1. INTRODUCTION

Fish is one of the most efficient farm animals in converting feed into animal protein. But unlike other domesticated animals fish require diets high in protein. With the rising cost and decrease in the availability and production of the conventional protein sources like fishmeal, residues from slaughter house and oil cakes, a necessity has arisen to search for locally available cheap alternative protein sources with a high level of protein, which can partially or wholly replace the expensive protein component of compounded fish feed in order to minimise the production cost, which is often about a half of the total budget in intensive fish culture.

Several investigations have already been carried out using various locally available cheap sources as feed ingredients, like algae (Kitchell and Windell., 1970; Singh and Bhanot., 1970; Mathavan et al., 1976; Vivekanandan et al., 1977; Mathavan and Christopher., 1980; Gerking, 1984 and Pantastico and Baldia., 1980), higher plants (Hauser, 1975; Jan et al., 1977; Fischer, 1977; Jeyachandran and Raj., 1977; Vandyke and Sulton., 1977; Ogino et al., 1978; Venkatesh and Shetty., 1978; Dey and Sarmah., 1982; Gaighter et al., 1984; Sukumaran and Raj., 1984; Venugopal and Keshavanath., 1984; Devaraj

Similarly a number of investigations also have been made on the possible replacements using various sources like wild legumes (Raj and Kutty.; 1984; Olvera et al., 1988 and Daniel and Sahayaraj., 1990), soybean meal (Kim etal., 1984; Wilson and Poe., 1985 and Dabrowski etal., 1989), cotton seed meal (Winfree and Stickney., 1984), cidir fruit (Asgah and Bedawi.,
1988), black gram, green gram and cowpea (Desilva et ah, 1988), lupin seed meal (Higuera et al., 1988), Cassia tora leaves (Manissery et al., 1988), Phaseolus aureus (DeSilva and Gunasekara., 1989) and clitoria leaf (Raj, 1989). Some of the ingredients have also been subjected to various treatments like drying, soaking, popping and thermal treatment in order to make the substance more acceptable to the fish (Luquet and Bergot., 197G; Hoonyaralpnlin and Lovcll., 1977; Capper et al., 1982; Wee and Wang., 1987; Higuera et al., 1988; Palacios et ah, 1988 and Olvera et al., 1988).

Though the legume seed kernels constitute an important source of less expensive proteins for fish feed formulation they also have problems related to the biological utilization due to the deficiency of sulphur containing aminoacids (Polit and Sgarbieri., 1976; Evans and Bauer., 1978; Khan et al., 1979; Walker., 1982 and Lumen et al., 1986) and the presence of several antinutritional factors.

Antinutritional factors found in the legumes are phytic acids (Maga, 1982; Gad et al., 1982a; El-Mahdy and El-Sebaiy., 1982; Henderson and Ankrah., 1985; Manan et al., 1987; Han, 1988; Han and Wilfred., 1988 and Noaman et al., 1988), tannins (Bressani et
al-., 1982; Tan et al., 1983 and Ayyagari et al., 1989) hemagglutinins (or) lectins (Bender and Reaidi., 1982; Boufassa et al., 1986; Durigan et al., 1987, Antunes and Sgarbieri., 1980; Grant et al., 1982; Fernandez et al., 1982; Bender, 1983 and Tan et al., 1983), subtilisin inhibitors (Gonzalez et al., 1979), oxalates (Gad et al., 1982b), flatulent oligosaccharides (Rao and Belavady., 1978), polyphenols (Barroga et al., 1985; Durigan et al., 1987 and Egbe and Akinyele., 1990) amylase inhibitors (Granum, 1979), trypsin inhibitors (Evans and Bauer., 1978; Antunes and Sgarbieri., 1980; Al-Bakir et al., 1982 and Ravindran and Ravindran., 1988), chymotrypsin inhibitors (Kakade et al., 1972 and Tan et al., 1984) and protease inhibitors (Richardson 1981., Sgarbieri et al., 1982; Saini, 1989 and Srivastav et al., 1990).

There is also interference due to toxic substances like cyanide (Okolie and Ugochukwu., 1989) and low digestibility of proteins (Khan et al., 1979; Phillips et al., 1981; Marquez and Lajolo., 1981; Sgarbieri et al., 1982; Rahman, 1983; Nnanna and Phillips., 1987 and Rajyalakshmi and Geervani., 1990). Attempts were made to destroy or reduce the toxins and anti-nutritional factors by processes like soaking (Ologhobo et al., 1984; Youssef et al., 1987; Jood et al., 1988; Okolie and Ugochukwu., 1989 and Pawar
1980; Muindi and Thomke., 1981; Possompes et al., 1983; Ohochuku, 1985 and Friedman et al., 1985) and enzyme treatment (Henderson and Ankrah., 1985; Han, 1988 and Han and Wilfred., 1988).

Since the future of fish culture very much depends upon our ability to produce cheap but nutritious fish feed an attempt is made in this study to evaluate the efficiency of certain wild seed kernels as a protein supplement in the fish feed for Indian major carp Cirrhinus mrigala. The objectives of the study are as follows:

* Survey and collection of wild seed kernels from various parts of the state.

& Analysis of protein, fat, carbohydrate and mineral composition of the seed kernels.

* Elimination of antinutritional factors.

$Fish feed formulations along with other ingredients such as oil cake, rice bran, wheat flour etc, (Iso-protein).

Feeding trials with fingerlings of C.mrigala.

Metabolic studies of the fed fish.

Haematological studies.

Organoleptic studies.
The present investigation is solely aimed at replacing a portion of the protein materials in the diet of *C.mrigala*, one of the Indian major carps popularly reared in composite fishculture.

The replacements studied here are the seeds of *Albizzia lebbeck, Bauhinia purpurea* and *Leucaena leucocephala*. *A.lebbeck* (Vaagai) is a deciduous tree with spreading crown equal to its height. It flowers from February to April and Llic Hal, leafy, conspicuous pods have around 10 seeds. It is a native of tropical Himalaya, India, Sri Lanka, South East Asia, South China and extensively cultivated in the tropics and subtropics (Mathew, 1983). The number of seeds per kg ranges from 7000 to 9000.

*B.purpurea* (mandari) is a moderate sized evergreen tree, often bushy with warty branchlets (Gamble, 1935). It grows in the plains and upto 1000m and very often cultivated. It flowers (rose to pink) with a peak during September and its oblong, compressed, woody pods have around 10 ovoid flat seeds. It is distributed all over South East Asia (Matthew, 1983).

*L.leucocephala* (suba-bul) is a deciduous tree which flowers cream with a peak during November to March. Originally it is from the tropical America and now is pantropical and is cultivated for green manure, fodder,
Albizia lebbeck - Plant
fuel and afforestation (Mathew, 1983). The number of seeds per kg ranges from 18000 to 20,000 and it is a nitrogen fixing tree (Mac Dicken, 1988).