Chickpea seed for 2010

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CROP TECHNOLOGIES

There are some crops of chickpeas, particularly of the kabuli type (Genesis 090) that are yellowing, whilst others have individual yellow plants scattered through the crop.

Cause

The cause of this yellowing has been investigated and work continues in this area; however the main conclusion is that the following factors have caused the problem

- Beet Western Yellow Virus (BWYV) (northern and southern region)
- Cucumber Mosaic Virus (CMV) predominantly in southern region
- Alfalfa mosaic virus (AMV) predominantly in northern region desi crops
- Herbicide damage
- Water logging

In most cases it is a combination of several of these factors and in some regions a secondary fungal attack has occurred.

Identification

Identifying exactly what has caused the yellowing symptoms is beneficial to future crop management. However this can be difficult. The most appropriate action if a grower is not sure is to ask an experienced agronomist. If still unsure a grower would be best to assume that it is at least in part due to virus and take the recommended action.

The symptoms of infection by the three viruses mentioned above are not dissimilar, in kabuli type chickpeas infection is seen as leaf yellowing and often mottling and stunted (bunched) growth. In desi types the above factors can be seen as reddening of the leaves and in particular their edges and on the stems. These symptoms may occur over the whole plant or only on new growth above the infection point.

Virus information

CMV has the widest host range of any known plant virus, it is carried over in the seed and transmitted by a large number of aphid species. It can cause severe infection in lentil, chickpea and lupin when aphid numbers are high. It causes yellowing of the leaves and reduced growth causing reductions in seed yield and quality. It is seed borne.

AMV is a virus predominantly of lucerne but is hosted by a variety of crops and weeds including chickpeas. It is seed borne.

BWYV is not carried in the seed. However it is spread from infected plants by aphids.

There are a number of strategies that will reduce the risk of virus problems next year.

Aphids

Aphids spread viruses from infected plants to healthy plants. Sowing infected seed will provide a source of the virus for aphids to spread. Although aphids rarely colonise chickpea plants, they still probe them as they move through the crop searching for plants they prefer, spreading viruses as they move. The aphids prefer thin crop stands or areas within the crop which have low densities , hence it is these areas that suffer most when infected aphids attack the crop.

Chickpea crops bordering lentils, canola or lucerne crops may be subjected to larger numbers of aphids, as aphids can colonized these crops and multiply quickly. Controlling aphids in these crops will decrease aphid numbers moving through nearby chickpea crops.

Control

1. ***Sowing healthy chickpea seed is the key control strategy for CMV in chickpea crops***.

To decrease the likelihood of virus in the proceeding crop, sow seed with low seed infection levels to minimise the virus source available for aphid spread. There are two things that you should do to ensure the best seed possible for next year.

A. Now is the time to identify which crops or parts of a crop have been affected by yellowing so that seed can be sourced from the best areas. Better areas are likely to be away from lentil or canola crops, or in a large paddock may be the middle areas. Harvest these good areas first and keep seed separate.

B. Grade the seed to remove small seed that is more likely to carry the infection.

C. Seed test the graded seed. You will need to send a representative sample for each 25 tonne seed lot to a seed laboratory, two of which are listed here:

Agrifood technology	**AgWest Plant Laboratory**
260 Princes Highway (PO BOX 728) Werribee Victoria 3030 Phone 1800 801 312 or 03 9742 0555 Fax 03 9742 4228 Email: robert.rantino@agrifood.com.au Cost CMV test: $150+gst Sample size: 250g Turn around time: 8 working days	Department of Agriculture and Food Western Australia 3 Baron-Hay Court, SOUTH PERTH WA 6151 Phone: 08 9368 3721 Fax: 08 9474 2658 Email: agwestplantlabs@agric.wa.gov.au Cost CMV test: $200 + gst Sample size: 1kg Turn around : 5-7 working days

Once the CMV and AMV infection rate is estimated by this sample (remembering that there will be sampling error) you will need to decide whether it is acceptable. Results less than 0.1% infection levels are recommended for sowing in high risk areas. Results less than 0.5% are recommended in low risk areas. Seed with infection levels over 0.5% are not recommended for sowing.

All new AACT seed will be tested for virus this year.

The BWYV is not seed borne so is definitely not a seed issue for next year, however the CMV and AMV are seed borne and now is the time to consider next years seed.

