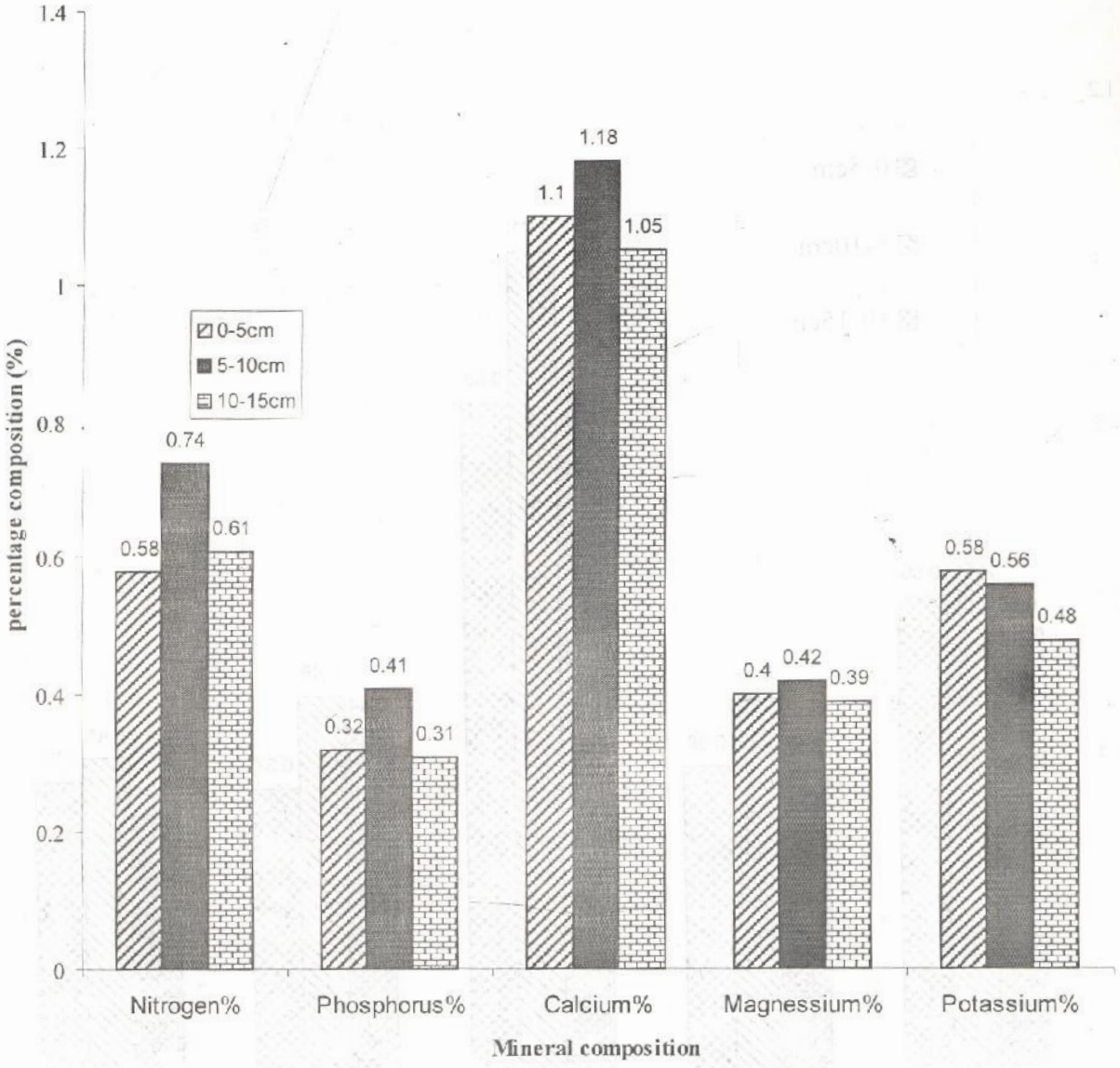

Figure3. Mineral composition of soil from Katsina state at differnt depths during the wet season

