Production Calendar

Win with Canola

November

December

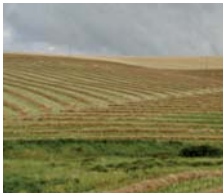
March

April

May-June

Jun-Sep

Oct-Nov



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Selection of Fields for Planting

a) Factors Influencing Decision

- Produce in areas with rainfall of ≥300 mm in April to October for a target yield of 2.0 ton ha^{-1}. With rainfall of 200 mm, a target yield of 1.0-1.5 ton ha^{-1} is realistic.
- To prevent blackleg contamination canola preferably should not be planted in the same field more than once every four years, and also at least 500 metres downwind from fields where canola was grown the year before.
- Weed infestation: Fields badly infected by wild radish or wild mustard should rather be avoided.
- As larger weeds are difficult to control and weeds drain soil moisture, fields should preferably be kept weed free during the summer months.
- Canola prefers cool but well-drained soil.
- The residual period of herbicides such as the sulphonylureas.
- Canola requires a soil $pH_{(KCl)}$ of 5.5–7 and acid saturation of <10%. Lime in advance if necessary.
- Canola is not well suited for fields that crust, become waterlogged or is prone to wind erosion.

b) Soil Sampling for Fertiliser Recommendation

- It is recommended that the soil be analysed at least every third year.
- Soil sampling should be done by an expert.
- Canola has a high sulphur requirement and is also susceptible to boron deficiency, therefore the soil analysis should also include these elements.

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Choice of Cultivar and Seed Orders

a) Factors Influencing Choice of Cultivar

- Use tested cultivars.
- Plant triazine-tolerant (TT) or imazamox-tolerant (CL) cultivars in weed-infested fields, especially where herbicide resistance exists.
- Plant conventional cultivars on weed-free fields.
- Hybrid cultivars with high yield potential are available for all three of the above groups.
- Plant blackleg-resistant cultivars.
- Plant cultivars with a medium to long growing season in areas with a long rainy season (high rainfall); at early planting dates (before end of April) and in deeper soil.
- Plant cultivars with a short growing season in areas with a short rainy season (<250mm rainfall April to October); in shallow soil and at late planting dates (after 10 May).

b) Available Cultivars and Cultivar Information

- The latest information regarding cultivar characteristics and yield in the various production areas can be obtained from:
  - Department of Agriculture of the Western Cape, Elsenburg (tel. 021 808 5111)
  - Canola Focus (http://newsletters.proteinresearch.net/)
- Seed orders can be placed (at approximately 2-4kg seed per hectare canola that will be planted and approximately 3-5kg seed per hectare canola that will be sown) with seed companies or agribusinesses.

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Seedbed Preparation for Planting

a) Handling Crop Residue

- Germination and establishment of canola is jeopardised if the seed is planted in direct contact with crop residue.
- Therefore, the residue of previous crops should be spread evenly on the surface of the field.
- Remove excess crop residue so that the planter will be able to handle it, otherwise it will block the planter.

b) Determining Pest Potential before Planting

- Inspect fields on which canola will be planted for the presence of snails and isopods by:
  - Looking under crop residue
  - Randomly placing a small quantity of bait in the field
  - Leaving a plastic tarpaulin (2m x 2m) or wet hessian bag on the field for a few days and then checking underneath the tarp/bag for snails and other insects.

c) Soil Tillage

- Canola has a tap root system and is sensitive to plough pans – rather break up the soil by deep tillage with a chisel or mouldboard plough.
- Canola has small seeds that require good contact with moist soil (more so than for wheat) in order to germinate.
- A level seedbed is required to obtain even planting depth – drag the field if necessary.
- For conventional planting methods (using a seeddrill) the seedbed should be finely tilled, level and firm.
- No-tillage systems require special planting equipment with depth control and press wheels.
- Before planting, spray with herbicides containing paraquat or glyphosate to eliminate weeds where necessary.
- As larger weeds are difficult to control and as weeds drain soil moisture, weeds should preferably be controlled at seedling stage.