2. If chickpea crops are located near crops which aphids colonise (eg lentil, canola, lucerne) it is important to control aphids within these crops to reduce spread of virus within that crop and reduce the number of aphids moving through chickpea crops. Control broadleaf weeds within chickpea crops and surrounding the crop..

3. Aim to achieve a good plant density through using recommended seed rates and other best management practices.

Media contact: Lyall Grey DPI Marketing and Communications, 5573 0942

Media Article

From the Department of Primary Industries

Monday November 2, 2009

SURVEYS HELP IN DPI CHICKPEA INVESTIGATION

Department of Primary Industries (DPI) scientists are assessing results from widespread chickpea surveys to better understand yellowing which has affected some pulse crops.
During October DPI scientists have surveyed dozens of chickpea paddocks across northwest Victoria and tested samples from them.

DPI pulse pathologist Helen Richardson said early indications suggested that the yellowing could be caused by a combination of seasonal, agronomic and disease issues.
“Our surveys show many crops are infected with viral diseases following high aphid numbers during the season, with diseased and healthy plants both testing positive to viruses and more symptoms in thinner crops and those located near an aphid source such as a lentil crop,” Ms Richardson said.

Reports of the yellowing problem stretch from Natimuk in the south to Swan Hill in the north with yellowing mostly in chickpeas but also reported in some lentils, lupins and field peas.
Ms Richardson and her team have travelled to farms as part of a survey to further understand the problem.

“Tests so far have found high levels of both cucumber mosaic virus (CMV) and beet western yellow virus (BWYV) in healthy and yellow plants from these farms,” Ms Richardson said.
CMV is a seed borne virus and both CMV and BWYV are endemic to grain growing areas of Victoria.

Earlier in October a separate DPI survey of 24 chickpea paddocks found BWYV, which is spread by aphids, in 24 of 46 samples tested.

Ms Richardson said the yellowing problems in the most severely affected crops were more than just virus-related with affected plants often showing poor root systems, stunting and rotted nodules.
“We believe many symptoms observed can also be linked to transient water logging, particularly on shallower duplex soils, and in crops that may have become wet at the crucial flowering period of their development,” Ms Richardson said.

“Transient water logging, particularly to stressed crops, can make plants more susceptible to diseases such as root rots and viruses.”

Results of disease tests on samples taken from paddocks are still to be finalised.
Ms Richardson said observations by her team and other DPI staff suggested the more severe yellowing problem appeared to be affecting less than 20 per cent of chickpea crops in the region.
Pulse research agronomist Jason Brand said the collated survey results, with implications for 2010, will be communicated to farmers and advisors.

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“Paddock selection based on soil type, care with using herbicides, seed testing for virus and virus control through ensuring good, even crop growth and the early control of aphids, especially in crops where they multiply such as lentil and vetch, will be important to successfully grow pulses next year,” Dr Brand said.

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Media Article

From the Department of Primary Industries

Monday, November 2, 2009

FARMERS WARNED TO KEEP CONTROLLING APHIDS

Farmers are being warned to continue considering aphid control even as the growing season draws to a close.

Department of Primary Industries (DPI) Horsham lentil breeder Michael Materne said aphids had appeared in large numbers this season and it was important to protect lentils and chickpeas from the insects.

“Aphids feed on lentils and colonise the plants and can multiply very quickly as has been seen this year,” Dr Materne said.

“In large numbers the aphids can physically cause damage to lentil plants and potentially reduce grain yield.

“But the biggest concern with aphids is their ability to spread viruses to plants which cause yield losses.”

This year detailed surveys of northwest Victorian chickpea crops have revealed high incidences of both cucumber mosaic virus (CMV), which is seed borne, and beet yellow mosaic virus (BYMV) which is spread by aphids. Both CMV and BYMV are endemic to grain growing areas of Victoria.

“In less preferred crops such as chickpeas, aphids tend to move through the crop feeding and spreading viruses but do not remain in the crop and colonising it.”

Dr Materne said while the growing season was nearly over, aphid control remained an important consideration in lentil crops that are still flowering.

“This will prevent some viruses such as CMV and Alfalfa Mosaic Virus spreading to plants that may then produce virus-infected seed that affects next year’s crop,” Dr Materne said.

“Seed from paddocks that have virus symptoms should be tested for virus prior to planting.”

Dr Materne said the earlier aphids were controlled in lentils, the less chance there was of aphids both multiplying and spreading viruses in lentils and other pulse crops.