

## TERMITES

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TERMITES are commonly known as "white ants". These insects form a pest on coconut seed-nuts in nurseries and transplanted seedlings. Termite infestation and damage can occur from the time nuts are laid in nurseries and subsequently, as transplanted seedlings even up to about one year from transplanting.

In the field, affected seedlings could be detected by observing the withered shoot: although the first damage may be brought to notice only after a seedling or two has succumbed to the attack, the observation will still be helpful as a sufficient warning, to treat the area and thus avoid further damage.

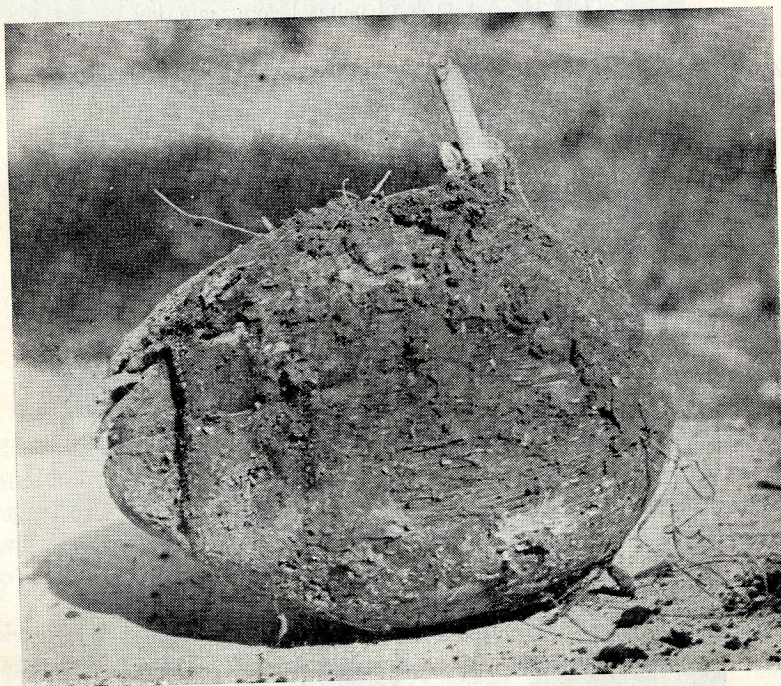


Plate IV—Note the termites on the seed-nut

A dead seedling can easily be noticed; but the insects, if they have caused the death of the plant, could be observed by diligent inspection. Under field conditions, it will be easy to recognise termites in mass rather than as individuals, for only rarely will an individual be seen.

There are several kinds of termites: they differ in form and structure, in adaptation to their habits. They can be grouped into two major types. (1) WOOD DWELLING TERMITES (2) EARTH DWELLING TERMITES (SUBTERRANEAN). Those that damage coconut seed-nuts and seedlings are of the subterranean type.

All types of termites live habitually in narrow galleries or passageways. The exploratory nature of their instincts are shown in the construction and use of tunnels which they form: and by this method, they disperse themselves into considerably large areas.

An important characteristic in their lives is that they live in colonies. As they live in burrows they are very safe from their natural enemies. Further, the potential immortality of the colony and a continuous food supply, are factors favourable to the increasing capacity of these insects for continuous and extensive life; and damage to seedlings.

Moisture and temperature are important environmental factors in the development and multiplication of termites. Local and seasonal distribution of these insects are largely influenced by these factors. In heavy rainy weather their appearance on the ground is less than in the dry weather. It is during the dry season that heavier damage is caused to seed-nuts and seedlings.

It has been observed in some nurseries where termites have been present in the lower depths of the soil, that they have later appeared on the surface, with the watering of the seedlings. Thus, they instinctively seek environmental conditions favourable to their existence and multiplication.

#### **Economic Importance in Coconut Plantations**

In one nursery it has been observed that about 70 per cent of the non-germinated seed-nuts were due to termite attack. The developing seedlings in nurseries can also suffer damage from termites and even be killed before transplanting. In one nursery, such loss amounted to as much as 15 per cent of the germinated seedlings.

Where seedlings are transplanted on to the field, where termites are present, the loss of seedlings can be considerably high. In one estate where no control measures were adopted, it is on record, that 86 per cent of the seedlings died as a result of termite attack.

### Occurrence

In all coconut growing districts, termites are generally present. Heavy infestations have been frequently reported from the Hambantota district, in the Southern Province and Kurunegala district, in the North Western Province.

In new clearings, termites may appear in abundance, the populations increase probably with the accumulation of organic matter from the felled jungle.

Clay soils are a popular habitat of subterranean termites. In these soils, where they are present, they appear easily when a wet coconut frond or cadjan is placed on the ground.