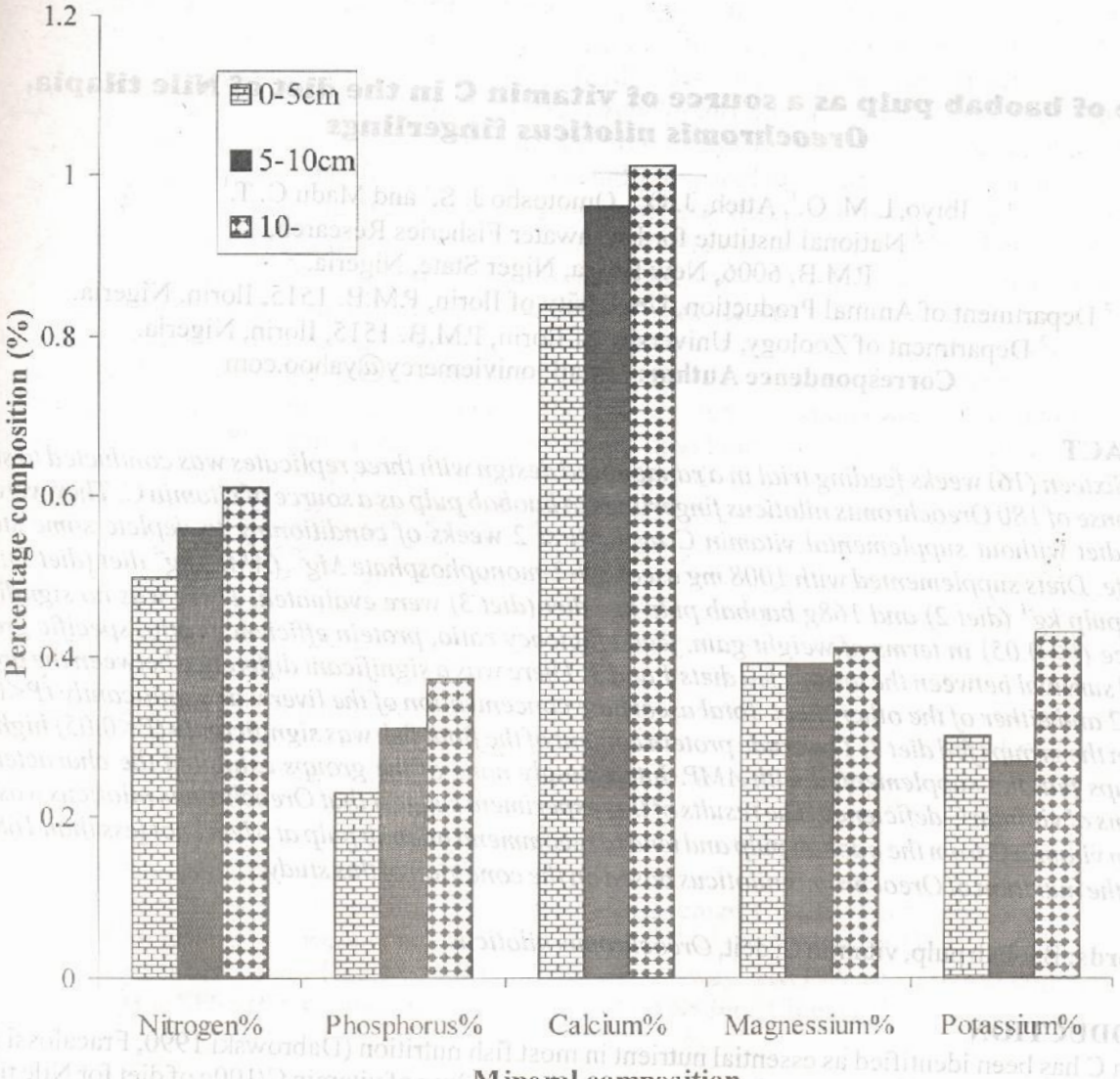

Figure4. Mineral composition of soil from Kebbi state at different depths during the wet season