

## Verticillium wilt - Defoliating strain 1A surveillance in Australian cotton

April 2015

Verticillium wilt of cotton is caused by *Verticillium dahliae*, a soil-borne fungus that enters the roots and grows into the vascular system of the plant. Non defoliating strains of Verticillium have been present in Australia for many years, however a new defoliating strain (1A) has now been detected in New South Wales.

### Cotton plant samples are needed

It is not known how this strain was introduced into Australia. To help determine the distribution of this new strain and understand this pathogen further, we are asking New South Wales and Queensland cotton growers to look for Verticillium wilt disease symptoms. Testing cotton with suspect symptoms will inform cotton growers of the strains of *V. dahliae* they have on their farms and assist in devising appropriate management strategies.

Fields should be inspected for symptoms of disease prior to harvest. Inspecting known wilt infected patches is recommended. Plants that are wilted or have vascular discolouration should be sampled for diagnosis.

### How was the defoliating strain found?

The cotton industry identified defoliating Verticillium as a high priority pest through its first Industry Biosecurity Plan. Recently an extensive collection of isolates of *V. dahliae* from commercial cotton fields, as well as a review of isolates stored in the collections of NSW cotton pathologists occurred. Molecular biologists with NSW DPI at the Plant Health Diagnostics Unit in Camden, South of Sydney, and cotton pathologists with the Department of Agriculture and Fisheries (DAF) in Queensland have developed and verified their ability to distinguish between the defoliating (1A) and non-defoliating (2A and 4B) strains.

Some historic isolates (one that was collected over 30 years ago) were sent to Spain for identification and have been confirmed as Group 1A – the defoliating strain.

### Surveillance

#### STEP 1: Inspect

Inspect your field in season for the following symptoms before harvest; some descriptions of symptoms indicate a “sudden and almost total defoliation and shedding of bolls”, which may or may not occur.

**Leaves:** wilted; yellow mottle between the veins and around leaf margins; dead tissue develops at the leaf edges; defoliated

**Bolls:** dropped

**Stems:** vascular discolouration



## Inspecting your field post defoliation:

If you want to manage Verticillium on your farm, you need to know its distribution and incidence.

*Do your own disease survey:* after picking take a walk with a pair of secateurs (long handles will make this job easier) across those areas or fields where you suspect a problem.

### **STEP 2: Contact us**

If you observe any of these symptoms in your field, contact your state pathologist:

**New South Wales:** Dr Karen Kirkby 02 6799 2454 or 0428 944 500 karen.kirkby@dpi.nsw.gov.au

**Queensland:** Dr Linda Smith 07 32554356 or 0457 547 617 linda.smith@daf.qld.gov.au

By providing these details we can provide guidance on sending samples for free diagnosis.

### **STEP 3: Sampling**

- Stem samples should be taken from plants prior to harvest
- Collect 2-3 stem pieces about 10cm in length from infected plants and place in a paper bag or envelope or wrap in paper
- Each bag of sampled stems should be from one field only
- On the outside of this bag, write your name, farm name, field name/number and the date
- The bag containing the stems should be placed in another paper bag and placed in an express post envelope
- Samples should be kept cool (placed in the fridge) and sent as soon as possible so that they arrive fresh at the laboratory. **Tip:** take your samples on the weekend and post them on Monday while they are still fresh. This will help ensure that the samples are not subjected to unnecessary delivery time.

## **Sending samples**

Send one ***Plant disease diagnosis request*** form with your sample(s)

### New South Wales

#### **Postal address**

Attention: Sample Submissions  
NSW DPI, EMAI  
Private Bag 4008  
Narellan NSW 2567

For New South Wales enquiries, email  
[biosecurity@dpi.nsw.gov.au](mailto:biosecurity@dpi.nsw.gov.au)

### Queensland

#### **Postal address**

Attention: Dr Linda Smith  
Ecosciences Precinct  
GPO Box 267  
Brisbane, QLD 4001

For Queensland enquiries, contact Linda Smith  
at [linda.smith@daf.qld.gov.au](mailto:linda.smith@daf.qld.gov.au) or 0457 547 617.

