Teremites, (Odontotermes obesus (Hambur) and Microtermes obesi Holmgren still continue to occupy their supremacy in causing recurring losses to wheat and barley crops and limit their yields in Rajasthan and other States of India particularly where rainfed or tube-well irrigated crops are grown. The relevant approaches for termite control include pre-sowing soil application, seed treatment and post-sowing treatment with insecticides besides the extermination of mound-building termite colonies by chemical application. Of these, seed treatment occupies a special niche in view of its cheapness, convenience in handling and necessity of the chemical in meagre quantities. But before any seed treatment method is recommended it is a peremptory requisite to have an adequate knowledge of the pesticide and seed relationship - that the effective dose against the pest must not jeopardise the germination of seed.

The arrival of new compounds in the last decade necessitated their evaluation for the control of termites through seed treatment. The dearth of information on these aspects in the literature from regions agro-climatically poles apart from Rajasthan...
made it imperative to undertake studies on the efficacy of certain pesticidal applications on the control of termites in wheat and barley crops after carefully scanning their effects on the germination and plant growth to evolve tenable control measures.

The studies were conducted under laboratory, greenhouse and field conditions mainly at the Agricultural Research Station, Durgapur, Jaipur (Johan Lal Sukhadia University, Udaipur, Rajasthan) from 1976-79 to 1980-81.

Tests conducted on the relative adherence of dry pesticidal powders indicated a differential pattern of adherence to wheat and barley seed, with relatively more adherence on the latter. The actual coating of the powder was in all cases lesser than their application rates.

In the test of dry adherence of pesticidal powders at three different rates for wheat and barley, although an increased retention was observed with the rise in the application rates, no linear pattern was observed. Two per cent methyl cellulose solution gave the maximum loading followed by gum arabic and soluble starch for BHC and chlordane dust at two application rates.

The germination of wheat and barley seed in greenhouse and microplot trials was observed to be governed
by the specificity of the pesticide, dosage, formulation, seed type and the testing conditions. In case of wheat seed treatment with aldrin, endosulfan, lindane dusts and larvin wettable powder at 2 kg dry, 2 and 4 kg with sticker and emulsifiable concentrates of aldrin, endosulfan, isophenphos, malathion + DDT + BHC at dosage of 80, 120 and 160 g a.i. did not have any inhibitory effect on germination, while the rest adversely affected germination. However, in the case of barley no adverse effect on germination was observed in all the treatments except where carbaryl, BHC and lindrin wettable powders were used with sticker and lindane emulsifiable concentrate at the rate of 80 to 200 g a.i. was used. At comparable dosages, powders were more safer than emulsifiable formulations as regards germination. Further, the barley seed was found to be more tolerant than wheat to the different dosages of the tested pesticides.

The study gives the precise and detailed description of seedling toxicity symptoms following insecticidal application for the first time for certain new compounds.

The observations on the mean emergence period of wheat and barley subsequent to seed treatment by powder and emulsifiable formulation at different dosages in green-house tests revealed that in case of emulsifiable formulations the period of emergence was delayed in
increasing rate of application. As regards powders, the same trend was observed with BHC 5 per cent, heptachlor 5 per cent, malathion + DDT + BHC (3:3:2) per cent, isophenphos + TATO (30:10) per cent and larvin 75 per cent wettable powder in case of wheat. In case of barley, only BHC and landrin 50 per cent wettable powder (all three dosages) and carbaryl 50 per cent wettable powder at 2 and 4 kg dosages with sticker delayed emergence while the rest of the treatments did not interfere with germination.

The effect of pesticidal seed treatment in wheat and barley using the criteria of seedling height, seedling dry weight, germination and productive tillering indicated the safe dosages of some of the tested pesticides. The observations indicated the order of preference in favour of dry seedling weight as compared to top height, between the two parameters of plant growth used as indicators to assess the toxicity of compounds under green-house tests.

The trials conducted for two seasons for the control of termites in wheat and barley under field conditions by pesticidal powders (with or without stickers) and emulsions, taking into account the germination, plant and tiller damage, revealed the
superiority of all the treatments except BPMC and carboxin over control. In both the crops, the powder and emulsifiable formulations of aldrin besides endosulfan emulsion proved efficacious. Further experiments on the application of insecticides through irrigation water to the standing wheat crop indicated the effectiveness of aldrin, heptachlor and lindane at the rate of 400 g a.i. and chlordane at the rate of 600 g a.i. in controlling termite infestation. The attempts to destroy the colony of mound inhabiting termites, Odontotermes obesus revealed that drenching of aldrin 30 emulsifiable concentrate at the rate of 20 ml and heptachlor 2C emulsifiable concentrate at the rate of 30 ml added to 30 litres of water per cubic metre of mound volume gave the best results.