

Tips for Successful Chickpea Production

By Bruce Barker, P. Ag.

Key Messages

- Chickpea has the ability to fix 60 to 80 per cent of its nitrogen requirements
- Herbicide options are growing for pre-seed and in-crop weed control
- Fungicide application at the seedling stage is critical to reduce ascochyta blight severity
- Research has shown that direct cutting without desiccation (natural maturity) results in the highest yields and largest seed size

With the late, wet harvest of 2016, chickpea growers are assessing their production practices for 2017. Fertility, weed control, disease management, and harvest operations can help overcome some of the challenges seen in 2016.

Fertility

Chickpea has the ability to fix 60 to 80 per cent of its nitrogen requirement through nitrogen fixation. Kabuli chickpeas are an excellent nodulator and nitrogen fixer. Desi chickpeas are good nitrogen fixers under ideal conditions, but may be a little sensitive to adverse environmental conditions. For maximum benefit from nitrogen fixation, select fields with low nitrogen fertility.

Research on starter nitrogen on chickpeas has produced varying results with some research showing yield and maturity benefits and others showing no benefit. Small amounts of starter nitrogen may help seedlings remain healthy and vigorous during the period of early development until nodulation kicks in which is approximately three to four weeks after germination.

Research by Dr. Yantai Gan and his colleagues at Agriculture and Agri-Food Canada (AAFC) in Swift Current, suggests that starter nitrogen may be used as a maturity management tool in chickpeas. Starter nitrogen of 25-50 pounds per acre (lbs/ac), (2856 kilograms of nitrogen per hectare) without inoculant resulted in earlier maturity by an average of 13 days in normal to cooler/wet seasons.

[Click here for more information on starter nitrogen on pulses](#)

Chickpeas also respond to phosphorous fertilizer with higher yields and larger seed size, although response has been variable in research studies. The maximum seed-placed rate of monoammonium phosphate fertilizer is 20 pounds actual P₂O₅ per acre.

In southwest Saskatchewan, research conducted by Gan found that Kabuli chickpeas showed a substantial increase in lowest pod height with application of starter phosphorus, which improved harvestability by five per cent.

[Click here for more information on phosphorus management in pulses](#)

Weed Control

Chickpeas are a poor competitor against weeds. Herbicide options in the fall, prior to seeding, and pre-seed/pre-emergent spring herbicide options must be considered. In-crop weed management is the final step. Perennial weed management should occur in the year prior to chickpea production.

Although not considered in-crop herbicides, Authority® and Valtera™ herbicides can act in-crop through soil residual properties. These broadleaf herbicides are key products for control of Group 2/9 resistant kochia. Metribuzin can also be used as a post-emergent herbicide for broadleaf weed control.

In-crop herbicides registered for grassy weed control are all Group 1 herbicides, which should be rotated to other herbicide groups in non-chickpea years to help prevent the development of Group 1 herbicide resistance.

At the Crop Development Centre at the University of Saskatchewan, all breeding lines are having imidazolinone (IMI) herbicide tolerance bred into the lines, so all new varieties in the near future will be IMI tolerant. This will provide an additional tool for controlling broadleaf weeds.

Disease Management

Ascochyta blight is a foliar disease that can completely destroy a chickpea crop with up to 90 per cent yield loss in Kabuli chickpeas, and up to 50 per cent yield loss in Desi chickpeas. Research carried out in Saskatchewan found that fungicide application at the seedling stage is critical to reduce ascochyta blight severity and maintain yield for susceptible varieties. Three well-timed applications per season are as effective as four to five applications in partially resistant varieties.

To help guide fungicide application decisions, the [disease decision support checklist](#) can help to determine disease risk. Follow [recommended fungicide rotations](#) to help manage the development of fungicide resistance.

The fungus that causes ascochyta in chickpeas is very genetically diverse and isolates of the fungus with resistance to strobilurin fungicides have been confirmed in Saskatchewan. As a result the following guidelines are recommended:

- Do not use a fungicide with only a strobilurin active, unless it is tank-mixed with a non-strobilurin fungicide
- Rotate the use of a strobilurin fungicide in the mix (or tank-mix) with a non-strobilurin product
- Do not use more than two applications in the same year of a fungicide containing a strobilurin on the same field
- Do not apply more than two applications of fungicides within the same group in a single growing season. The exception is for chlorothalonil, which can be applied three times

Saskatchewan research concluded that at least two non-host crops needed to be grown between successive chickpea crops to reduce ascochyta disease risk if blight was present in the initial crop. Plant seed that has zero levels of ascochyta or seed with levels below 0.3 per cent ascochyta and use a registered seed treatment. For further information, visit AAFC's page on [An Integrated Approach to Manage Ascochyta Blight in Chickpea](#).

Harvest

Chickpeas are considered ready to harvest when the majority of the plants are yellow and most pods are mature.

Desiccation is not as common on chickpeas compared to peas and lentils, but it can still be a valuable tool in some situations. Traditionally most chickpea acres are straight cut without the aid of a desiccant. However, desiccants have been used more frequently in the last five years due to wet weather and lack of drought or frost stresses that initiate chickpea maturity.

Research has shown that direct cutting without desiccation (natural maturity) results in the highest yields and largest seed size. Desiccation with Reglone® or application of pre-harvest glyphosate applied prior to pod rattle stage, when 80 per cent of pods are tan coloured, can preserve yield.

Glyphosate can be applied for pre-harvest weed control when seed grain moisture is less than 30 per cent. It can also be used to stop late season chickpea re-growth, but dry-down time will still be governed by the weather. Reglone® desiccant is registered for crop dry-down in chickpeas but does not speed maturity of green crops.