

## Controlled release formulations of soil applied pesticides

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Pesticides applied to the soil are subject to various factors such as leaching, evaporation and phytolytic, hydrolytic and microbial degradation. These factors reduce the effective life of soil applied pesticides. This has necessitated higher application rates or repeated application to achieve the length of control required. It has also restricted the type of chemicals which can be used.

Consolidated Fertilizers Limited (CFL) is developing a formulating technique which enables the sustained and controlled release of pesticides.

### Methods

The technique involves the incorporation of the pesticide in a thermoplastic matrix. Formulations are produced as granules and sizing can be varied from 1 x 1 mm to 3 x 3 mm which is suitable for application through conventional granule applicators. Release of the pesticide is by a leaching mechanism operative in moist soil.

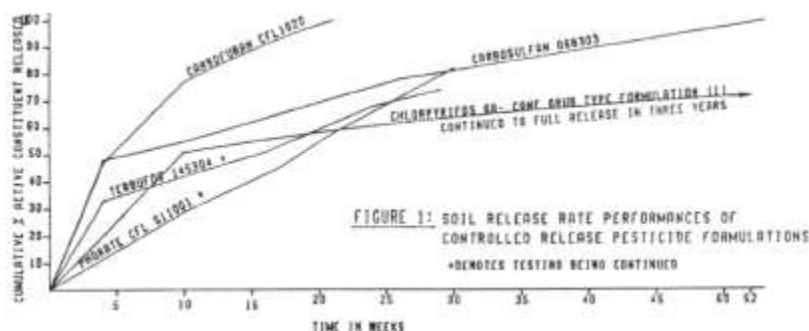
### Results and Discussion

As a result of four years of co-operative research with the Bureau of Sugar Experiment Stations (BSES)(1), CFL have introduced suSCon\* 140C in 1984 for commercial usage. suSCon 1400 is a controlled release granule formulation containing 140g/kg chlorpyrifos. Applied at 4 kg a.c./ha it is registered in Queensland in sugar cane to control five cane grub species - Lepidiota frenchi, Ts consobrina, 1, crinita, Dermolepida albohirtum and Antitrogus mussni for a two year period. Third year data will be available at the end of 1984.

The formulation technique used to develop suSCon 140G is compatible with a wide range of pesticides. To date CFL have concentrated on developing formulations containing chlorpyrifos, terbufos, phorate, carhosulfan, carbofuran and fonofos. Formulations containing fungicides, herbicides and micronutrients have also been successfully produced.

Soil release rate studies carried out by CFL indicate that formulations can be designed to release their active content at various rates. Some examples of formulation release rate performances are shown in Figure 1.

Results obtained indicate that controlled release formulations using this technology are capable of replacing the persistent organochlorine insecticide uses in soil. New applications for systemic insecticides, nematicides and fungicides applied to the soil should be possible when used in these formulations.



(1) Hitchcock, B.E., Chandler, K.J. and Stickley, R.D.A. 1984. Proc. Aust. Soc. Sugar Cane Technol., 87 - 94.

\*suSCon is a Registered Trademark.