## **Farmers are advised to continue with best management practices and Come Clean Go Clean:**

- Choose varieties with Verticillium ranks over 100
- Manage for earliness
- Avoid late season irrigation
- Slash/mulch cotton residues soon after harvest
- Rotate with non hosts such as cereals and sorghum
- Control alternative weed hosts
- Minimize tail-water
- Always practice good farm hygiene



### **For more information:**

Contact the Exotic Plant Pest Hotline 1800 084 881



Lab no \_\_\_\_\_  
Date / /  
(Office use only)



WORLD RECOGNISED ACCREDITATION

NATA accredited facility No 14495

# Plant disease diagnosis request

✓ PLEASE PRINT CLEARLY *✗ Running writing leads to errors and delays*

## Step 1 Payment authorisation and reporting details

**Please note:** Diagnostic testing **will NOT** commence until **YOUR complete** billing details and authorisation are received

**Submitter declaration:** (Submitter receives invoice and report) I understand that there is a minimum fee for sample submission and that fees may be greater, depending on the testing required. I agree to accept all charges for this service.

Name \_\_\_\_\_ Signature \_\_\_\_\_ Date / /  
Company \_\_\_\_\_ (If NSW DPI staff member: Location \_\_\_\_\_ WBS \_\_\_\_\_ - \_\_\_\_\_)  
Address \_\_\_\_\_ Town/suburb \_\_\_\_\_ P/code \_\_\_\_\_  
Tel: \_\_\_\_\_ Fax: \_\_\_\_\_ Mobile \_\_\_\_\_  
E-mail: \_\_\_\_\_ **Send report by:**  E-mail  Fax  Post

**Grower/owner** Name \_\_\_\_\_ Company \_\_\_\_\_  Requires copy of report  
(If different from submitter)  
Address \_\_\_\_\_ Town/suburb \_\_\_\_\_ P/code \_\_\_\_\_  
Tel: \_\_\_\_\_ Fax: \_\_\_\_\_ Mobile \_\_\_\_\_

## Step 2 What testing do you require?

**Please note:** Testing time varies from **days** to **weeks**, depending on the complexity of the problem and the nature of the tests

- A.  Proceed with testing for a complete diagnosis **OR**  Contact submitter to discuss testing requirements or costs  
(If no box ticked, then testing for a complete diagnosis is assumed)
- B.  Include tests for \_\_\_\_\_ **OR**  Test ONLY for VCG Verticilium Wilt  
(Suspected disease or pathogen) *(Please note: if this box is ticked no other testing will be conducted)*

## Step 3 Supporting information

**Please note:** If this submission includes multiple samples, attach additional information identifying each sample clearly

Date collected: / / **Sample locality:** \_\_\_\_\_ **Sample site** \_\_\_\_\_  
(If different from grower/owner) (e.g. block, greenhouse, paddock etc.)  
**GPS coordinates:** System  WGS84  GDA94  other \_\_\_\_\_ SOUTH \_\_\_\_\_ ° \_\_\_\_\_ ' EAST \_\_\_\_\_ ° \_\_\_\_\_ '  
**Sample name** \_\_\_\_\_ **Variety** \_\_\_\_\_ **Genus** \_\_\_\_\_ **Species** \_\_\_\_\_  
(eg. soil, water or common name)  
**Symptoms?** \_\_\_\_\_  
(e.g. leaf spot, dieback, wilt ... of *plant part*? Attach additional information as necessary)

\_\_\_\_\_ **OR**  Notes attached **Symptoms distribution:**  Scattered plants  Patches  Uniform over large area  
% crop affected \_\_\_\_\_ When problem started? \_\_\_\_\_ Other factors? \_\_\_\_\_  
(e.g. weather events, waterlogging, row spacing, sloping ground ...)  
\_\_\_\_\_ Other laboratories or other NSW DII staff consulted for this problem?  No  Yes  
... fertilisers, herbicides, fungicides, previous crop) (If yes, please attach information on who was consulted and what was concluded?)

