



WILLGRO PROCUREMENT SERVICES SOUTH AFRICA

Licensed exporter. Contact us for quotes on spares/ machinery/ office or household goods, whatever you may be looking for.

jeff@willgroauto.co.za
+27828798020

Managing Cold Injury, Frost, Pests and Diseases

By Chinheya Cleopas, Head Plant Health Services

"Enabling your choice of variety to attain its yield potential"

A healthy tobacco seedling goes a long way to ensure a healthy tobacco crop in the field. However, cold damage, frost, pests and some diseases can cause damage to tobacco seedlings hence making their management important. Management options include a combination of cultural practices and application of pesticides and/or biological control agents.

1. COLD INJURY AND FROST DAMAGE

Cold injury is quite common for early sown tobacco seedbeds in slow growing areas. Upward leaf cupping and puckering are the main symptoms (Fig 1). The affected seedlings may be uniformly distributed through the seedbed or, more often, the injury may occur in just a few cold spots. Cold injury results more from large differences between day and night



Fig 1. Leaf cupping as a result of cold damage.

temperatures and less from a very cold night. Frost damage is more frequently associated with rapid temperature changes early in the morning. Diligent temperature management is the key to reducing cold injury, but even with the best management mild cases may occur. While cold injury sometimes slows growth, it does not result in permanent harm to the plants while frost injury most often results in complete losses.

Management of cold injury and frost

June-sown seedbeds particularly in frost prone areas should be grown under plastic tents. The recommended covering is UV resistant 75-micrometre gauge clear polythene sheets. The material, which should form a semi-circular tent or tunnel 90 cm high, will cover a bed 1,35 m wide. An easy method of supporting the cover is to use wire hoops. The hoops are spaced 1,0 - 1,5 m apart along the length of the bed and pushed into the ground as far as the loops. Two hoops are used at each end of the bed to add strength. The hoops are stabilized by a length of string that runs from hoop to hoop and is wrapped once around the apex of each. The string is kept taut and tied to stays at each end of the bed.

The covers must be left on permanently for most of the seedbed phase and opened only for watering and routine sprays. On clear, hot days the ends of the covers should be opened to ventilate the beds and so avoid temperatures

above 35°C (measured with a shaded thermometer at plant level). The surface of the beds under plastic tents should be mulched in the same way as open beds, but avoid too dense a cover with grass mulch that will result in leggy seedlings. Alternatively, nappy liner may be used to reduce rapid evapotranspiration.

2. INSECT PESTS AND DISEASES AND THEIR CONTROL

The first line of defence in managing insect pests and diseases is total exclusion of the pest and disease before establishment. The following are some of the most important insect pests and diseases that the grower may encounter as well as their control measures.

2.1 INSECT PESTS

Fungus gnat (*Sciara sp.*) - Fungus gnats are mosquito-like insects, grey to black in colour, with long legs and generally clear wings (Fig 3). The larvae then burrow into the root zone, feeding on seedling roots and thereby causing poor growth, wilting, yellowing and seedling mortality in extreme cases. This is a serious pest in float beds until seedlings are at least 4-5 weeks old and pest monitoring is, therefore, of



Fig 3. Adult fungus gnat (left) and larvae (right). The larvae are the damaging stage of this pest, and these feed on the roots of seedlings while the adults only feed on the algae.

Scouting/monitoring the Fungus gnat

Always visually inspect floatbeds for flying adults or damaged plants. Wave a hand above the seedlings to check if an infestation has started, and if adult gnats are present, they will be seen flying off the seedlings. Because of the significance of this pest, Kutsaga developed an easy to use and inexpensive yellow sticky trap called Gnatbuster (Fig 4), for control of the pest. Since the larvae constitute the main damaging stage they can be chemically controlled by drenching with Cyromazine at the rate of 30 g/100 litres water or Imidacloprid + β cyfluthrin at a rate of 60 ml/100 litres water.

Cutworms (*Agrotis sp.*) - Cutworms are incidental pests which usually cause damage during and soon after hardening. Recommended insecticides should be applied, making sure

that the insecticide reaches the media surface, to achieve effective control.

