

Organic Oilseed Rape in Scotland: A technical guide

Robin Walker

Scotland's Rural College
Ferguson Building, Craibstone,
Aberdeen, AB21 9YA, Scotland
Email: robin.walker@sruc.ac.uk

Andrew Cheetham

Ceres AgriServices
Ceres House, Boyndlie, Fraserburgh,
Aberdeenshire AB43 7DQ, Scotland
Email: cerasagriservices@gmail.com

Introduction

Organic oilseed rape (canola) is very rarely grown in the UK, and not at all in Scotland. This is due to a number of agronomic factors linked to provision of adequate fertility, disease, pest and weed issues, with the latter also being of concern if seed shed by the oilseed rape was to become a pernicious volunteer weed over many seasons. Under organic standards, there are limited options to control these factors compared to conventional approaches that can use agrochemicals.

However, some European countries, such as Sweden, have been successfully growing organic oilseed rape for around 20 years, currently around 10,000 ha, or 10% of the total oilseed rape crop in that country. As Scotland is on a similar latitude to Sweden, a few enterprising Scottish farmers and other interested parties from a RISS group undertook a study tour in early 2019 to develop knowledge and understanding of how the crop was grown in Sweden and to evaluate its potential to be grown successfully in Scotland.

The information provided in this technical guide was developed through a Knowledge Transfer Innovation Fund - KTIF project (SCottish Organic CANola - SCOCAN) where 5 Scottish organic farms grew oilseed rape with guidance from an agronomist and researcher alongside other interested parties along the chain.



An organic oilseed rape crop growing in NE Scotland

Field Location & Pre-cropping Considerations

Choose a field with features that are more likely to deliver a successful crop, especially when growing organically. Do not grow oilseed rape in a field that has been used to grow other brassica crops within the last 5 years, has a known clubroot or brassica weed problem (e.g. Charlock). Ideally do not grow oilseed rape in fields surrounded by trees or hedges. This can increase the risk of both flea & pollen beetle, and there are only limited control options under organic standards. It can also encourage bird damage.

Previous cropping:

- try to follow a crop that leaves lots of useful nutrients, particularly N in the soil, or use permitted amounts of FYM for example
- If you follow a cereal crop, plough, then create a false seedbed to reduce both weeds and volunteers
- If you follow a grass / clover crop, graze hard or cut it tight (best option after 2nd cut of silage), then rotovate prior to ploughing
- If you follow a "Green Manure" make sure your green manure mix has species that root at different depths in the soil profile

Soil Analysis & Crop Nutrients

Undertaking a full soil "health" survey of any field you intend to grow an organic oilseed rape crop in will likely prove beneficial. Ideally it will provide a good indication of any likely nutrient deficiencies, or excess, as well as other soil "health" indicators such as pH, potentially mineralisable N, microbial respiration and CEC. A broad spectrum analysis that includes trace elements as well as macro elements like N, P and K may also provide useful evidence if seeking permission from certification bodies to apply products to alleviate any problems.

Seed Choice & Establishment

Follow the **5 Point Seed Strategy** (MUST tick all 5 boxes)

1. Always use a hybrid which has both autumn & spring vigour
2. Always choose seed with a good Thousand Grain Weight (TGW) aiming for a minimum of 5.5 g per 1000 seeds
3. Choose a variety with a good overall disease resistance rating. Turnip Yellow Virus Resistance and Light Leaf Spot (LLS) resistant (minimum AHDB 7) of particular importance
4. Choose a variety that has the Pod Shatter Resistance gene
5. Use early maturing varieties, especially for spring sown crops

Stick to the breeders recommended seed rates - 3ha pack (1.5million seeds) equals 3ha (500,000 seeds/ha). You will need derogation to use untreated conventionally produced hybrids as no organic seed is currently available. Roll before and after sowing to give a fine, firm seedbed with good seed to soil contact to encourage even emergence and help reduce attack from flea beetle. Organic flea beetle deterrents are coming onto the market which can be incorporated with seed at sowing. Autumn crops should be drilled around mid August, with spring crops drilled as early as weather will allow from mid March onwards to help with earlier harvesting dates.