## Step 4 Packing and sending samples

- ✓ Pack samples in sealed containers *✗ Do not* place this submission sheet in contact with the sample
- ✗ DO NOT* place leaves in contact with plastic wrapping or bags *✗ Avoid* sending samples over weekends or public holidays
- ✓ Call for packing information OR check our website: [www.dpi.nsw.gov.au/aboutus/services/das/plant-pests-diseases](http://www.dpi.nsw.gov.au/aboutus/services/das/plant-pests-diseases)
- ✓ We cover freight for samples from NSW if you use **our** couriers; call for details
- ✓ Courier (preferred) to: PHDS, EMAI, NSW Department of Primary Industries, Woodbridge Road, Menangle NSW 2568
- ✓ Australia Post to: PHDS, NSW Department of Primary Industries Private Bag 4008, Narellan NSW 2567

**FOR FURTHER INFORMATION OR TO CHECK CURRENT PRICES PLEASE CALL 1800 675623**

Test results and findings may be provided to authorised staff and used for statistical, surveillance, extension, certification and regulatory purposes in accordance with Departmental policies. The information assists disease and residue control programs and underpins market access for agricultural products. The source of the information will remain confidential unless otherwise required by law or regulatory policies.



# Disease Enquiry - Cotton

Sheet  of   
Please fill in for multiple samples

## 1 Contact Details

Please print clearly

Date Submitted: \_\_\_\_\_

Submitter's Name: \_\_\_\_\_

Company: \_\_\_\_\_

Address: \_\_\_\_\_

Phone: \_\_\_\_\_

Town/Suburb: \_\_\_\_\_

Fax: \_\_\_\_\_

Postcode: \_\_\_\_\_

Mobile: \_\_\_\_\_

Email: \_\_\_\_\_

Send Report By:  Email  Fax  Phone  Post

## 2 Collection Details

(Please complete section 2 & 3 for all different samples)

Grower/Owner Name: \_\_\_\_\_ Company: \_\_\_\_\_  Requires copy of report  
(if different from submitter)

Address: \_\_\_\_\_

Phone: \_\_\_\_\_

Town/Suburb: \_\_\_\_\_

Fax: \_\_\_\_\_

Postcode: \_\_\_\_\_

Mobile: \_\_\_\_\_

Email: \_\_\_\_\_

## 3 Sample Information

Date Collected: \_\_\_\_\_

Type of Sample: \_\_\_\_\_ Total Number of Samples: \_\_\_\_\_  
(eg soil, leaf, root, whole plant, stem, fruit, growing media)

Collected From: \_\_\_\_\_ Site Type: \_\_\_\_\_  
(if different from above) (block, paddock, greenhouse etc)

Sample Name: \_\_\_\_\_ GPS Lat/South: \_\_\_\_\_ Long/East: \_\_\_\_\_  
(what's written on the bag?)

Crop: \_\_\_\_\_ Variety: \_\_\_\_\_ Growth Stage: \_\_\_\_\_

Symptoms: \_\_\_\_\_  
(leaf spot, dieback, wilt, poor vigor.....of plant part.....? Attach additional information as necessary)

% of Crop Affected: \_\_\_\_\_ When problem started? \_\_\_\_\_

Distribution  Scattered plants  Patches  Uniform over large area

Where Are Affected Plants Localised? \_\_\_\_\_  
(on slopes, low lying areas, melon holes, under trees etc.)

Other Factors? \_\_\_\_\_  
(Waterlogging, frost, moisture or heat stress, fungicides, row spacing, fertilisers, herbicides, fungicides, previous crop.....dates of application...)

## 4 Sample Submission - Cotton Samples

Pack samples as per the submission tips sheet (plants in paper, soils in plastic) and send to:

Attn: Linda Smith, Images to: linda.smith@daff.qld.gov.au  
Cotton Pathology, DAF,  
PO Box 267, Brisbane, QLD, 4001

**FOR FURTHER INFORMATION PLEASE CALL (07) 3255 4500**  
email: plantpestdiagnostics@daff.qld.gov.au