

The

**OPRA**tive Word

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## Delayed planting as a strategy to reduce pest damage when replanting oil palms

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### Introduction

Excavators are used to mechanically fell oil palms when they are due for replant, typically taking place after about 20 years of Fresh Fruit Bunch production (FFB).

Ground-based observations of the standing oil palm canopy do not give an accurate view of pests that might be present among the fronds, especially where there is little visible damage to the fronds as this may suggest that there are no pests present. This is sometimes not the case, and frequently new plantings are invaded by insect pests especially sexavae and stick insects that move across from the recently felled palms.

If felling and ground preparation is done effectively, there will be very few suitable green food sources available for pest insects (e.g. sexavae, *Eurycantha* or bagworms) remaining on the felled palms as the fronds dry out. By disturbing the ground and delaying new planting by as little as two weeks, any potential infestations of sexavae may be prevented by starvation (Figs. 1 and 2).

Any pests leaving the felled palms and searching for fresh food will be exposed to predation by birds, reptiles, amphibians, small mammals and predatory insects such as ants and beetles.



Figure 1. Replanting: Malilimi Plantation, March 2007.

To investigate the survival of two genera of sexavae, the following trials were based on the assumption that there



Figure 2. Replanting: Bebere Plantation October 2007.

may have, or have recently been infestations of sexavae in nearby palms, or in the palms that are to be felled.

### Methods

Three simulated trials were carried out using separate groups of 101, 100 and 100 sexavae respectively from two main genera of sexavae, *Segestes decoratus* and *Segestidea defoliaria*.

The insects were collected in March 2007 from three different oil palm plantations (Garu, Malilimi and Dami) and brought back to the laboratory at PNGOPRA, Dami OPRS. These sites were chosen as each was inhabited by a different sexavae species (i.e. Garu with *S. decoratus*, Malilimi with *S. defoliaria*, while both species occurred together at Dami). The insects from each locality were released into large outside cages (about 1.8m x 1.8m x 2.0m) covered with green shade netting (25% shade). They were not given food or water except naturally available rain water. Rainwater is actively imbibed by all stages of sexavae, and stick insects. Only in the first trial from Garu and Malilimi, was water provided using a hand spray. Day 0 was the day the cages were set up with insects.

### Results

No *S. decoratus* deaths occurred during the first two days (Fig. 3) while in *S. defoliaria* there were no deaths during

the first 4 days, after which deaths occurred more rapidly than with *S. decoratus*, (Fig.4), however the times to reach 100% mortality were similar at between 7-11 days (Figs.3-5).

Fifty percent (50%) of the insects had died between Days 4-6. In the second trial, deaths began slightly sooner, with 50% dead by Day 4 and 100% mortality after 7 days for both species (Fig. 5).

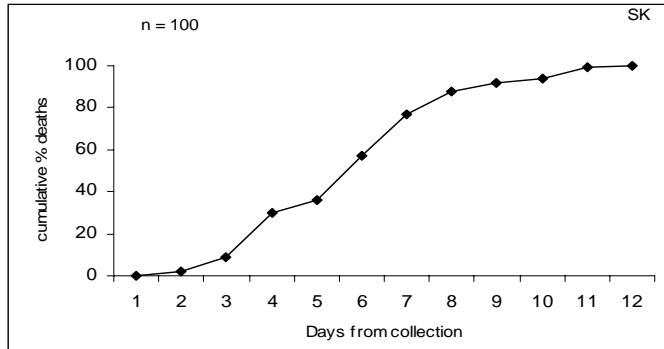


Figure 3. Garu Plantation: *S. decoratus* deaths (cumulative)

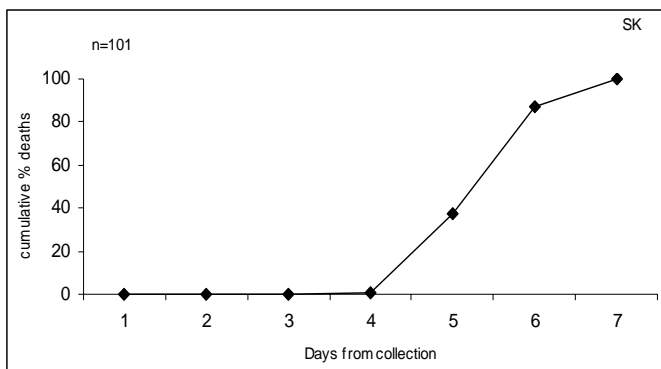


Figure 4. Malilimi Plantation: *S. defoliaria* deaths (cumulative)

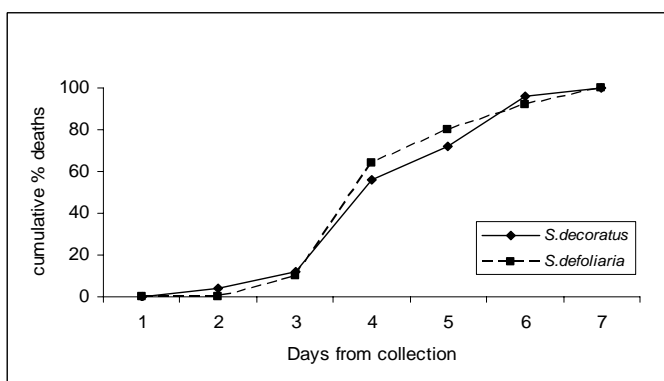


Figure 5. Dami Plantation (Buluma field): *S. defoliaria* and *S. decoratus* deaths (cumulative)

## Discussion and recommendations.

These trials show the importance of food availability to sexavae, as if this is denied for two weeks, they die rapidly during this time. Both sexavae genera found in West New Britain responded similarly to starvation, and as a result of these trials we **recommend** the following:

- 3! After palm felling has taken place, new oil palm seedlings should not be planted for at least two weeks after the felling operation is complete.
- 3! During periods of rainfall, when old fronds do not dry out rapidly, 3-4 weeks is advised.
- 3! Cleaning the inter-rows mechanically will also reduce the chance of re-infestation, by exposing eggs, killing insects and removing any other possible food source. It will also mean that any insects moving through the inter-rows will be exposed to predation.
- 3! Pest surveys should be undertaken **prior** to felling if replanting is due in areas where the palms due for felling are in close proximity to productive oil palms.

If field surveys find that pest populations are present and pose a threat, then they should be controlled through targeted trunk injection (TTI). Normal PestRec instructions from PNGOPRA are followed to ensure that pests present do not move out from felled palms on to the newly planted palms. If there is a risk of any movement on to the young palms, then perimeter rows (on advice from PNGOPRA) should be treated using TTI at least 10 days before they are due to be felled.

**NB.** These options are not recommended for smallholder Village Oil Palm (VOP) or Land Settlement Schemes (LSS), as these palms in these blocks are usually poisoned and left standing, and are not mechanically felled. The vegetation growing among these palms is not removed during poisoning, and therefore a potential food source will remain, and eggs that are laid in frond bases or soil will remain protected.

In smallholder blocks a pest survey should be carried out prior to any planned palm poisoning taking place, as any pest populations already present may move into neighbouring phase plantings once the host palms have been poisoned.

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