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Planting Canola

a) Planting

- Soil temperatures of 15-20°C are optimal for germination.
- Plant shortly after the first autumn rains, as soon as soil moisture is adequate for germination.
- Optimal planting date: 15 April to 15 May, according to rainfall area.

b) Planting Method, Planting Density and Planting Depth

- Plant at density of 2.5-4kg seed ha^{-1} (300mm row spacing) and 3-5kg seed ha^{-1} (for narrow row spacing) in order to maintain a population of 40-70 plants m^{-2}.
- Hybrid cultivars can be planted at 2-3kg ha^{-1}.
- Plant 12-25mm deep on a firm, moist seedbed to ensure quick emergence and establishment.
- Seed should not be placed in direct contact with fertiliser.
- Spread seed evenly in the planting row as well as across individual rows.
- On conventionally tilled fields, plant with a wheat planter and harrow.
- Avoid using rollers on soil that crusts.
- On untilled fields, plant with a no-tillage planter equipped with knifepoint openers, depth control and press wheels.
- Plant in row widths of 200-300mm depending on the type of planter and the amount of crop residue.

c) Fertilisation at Planting

- Add phosphate and potassium according to soil analysis.
- The guideline is 24mg P kg^{-1} (Bray 1) and 80mg K kg^{-1} (citric acid or Bray 1) for heavily textured soil, and 60mg K kg^{-1} for lightly textured soil.
- Add sulphur at 10-15kg S ha^{-1} per ton target yield if the soil analysis indicates a deficient sulphur level. Sulphur is mostly added as gypsum, but superphosphate and ammonium sulphate are also sources of sulphur.
- Add trace elements if soil analysis indicates deficiencies. Soil applications of manganese in lime-rich soil and boron are not recommended; deficiencies will have to be rectified with foliar sprays during growing season.
- Add nitrogen according to rainfall, crop rotation and target yield.
- Broadcast application: a maximum of 40kg N ha^{-1} where rainfall is >350mm, and a maximum of 30kg N ha^{-1} where rainfall is <350mm.

- A maximum of 20kg N ha^{-1} when band-placed with seed.
- Preferably use nitrate-based N if it is band-placed with seed.
- See the *Canola Manual* for specific recommendations.

d) Weed Control at Planting

- For pre-emergence control of annual grassy weeds and broadleaved weeds in canola the following herbicides can be used:
  - Metazachlor or trifluralin – all cultivars
  - Simazine, or terbutilazine + simazine – triazine-tolerant cultivars.
- Trifluralin can be used in canola, both in conventional and no-tillage systems.
- However, if trifluralin is applied in both the wheat and canola cropping phases the risk of herbicide resistance development increases drastically.
- Spray the herbicides evenly on the soil surface and mix with the soil during the planting process.
- If the soil surface is covered with a thick layer of crop residue, it may decrease the efficacy of the above-mentioned herbicides.
- Rainfall of 10-15mm within a day or two after application will increase efficacy.
- Consult instructions on labels for application doses and other measures.

e) Pest and Disease Control at Planting

- **Seedling dieback** is caused by *Fusarium*, *Pythium* and *Rhizoctonia* spp and is characterised by seedlings suddenly wilting, falling over and drying out.
- **Seedling dieback** can be prevented by treating seed with fungicides.
- **Red-legged earth mite/black earth mite** and **blue oat mite** are small soil insects that suck the sap from young seedlings and cause considerable damage.
- Seed treatment with an insecticide such as dimethoate will protect seedlings against mites, earth fleas and aphids, but follow-up spray with dimethoate (300ml ha^{-1}) directly after the seedlings have emerged may be necessary in cases of severe infestation.
- Place bait for snails and isopods that can destroy young stands if pre-planting inspection showed signs of infestation or if the field is located in a problem area.
- Bait should contain both metaldehyde and carbaryl as active ingredients and should be broadcast after planting but before canola seedlings emerge.

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Weed Control after Emergence

a) Choice of Herbicides

- Propyzamide (Kerb) can be used after emergence of canola but before emergence of weeds, to control ryegrass.
- Annual broadleaved and grassy weeds – imazamox (Cysure) (only CL cultivars).
- Annual broadleaved weeds – clopyralid (Lontrel) or ethametsulphuronmethyl (Lomex).
- Annual grassy weeds – haloxyfopmethyl (Gallant Super), propaquizafop (Agil), quizalofop-P-ethyl (Co-Pilot), quizalofop-P-tefuryl (Pantera) or tepraloxydim (Aramo).

b) Application Guidelines

- Vary herbicides in order to prevent herbicide resistance.
- Spray when weeds are in the seedling stage, preferably within four weeks after their emergence.
- Spray equipment should be cleaned thoroughly after it was used for spraying cereals, especially after being used with sulphonylurea herbicides.
- Ensure that spray equipment is calibrated correctly.
- Avoid drifting of herbicides to adjacent cereal fields.
- Efficacy of herbicides will be low if plants suffer from stress (cold, drought, heat) and are not growing actively.