### Identification

Termites are like ordinary ants in appearance, but little larger and whitish or cream coloured. Where a seedling has been killed and if that be due to termites, it may not be difficult to find the insects on the dead plant itself or in the soil near it. If by superficial observation the insects are not seen, it is obviously necessary, to dissect the dead plant for close inspection, to look for termites. The soil around the plant may also be dug out and examined.

Several of them may be seen together in company as they are individuals composed of a colony. They may look alike in aggregation but groups of them differ structurally as they perform different functions in the colony.

Those that fetch food are known as "workers" and they usually outnumber others in the colony. They possess mouth parts that enable them to bite and collect feeding material. In the event of an invasion by an enemy of the termites, particularly the ants, some of those in the colony are adopted to fight and defend. They possess long elongated heads and mandibles (mouth parts) which resemble piercing weapons. In some species the so-called 'soldier' termites may be lacking.

The reproductive group performs the function of reproduction. One individual is specially produced with the potential capacity, when fully developed, to lay a large number of eggs. With its swollen body, laden with eggs, it has no other function to perform, principally, other than egg laying. Besides this unique individual, sometimes called the "Queen", there are a few supplementary reproductive individuals who could become the "Queen" in the event of the loss of the existing one.

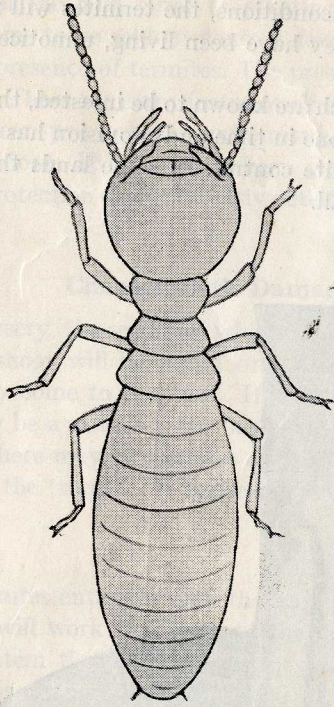


Plate V—A Worker Termite

The eggs produce young termites called "Nymphs". These nymphs in course of development shed their skins at different times (molts), usually about 4 to 10 times before they get differentiated into adults.

In some colonies, the reproductive group which possess the swarming habit, when mature, produce wings and fly out into the open. This phenomenon happens seasonally.

It has been observed that these winged forms, usually swarm out with the first showers of rain after a dry spell, particularly at dusk time. The insects in flight get attracted to lamps lit at night. In the order of events, in the life of these insects, they will shed their wings and those who escape death from their perilous sojourn into the open will return to soil to organise new colonies.

#### **Early Detection is Important**

Some lands are heavily infested, others are not to that extent. In lands which at first do not appear to have termites, it will be found to be infested, when the surface soil becomes dry or the sub-soil becomes

very wet. Under those conditions, the termites will move on the surface from beneath where they have been living, unnoticed.

In those lands which are known to be infested, the planning of control treatments has to be done in time and provision has to be made for items of expenditure in termite control. In some lands the attention required may be less or not at all.

