SUMMARY - Project RG/86/C/7

Studies were undertaken with a view to promoting neem as a natural pesticide.

Existing HPLC methods for the estimation of azadirachtin were evaluated and modified to analyse neem seeds and neem products. A low cost and rapid TLC method was developed to screen neem seeds and other products for azadirachtin

Both azadirachtin and salannin degraded rapidly when exposed to direct sunlight. Salannin was found to be extrmely sensitive and decomposed within two days while azadirachtin took 14 days to degrade completely. The degradation rate was found to be lower in the crude extraxt than in the pure form. Refrigeration in the dark extended the life time of azadirachtin to more than 6 months.

Neem kernel volatile was rich in organosulphur compounds. The constituents were similar to that found in onion flavour. The major sulphur compounds were dimethyl thiophenes and 1-propenyl propyl trisulphides. The medicinal and bactericidal properties associated with neem oil can be partly attributed to these organosulphur compounds.

Neem cake was rich in protein (40-50%). The protein content of the commercial cake was however only 15% due to the presence of seed coat. The essential amino acids were well balanced except for lysine with a chemical score of 47. No trypsin inhibitiory activity was detected though it is reported to be present in Indian neem cake.

Expelling of oil removed little azadirachtin from the kernel. The residual cake which is enriched with azadirachtin found to be a better source for insecticide formulation than the fresh kernel. Neem oil, though contained substantial quantities of salannin, will be of limited use as an insecticide due to its extreme sensitivity to light

The local commercial neem products, neem oil and neem cake were unsuitable for insecticidal formulations. Neem oil was heavily adulterated with coconut oil and neem cake had low levels of azadirachtin probably due to high temperature processing associated with screw expellers.

An integrated neem seeds processing scheme consisting of decortication and expelling the kernels with chekku at the collection sites, and processing the enriched cake at a central facility to insecticidal formulations and animal feed appears to be a viable industry.

Field trials with neem formulations were not carried out due to the unsettled conditions at Ruhuna during this period.