Leaf-miner and leaf-eaters - These include the leafminer *Phthorimaea operculella* and leaf eaters such as the lesser armyworm *Spodoptera exigua*, semi-loopers *Trichoplusia orichalcea*, Laceworm *Spodoptera littoralis* and several species of grasshoppers. Broad spectrum insecticides such as Dimethoate and Imidacloprid + β -Cyfluthrin can be applied to control the above pests.

Aphids - In addition to direct damage through sucking, aphids also transmit virus diseases such as PVY and Bushy top which only become apparent after transplanting into lands. It is important to sow aphicide treated seed as this ensures protection from

aphids for at least six weeks after sowing. However, should aphids be observed in the nursery, they MUST be controlled immediately using recommended systemic aphicides in the Flue-Cured Recommendations.

2.2 DISEASES

Pythium and *Rhizoctonia* (damping-off), *Fusarium* and *Phytophthora* are some of the soil-borne pathogens that are of importance in the seedbed. Currently, *Pythium* is one of the most serious problems in the floating tray system, and effective chemical and biological control measures are recommended.

The first line of defence in any Integrated Pest Management program (IPM) is good sanitation. Sanitation - Sanitation is of paramount importance (Fig 6 below) and the following must always be adhered to.

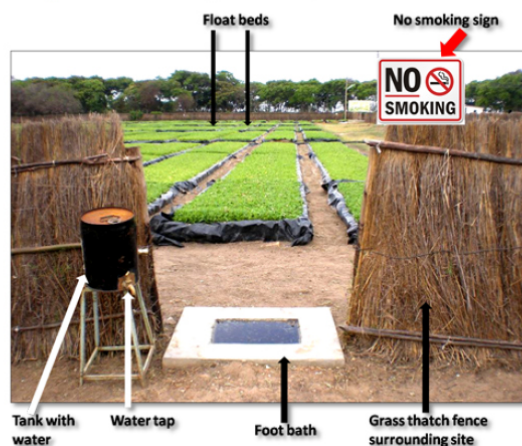


Fig 4. Yellow sticky trap for monitoring and mass trapping fungus gnat in the float system.

Pythium root rot - Seedling root rot, caused mainly by *Pythium myriotylum*, is one of the major challenges in the floatbed seedling production system. Symptoms of the disease include yellowing of the leaves, wilting and rotting of the roots (Fig 7). Fungicides such as metalaxyl-m + mancozeb, fenamidone + mancozeb, strobilurins and strobilurins + triazoles should be applied as preventatives from 3 weeks after sowing or as curatives after the disease has already established.



Fig 7. *Pythium* root rot leaf symptoms (top), and roots become brown and slimy (bottom) before the leaf yellowing symptoms appear

***Rhizoctonia solani* damping-off of seedlings – sore shin** - This is a problem in both the float and conventional seedbeds. Seedling deaths are observed during the very early stages of seedling growth, around three to six weeks after germination. The first symptom is a small water soaked lesion on the stem base that rapidly becomes brown and sunken. The lesions constrict the stem and stems break-off (Fig 8). Lesions continue to grow throughout the stem and leaves causing them to turn brown and die, and unlike in the case of *Pythium* damping-off, seedlings usually die without

the leaves first yellowing and the root system can remain clean and intact with only the base of the stem turning brown. The problem is aggravated by high temperatures and high humidity, and if no corrective measures are taken, seedling mortality can be severe.



Fig 8. *Sore shin (Rhizoctonia solani)* infection in the seedbeds. Disease development and early symptoms (top left and middle), and later infections on older seedlings (bottom left and right).

A biological control agent. *Trichoderma harzianum*, can be used for the management of seedbed pathogens, and this is available from Kutsaga. The fungus must be incorporated into the growing media for floatbeds or into the ground for conventional seedbeds. It can also be applied as a drench after seedling emergence.

For more information, contact Kutsaga Research Station's Plant Health Services Division VOIP 0868 800 2604 or Email: cchinheya@kutsaga.co.zw

ZiMunda Farming

37 Victoria Drive, Newlands, Harare
Zimbabwe

You received this email because you signed up on our website or made a purchase from us.

[Unsubscribe](#)