Nitrogen Topdressing, Trace Element Applications & Pest Control

a) Time of Application and Quantity of Nitrogen as Topdressing

- The quantity of N as topdressing is determined by the total recommendation and the quantity applied at planting.
- Higher rainfall than usual during the growing season may necessitate additional N fertilisation.
- Generally, two N topdressings are recommended: 30-40 days after emergence and again 60-70 days after emergence. In seasons with very low rainfall the latter topdressing may be scaled down or withheld completely.
- Topdressing quantities of <10kg N ha^{-1} are not effective and therefore not recommended.
- Sources of nitrogen that also contain sulphur are recommended for soil with deficient sulphur content.

b) Trace Element Application

- Trace element application is necessary if soil analysis indicates levels to be "low" or "deficient" (see *Canola Manual*).
- Soil application is not recommended for lime-rich soil with a high pH; foliar sprays should be used instead.
- The following is important for effective application:
    - Plants should have sufficient leaf area.
    - Plants should not be sprayed if they are wet because of dew or rain.
    - Plants should be growing actively.
    - Proper wetting of plants during spraying is important.
    - At least 2-3 hours should pass between foliar spraying and rainfall.
    - Trace element supplementation should not be mixed with herbicides.
    - Follow manufacturers' specifications strictly.

Nitrogen Topdressing, Trace Element Applications & Pest Control

a) Identification and Control of Major Insect Pests

- **Cabbage aphid** is the primary aphid species that feeds on canola and can be observed between leaves at the growth tip or raceme in particular. It is especially active in warm weather. However, chemical sprays are in general not necessary – except in the case of particularly severe infestation during the sensitive early vegetative or flower formation stages – since this pest is controlled effectively by a natural enemy, the parasitic wasp *Diaeretiella rapae*. Chemical sprays during the flowering stage to control cabbage aphid will also kill the pollinators of canola and should therefore be avoided where possible.

- **Diamond-back moth** is a small moth with a diamond pattern on closed wings. Light-green larvae that eat holes in the leaves are especially active in warm weather and may cause considerable damage. Spray with chemical pesticide when 17-23 larvae occur per 10 plants during mid- to late flowering stage or 43-57 larvae per 10 plants during pod filling.

- **Cotton bollworm larvae** differ in colour (light green to dark brown) and have corrugated skin and short black hair. Bollworm infestation is associated with aphid infestation. Bollworm larvae bore into the pods and cause yield losses. Monitor crops from the flowering stage and spray with chemical pesticide if more than 4-5 larvae m^{-2} occur.

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Harvesting Canola

a) Harvesting Methods and Equipment

- Can be harvested directly if wind is not a problem.
- Swathe and thresh if there is a risk of strong wind or if canola has ripened unevenly.

b) Correct Stage/Time for Swathing

- Swathe when 40-70% of the seed in the pods in the lower and middle parts of the main stem have changed colour from green to yellow/black.
- About 14-28 days after completion of flowering stage (<10% of flowers still visible).
- Seeds have to be firm and contain 30-35% moisture.
- Cut with the normally prevailing wind direction; cutting height should be above the branching of the plant.
- Pick up and harvest when moisture content drops below 8% (<14% if drying facilities are available). It can be ready for harvesting within 7-14 days after swathing.
- Harvest from the side on which the pods are lying.
- Benefits of swathing:
    - Harvesting process can start earlier.
    - Produces more uniform ripening with uneven stands.
    - Harvesting of crop is easier and faster.

c) Correct Stage for Harvesting Directly

- Harvest directly when there are no more green pods.
- Harvest directly at moisture percentage of 8-10% (<14% if drying facilities are available).

Harvesting Canola

d) Limiting Crop Losses during Harvest

- Harvest at the correct stage of ripeness.
- The cutting height of the swather should be lower than the bottom pods but preferably no lower than 250-300 mm above ground level.
- Harvest on cool days, at cool times during the day or at night – when humidity is high.
- Harvesting on warm, dry and windy days should be avoided.
- Inspect and seal combine harvester and grain tanks to prevent “leakage” of seed.
- Preferably use combine harvesters with extended threshing tables and rubber conveyor belts.
- Move the pick-up reel of the combine harvester backwards and rotate the pick-up reel at forward speed.
- Adjust the combine harvester according to the specifications for rapeseed.
- For swathed canola the speed of the picker should correspond with the forward speed of the combine harvester.

e) Transporting and Storing Canola

- Ensure that all transport tanks are sealed tightly.
- Moisture content should be <8% for storage.
- Stored canola should be checked regularly for heat and sweat build-up.

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