



THE PULSE AGRONOMY NETWORK  
PARTNERSHIP WITH INDUSTRY

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## **Land Rolling Guidelines for Pulse Crops in Western Canada (A summary of AGRI-FACTS Agdex 142/21-1)**

The complete document can be found at [http://www1.agric.gov.ab.ca/\\$department/deptdocs.nsf/all/agdex8817?opendocument](http://www1.agric.gov.ab.ca/$department/deptdocs.nsf/all/agdex8817?opendocument)

Land rolling is done to ease harvest operations as well as aid in producing a high quality pulse crop.

For rolling fields, the steel cylinder land roller is the most common roller used. However, if the land does not have rocks, a harrow packer (coil, spiral) draw bar is a viable option to the land roller. Harrows (tooth and tine) can break lumps and firm soil, but do not push rocks down.

Pulse crop fields are rolled for a number of reasons:

- to provide a smooth and level surface (push down soil ridges) for faster, easier harvest operations and better seed-to-soil contact

- to push down stones to reduce guard and sickle section breakage as well as expensive “internal” combine damage
- to allow the cutter bar to get closer to the base of plants to reduce yield losses
- to reduce “earth tag” or soil on the seed, thereby improving quality
- to aid in the harvest of short stature crops; land rolling works especially well under drought conditions
- to allow for an easier adjustment and operation of lifter fingers
- to aid in the harvest of lodged pulse crops and pulse/cereal mixtures for silage

### **Pre-emergence rolling**

Pre-emergence rolling for pulse crops is the preferred approach, as opposed to post-emergence, with certain exceptions. Pre-emergence rolling is **not** recommended under the following conditions:

- extremely wet conditions on clay soils or clay soils with low organic matter that are prone to crusting
- sandy soils, which are prone to erosion
- dry soils, which are prone to wind erosion
- peat soils

Farmers should be careful not to double roll areas of the fields, such as headlands, because excessive plant damage and packing can occur from tractor tires.

Chickpea, dry bean, and fababean fields are not usually rolled after emergence. For chickpea, rolling after emergence (especially under moist conditions) will spread the devastating disease ascochyta blight. Also, chickpea and fababean develop turgid, stiff stems early in their development, and rolling can cause mechanical (breakage) injury to the plants. The rolling of fababean fields is not necessary because of the higher pod location from the soil surface and the good, complete standability of this crop.

### **Post-emergence rolling**

The use of post-emergence rolling depends on the pulse species. Field pea and lentil may be rolled after emergence, although pre-emergence rolling is preferred. When faced with the choice to either spray early or roll early, growers should know that spraying first is recommended instead of rolling.

Research on lentils indicates that land rolling after the emergence of lentil can be successfully completed up to the 5- to 7-node stage without significant yield loss in large seeded lentil varieties, such as Laird, and the 7-node stage in small seeded varieties. Rolling the lentil crop after a rain or heavy dew can uproot small lentil seedlings and increase the risk of soil compaction or the spread of ascochyta blight and anthracnose.

The researchers concluded that for dry bean, rolling should be completed right after seeding or after the hypocotyl arch has straightened itself.

If farmers wish to roll the field post-emergence, rolling should be done when the plants are slightly wilted and the soil surface is dry. Rolling should not be done on excessively wet, dry or sandy soils or when the crop is damp or stressed by extreme heat, frost or herbicide application. If practical, wait until the stress conditions subside before rolling – a minimum of two to three days.

Farmer experience in land rolling of pulses crops at later growth stages resulted in significant problems:

- damaged plants
- increased spread of foliar diseases
- reduced grain yield

For dry beans, farmers should pay close attention to the crop stage development. The hypocotyl hook structure of dry bean is quite fragile, and if the hook is within half an inch of the soil surface or the crop is 3 to 5 days after emergence, growers should not roll the crop.

When faced with the post crop emergence decision as to whether to spray early or roll early, growers should know that spraying first is recommended, as opposed to rolling first. Early weed removal, especially under higher weed pressures, will result in higher yields.

**If you require further information, please review the complete document found at the following link.**

[http://www1.agric.gov.ab.ca/\\$department/deptdocs.nsf/all/agdex8817?opendocument](http://www1.agric.gov.ab.ca/$department/deptdocs.nsf/all/agdex8817?opendocument)