HERBICIDAL CONTROL OF WATER HYACINTH AT ERE, OGUN STATE: IMPLICATIONS FOR FISH PRODUCTION.

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INTRODUCTION

Water hyacinth *(Eichlorina crassipes)* which came into Nigeria in September, 1984 (Kusemiju, 1984) has been subject of very vigorous control by governments (Akinyemiju and Imevbore, 1990) and estuarine communities (Adekoya, 1987). The mechanical control option which was first used had limited success. This has raised the issue of alternative methods of control especially as the intestation has been shown to have significant effect on fish production. (Adekoya and Ekpo, 1992). The limited success of the mechanical control method at Ere, Ogun State betwen 1984 and 1990 compelled the fishing community there to appeal for the trial of the chemical control method. A pilot demonstation of the latter was then commissioned by the Ogun State Agricultural Development Project, Abeokuta between June 1991 - July 1992.

MATERIALS AND METHODS

The site of the pilot demonstration at Ere (a channel) was first subjected to some sensitivity index mapping to ascertain the absorbance, hydrographic and impact possibilities as a means of achieving conservation non-targets aquatic flora and fauna. Preliminary studies were therefore undertaken by a team of 18 scientists alongside the representatives of the Federal Environmental Protection Agency (FEPA), Lagos the representatives of the herbicide of choice Round-up (glyphosate), Monsanto, U.S.A. and the crew of the aerial application company PMAS, Kaduna. An ethical certificate from the Ministry of Health, Abeokuta ascertaining that the balance between risks and benefits was adequate to make the chemical control advisable, was obtained.

Major aspects of assessment undertaken at pre and post-herbicide applicating periods included: Fishinerfolk activities (fisn catches); activites of women-in-agriculture; Fish pathology; Aquatic Flora and Fauna (assessment's) Aquatic weed abundance; Microbiological data; Hydrological data; medical data, residue analysis, and some ethnographic assessments.

The channel site of the herbicide application was scheduled from use and interference by other lagoon weeds while the hydrographic details were taken with some grid established to

facilitate sampling. Adequate publicity was employed to educate the community on the weed to keep away from the channel for the application period. Application was mainly by Aircraft and partly with Knapsack Sprayers.

RESULTS

The residue analysis showed a low 0.02uh/litre glyphosate dectectable only up till 20 days post - application.

The Pre-application revealed a low level of women - in - Agriculture (W.I.A.) activities which increased significantly ($P < 0.05$) after herbicide application. The fish catch/unit effort as well as the species abundance/catch which was low at the pre-application period rose significantly ($P - < 0.05$) in the post-application period. Disease levels in the fishes at the pre-herbicide application was higher than at the post-application period. There was plantation bloom and increased growth of nymphs after the herbicide application. There was, however a reduction in the abundance of host-snails of schistosomiasis which were generally found attached to the roots of the water hyacinth. All the floating water weeds were controlled by the herbicide. They eventually sank to the channel bottom. There was a significant ($P < 0.05$ increase in the Bacterial growth after the herbicide application. Temperature and pit averages reduced after the herbicide application. Oxygen concentration and conductivity, however, increased after the herbicide application. The prevalence of 16.9 urinary schistosomiasis in the population (pre-application) was treated and brought to 2.9% by the public health doctor on the team. No fish mortality was seen though.

DISCUSSIONS

The results of this study seem to suggest that there was an increase in the nutrient content of the channel after herbicide application. This implied an upsurge of available food for fish and other aquatic organisms within the channel after the herbicide application. This was possibly a major factor that would have encouraged increased fish production and migration into the channel. The fact that water hyacinth infestation also affects the water current on which fish migration depended is a likely factor. The decaying water hyacinth mass which sinks into the medium is likely to boost nutrient content, promoting the growth of fish and other aquatic animals. Increased post-an herbicide application is also likely to improve fish growth, especially alongside reduced temperature averages.

The reduction in the snail-host of schistosomiasis in the channel is possibly due to loss of anchorage. The medical treatment of the excellence in the population is an added advantage. The residue analysis revealing a 0.02UL/Litre presence of glycophosate which was no longer detectable after 20 days is a pointer to the fact that post-application residue presence was very low and was probably responsible for the fact that no mortality of fish occured throughout.

CONCLUSION

The results of this seem to suggest that herbicidal control of water hyacinth is possible, especially under specialists' management with the conservation of fish and other non-target aquatic organisms alongisde improved fish production.

It is, therefore, advisable for sites of convenience where water hyacinth is still a menace, since fish and other aquatic organisms are conserved with improved yield.

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