Cooperative Research Centre

COTTON information sheet

Farm Hygiene for Disease and Weed Control March 2000

Come Clean - Go Clean

Prepared by pathologists and weed scientists from the Cotton CRC

When it comes to diseases and weeds: PRACTISE BEST PRACTICE WHENEVER POSSIBLE !!

Prevention is better than cure! - It is better to prevent the introduction of a disease, weed or pest than to try and control it after it has been introduced and become widespread. Anumber of disease and weed problems are currently limited to particular regions or farms within regions ie;

- Cotton anthracnose has been recorded in Queensland and north-western Australia but not in NSW
- Fusarium wilt of cotton is established in most parts of Queensland and NSW but has not been observed in the Lachlan valley of NSW, the Emerald area of Queensland, the Northern Territory, Western Australia or north Queensland
- Tropical rust of cotton has been recorded in north Queensland and the Northern Territory but not in NSW, central or southern Queensland
- Black root rot of cotton is widespread in NSW and southern Queensland but has not been recorded in north Queensland and north-western Australia
- Grey mildew has been observed in north-western Australia but not in cotton production areas of NSW
- Texas root rot; hypervirulent strains of the bacterial blight pathogen; defoliating strains of the verticillium wilt pathogen; leaf curl and leaf crumple gemini viruses and many other serious diseases of cotton have not been observed in Australia
- Anoda weed and velvet leaf are spreading and are now present on isolated properties in both NSW and Queensland.

It is important that efforts be made to prevent the introduction of weeds, pests and diseases into new areas and to minimise the further spread and build-up of weed, pest and disease populations once they have been accidently introduced into an area or onto a farm.

Pathogens can be spread in soil and trash attached to vehicles and machinery !! (examples follow)

- Dirt was collected from underneath 16 visitor's vehicles parked at the Australian Cotton Research Institute during a Namoi valley field day. The samples were tested for the black root rot and Verticillium wilt pathogens and for species of Fusarium
- 3 of the 16 vehicles were carrying the black root rot pathogen!!
- 12 of the 16 vehicles were carrying the Verticillium wilt pathogen!!
- 15 of the 16 vehicles were carrying species of Fusarium! (not the cotton fusarium)
- Department of Primary Industries (QDPI) staff at Indooroopilly collected soil from around the wheels of the car following a trip to Dalby to collect samples for their work on Fusarium. The soil was placed into pots in the glasshouse and seed of a susceptible cotton cultivar was planted. Symptoms of Fusarium wilt developed in the seedlings.

'Best Practice' involves choosing the best option when a decision has to be made. 'Best Practice' is not always possible, and sometimes not practical, but attempting 'Best Practice' will maximise economic and ecological sustainability on the farm.

BEST PRACTICE

FOR COTTON GROWERS WITH FIELDS WHERE SIGNIFICANT DISEASE OR WEED PROBLEMS ALREADY EXIST.

The following principles should be applied to min - imise the spread of Fusarium wilt, Anoda weed or velvet leaf, Black root rot, etc.

- Grow disease resistant cultivars where possible
- Growers should advise neighbours, visitors, contractors, suppliers etc. to take extra precautions
- Avoid vehicle and machinery movements when road conditions are wet and muddy
- Consultants, when on-farm, could use a vehicle (and maybe even footwear!) supplied by the grower and retained on-farm
- Machinery should be cleaned after working in the affected field - before going into other unaffected fields
- Module trucks should be cleaned after transporting modules from affected fields and before transporting modules from unaffected fields
- Gin trash and motes arising from seed cotton modules from affected fields should be burnt. The first load of gin trash from subsequent unaffected seed cotton should also be burnt
- Modules, cotton seed and husks should be transported securely with no 'dribbling along the highway'
- Crop by products and residues should be disposed of responsibly
- The industry should be kept informed of those areas where significant disease or weed problems exist. Such information should indicate areas rather than individual farms.

BEST PRACTICE

FOR ALL COTTON GROWERS & THOSE IN SERVICE INDUSTRIES.

- Tail-water and run-off water should be retained on farm and kept out of river systems
- Machinery and vehicles coming onto or leaving the farm should be free of soil and crop debris. Best results are achieved by using a pressure cleaner followed by a spray with a detergent-based disinfectant such as Castrol 'Farmcleanse'
- Control weeds within and around each field
- Use an appropriate crop rotation strategy
- Maintain good nutrition
- Minimise spillage and loss when transporting modules, hulls, cotton seed or gin trash.

Photo1. Mud attached to vehicles and machinery is a major transmission path for diseases and weeds

CLEANING DOWN !!!
'GO CLEAN' SO THAT YOU CAN 'COME CLEAN!'

A thorough clean-down with compressed air will generally be sufficient to reduce the risk of dispersing disease propagules. All dust and plant debris should be removed.

If there is soil / mud attached to the machinery or vehicle OR if the vehicle or machinery has been used in an area where Fusarium is known to be present - then it will be necessary to use a pressure cleaner. All soil and plant debris should be removed and an appropriate disinfectant applied.