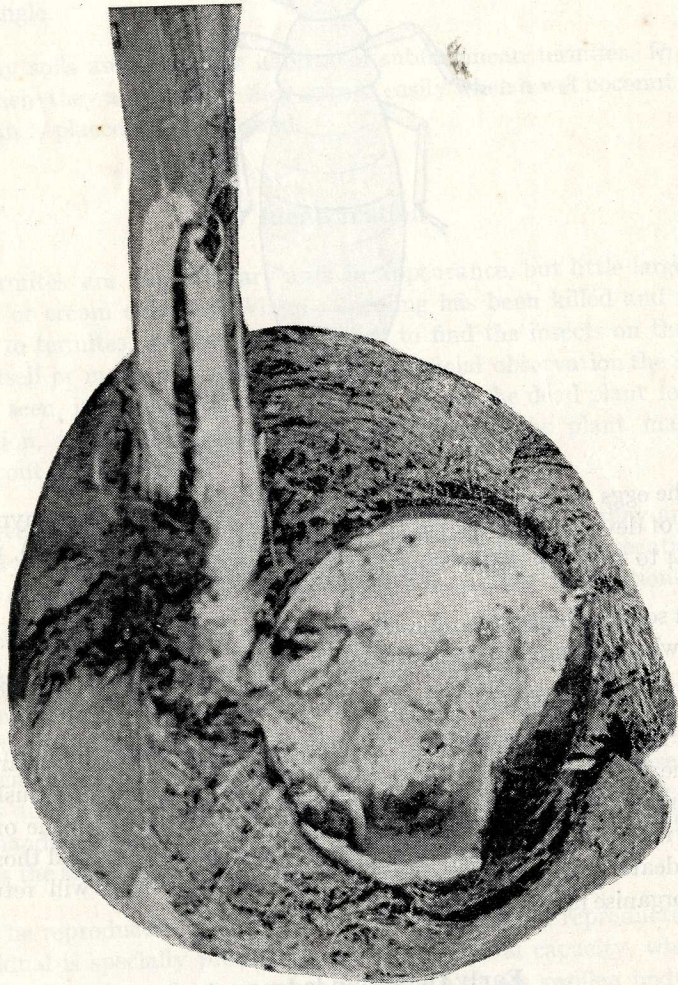


Plate VI—Section of termite affected seedling

An inspection of the field, prior to planting, is therefore, evidently necessary; but it seems to be seldom done. A few sample diggings in the soil may reveal the presence of termites. The presence of termite mounds should also be noted. There are many instances of termite damage reported, which could have been prevented or minimised, if early detection and treatment had been done. It has always been emphasized that the foremost work in Crop Protection should be early detection of pest infestations.

### **Characteristic Damage**

In a coconut nursery, the seedlings which are killed could be detected easily. The central shoot will be found dry. The dried up shoot when pulled out, will easily come to the hand. If the seedling is uprooted and examined, there may be a wound at the base of the 'stem'. The bud will be found decayed. There may be termites on the husk of the seed-nut or inside the wound on the 'stem'. If the seed-nut is split open, the inside may be decayed.

Usually, the termites enter through the husk region of the seed-nut. From thereon, they will work their way to the "collar" of the seedling. Inside the decayed stem there may be an incrustation of soil. The soil inside these wounds is characteristically found in termite damaged seedlings. It is useful to observe this when damage due to rats and bandicoots is searched for. The damage done by those pests are very similar to damage done by termites, but the absence of soil in the wounds caused by them, should be expected.

### **Control Measures**

#### **(1) Cultural:**

- (i) By constantly disturbing the soil, that is, by harrowing the soil or by manual tillage, termite populations will dwindle.
- (ii) Destroy ant hills. They should be levelled to the ground.

#### **(2) Chemical:**

- (i) Either before or even after planting the seedling, an insecticidal treatment is recommended.
- (ii) Generally, ALDRIN and CHLORDANE insecticides are very effective. They are available from Firms dealing with Agricultural chemicals. The dilution and dosage will depend on the formulation.

- (iii) In the Schedule, given below, there is a list of formulations suitable for use. List of suppliers of these insecticides, dilutions and dosages recommended are also given. Any one of these insecticides may be used.

Whichever chemical is used—

- (iv) Treat each planting hole separately.
- (v) To apply the dilution, immediately round the seedling, use a watering can, with a 'rose'.
- (vi) After intervals of one, two and four months, examine soil to see whether termites are present. Repeat treatment only if necessary.
- (vii) Applications can be done at any time except when heavy rains are present.

#### SCHEDULE

#### INSECTICIDES FOR THE CONTROL OF TERMITES (White Ants)

<i>Name of Insecticide</i>	<i>Place Available</i>	<i>Dilution</i>	<i>Dosage for Seedling</i>
Aldrex 2	Shell Co., Ltd., P.O. Box 280, Colombo.	1 Tablespoonful in fifteen (15) gls. of water	1 gl. of diluted insecticide per seedling
Aldrin Misci- ble Oil	Mackwoods Ltd., P.O. Box 91, Colombo.	1 Tablespoonful in six (6) gls. of water	1 gl. of diluted insecticide per seedling
Intox '8'	A. Baur & Co., Ltd., P.O. Box 11, Colombo.	1 Tablespoonful in six (6) gls. of water	1 gl. of diluted insecticide per seedling
Chlordox	Mackwoods Ltd., P.O. Box 91, Colombo.	1 Tablespoonful in six (6) gls. of water	1 gl. of diluted insecticide per seedling

This list is not complete and there may be other suitable insecticides in the market. At present, the above chemicals can be recommended.

Paradichlorobenzene (PDCB) was formerly recommended by the Coconut Research Institute in the treatment of planting holes, when seedlings are transplanted as a preventive against termite damage.

In view of cases brought to our notice where toxic effects on seedlings have been observed, this chemical is now not recommended. Safer insecticides, recommended in the Schedule above, are available.

*Note by the Editor.* Termites damage seed-nuts planted in the nursery as well as seedlings transplanted in the field. The present practice is to treat nursery beds and seedholes where the seedlings are planted with suitable insecticides. As most of the insecticides listed in this article are said to have persistence effects lasting about two years, if a suitable method of treating *seed-nuts* can be determined, then treatment of seed beds and seedholes can be dispensed with, thereby saving considerable labour and expense.