Staff at QDPI, Indooroopilly have evaluated a range of disinfectant / detergent options for the elimination of Fusarium contamination when cleaning vehicles and machinery. Their results indicated that best disinfection was achieved by thorough washdown then chemical disinfection. Ideally, machinery should be thoroughly pressure washed – a detergent degreaser such as Castrol 'Farmcleanse' should then be applied, left for a short period, and then rinsed off. Castrol 'Farmcleanse' which is a biodegradable, agricultural detergent degreaser with anti-fungal properties, has been the most effective product tested to date. (See - CRC Information Sheet "Detergent based degreaser for disinfecting machinery to reduce the spread of Fusarium wilt of cotton March 2000")

Clean-downs should be performed away from crop production and heavily trafficked areas, preferably on a hard surface which can be hosed down. Care should be taken not to contaminate one vehicle or piece of machinery with soil washed off the previous one! It is important that waste water drains to an evaporation pond or is held in a sump. It is best to clean down before you leave where you have been so that you can arrive clean wherever you are going.

Truckwash facilities at Service Stations at Goondiwindi, Brookstead and Moree provide access to a pressure cleaner at a site with hard standing and with waste water retained in a sump / grease trap which is emptied regularly and waste disposed of appropriately.

This policy should apply to everyone who moves machinery - whether it be earth moving equipment or combine harvesters. A little voluntary effort now could save a lot of effort at some time in the future.

Growers should insist on a prior cleandown of vehi - cles and machinery before arrival at their front gate!

A FOOTBATH FOOTNOTE – A 1% bleach or 10% 'Farmcleanse' footbath can be a good thing in the right place but an absolute disaster if placed poorly !! The footbath must be located on a hard dry surface or lawn and there should be no chance of picking up more dirt after dipping! Appropriate times may include the start and end of a field day and on departure from a Fusarium trial site. A footbath will not work on mud-covered boots!!

'Farmcleanse' is recommended as it has higher penetration into attached soil / mud than bleach or other fungicides and is less toxic to the user – but more toxic to Fusarium.

AN ALTERNATIVE TO A FOOTBATH IS THE USE OF LARGE POLYTHENE BAGS OVER THE SHOES AND LOWER LEGS FASTENED WITH A RUBBER BAND AND DISCARDED APPROPRIATELY ON LEAVING THE FIELD

CLEAN DOWN THOSE PICKERS AND STRIPPERS !!

To assist growers, contract pickers and importers Mr David Holben of the Australian Quarantine and Inspection Service (AQIS) assisted by Mr Robert Bell of Auscott, Narrabri have developed an inspection protocol for cotton pickers and strippers.

COTTON PICKER (CASE 2044 / JD 9965)

- **Row units:** Inspect the picking heads externally and open all picking head inspection doors to expose moisture racks, doffers, spindle bars and rotor assemblies
- **Doffers and moisture racks:** Inspect in, around and behind these units
- **Rotor Assemblies:** Manually rotate and inspect.
- **Air ducts:** Open rear inspection doors located behind the picking heads
- **Picking heads:** Raise and support on blocks before inspecting the underside

Safety Alert: Picking heads are held up by hydraulic pressure. Do not climb underneath, unless heads are safely blocked in raised position

- **Cabin:** Depending on model type either remove top cabin panel or hinged roof to expose the air conditioning system and filtration unit. Also inspect internal cabin, particularly under the floor mat
- **Horizontal air ducts:** Remove/open all covers and inspection panels
- **Vertical air ducts:** Inspect the duct by looking down the duct from the top
- **External basket steps:** While climbing steps inspect the space in between the cabin and the cotton basket
- **Basket roof:** Inspect the basket roof

Safety Alert: The meshed surface area on the basket roof will not support a person's weight. Walk only on the perforated metal walkways which run from front to back

- **Inside basket:** Gain access through the hinged door on the roof. Use a ladder to descend into the basket and inspect from the inside
- **Undercarriage/chassis:** Inspect underside of machine, chassis rails and telescopic rear axle if fitted
- **Basket:** Tip or elevate basket (depending on model type) and inspect underside, drive shaft assemblies, blower fan and hollow basket support frames

Safety alert: The basket is operated hydraulically. Do not climb under basket unless it is safely secured into raised position

- **Radiator:** Remove cover panel to expose top of radiator. (This can only be done when basket is in the raised position) Inspect radiator and surrounding area
- **Side and rear screens:** Remove or hinge open all screens on the engine, radiator and fuel bays and inspect the areas inside
- **Tyres and wheels:** Inspect for soil and plant residues.

COTTON STRIPPER (JD 7450)

- **Row units:** Remove all covers to expose vertical and horizontal augers and rotary brushes. Inspect all components
- **Belts and drive assemblies:** Remove and/or hinge open top cover panels to expose belts and drive assemblies. Inspect
- **Horizontal auger:** Raise stripper front platform 300mm or or more and check the underside of horizontal auger

Safety alert: Front platform held up by hydraulic pressure. Do not climb underneath unless platform is safely blocked in raised position

- **Pre cleaner**: Remove cover panels then remove saw brush holders. Carefully rotate cleaner manually by using the pulley system on the outside of the cleaner
- **Cleaning fan:** Remove back panel, expose doffer, fan assembly.

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