The System Cameleon drill / robotic weeder working in an organic oilseed rape crop growing in NE Scotland

The preferred option for drilling in Sweden is to use a precision seeder with a robot weeding option, something like the System Cameleon for example. This approach was used on 3 out of the 5 SCOCAN farms in 2019/2020 and allowed very accurate inter row weeding on 2 or 3 occasions during the early part of the season before the crops grew away. The row spacing for this machine was 25cm. The other farms used a more traditional plough, secondary cultivation and drill approach, with a row spacing closer to 12cm, and relied on rapid establishment and vigour to suppress weeds.



The crop before (left) and after (right) the System Cameleon had been used to robotically weed one of the Scottish organic oilseed rape crops

Plant Tissue Samples

Take tissue samples at strategic growth stages, for example when the crop has 4 or 5 true leaves and at stem extension. This will indicate any nutrient issues and may be used as evidence to seek derogation from the certification body to use certain products in order to alleviate the issue. Only apply nutrients that will actually be beneficial and only those products that are approved under organic certification, or through derogation.

Oilseed rape has a large tap root and can access key nutrients from lower down the soil profile, boron and molybdenum for example. If recommendations have been made and approval for their use has been met, only apply foliar products at the time of advice - not 3 months later, as you will see little benefit and just waste money.



The oilseed rape's large taproot can access nutrients deep down the soil profile

Monitor The Crop

You should ideally monitor the crop weekly for signs of stress that may be caused by nutrient issues up to early budding stage. You should be especially vigilant of pests and diseases throughout and contact an advisor in relation to issues that are of particular concern as there may be organically approved control options. Pigeons, slugs and flea beetle are common issues around establishment, with scaring devices and organically approved slug pellets available to combat the first two of these post drilling. Some new organic products are starting to appear which might limit flea beetle damage, but these are usually applied with the seed when it is drilled. Other organic products are starting to become available for control of pollen beetle later in the season.

Resistant varieties will hopefully reduce disease problems (e.g. Light Leaf Spot), but Sclerotinia is one disease where severity can fluctuate between seasons, with limited options for control. 2019/20 season was kind in this regard.

Swathing

Swathing, rather than direct combining, would be the preferred option to help desiccate the crop and even up seed maturity in most cases. Always swath using the widest available swather as it will help concentrate any shed seed, and therefore volunteers within the swather bout width. Seeds in the upper third of the pods should be starting to turn from green to brown, with the lower third of the pods containing seeds that are already dark brown to almost black.



Swathing an organic oilseed rape crop growing in NE Scotland

Harvesting & Volunteer Control

Combining is likely to take place around 10 to 14 days after swathing was undertaken and the seeds have desiccated and developed a dark brown / black colouration. Ideally use a combine harvester that has a Draper Header and shut off chaff spreaders when in use.

Bale and remove the straw from field at the earliest opportunity, as this will help reduce volunteer problems in the future. Do not incorporate the straw, as this is likely to increase the number of seeds in the seedbank which may lead to increased volunteer oilseed rape issues in future years. Once combined, dry and condition the seed within 48hrs to around 9% moisture in order to reduce the risk of the seed heating up through natural processes leading to a deterioration of oil quality and possibly spoilage.

Yields from the 5 farms averaged around 2.5 t/ha @ 9% MC, with the best performing crops yielding slightly over 3 t/ha and the worst under 1 t/ha. Oil content was between 41 and 43%, and erucic acid levels were all well below the 2% level required for human use, which meant the seed could be sold at a 25% premium over that destined solely for livestock nutritional purposes.

Allow any seed that has been shed during the harvesting operations to germinate. You need to control these volunteers early if using mechanical weeding, ideally at cotyledon stage before the taproot forms. Several passes with a tine harrow over a number of weeks can prove effective. Other options include allowing the volunteers and other weeds to grow and graze off over the winter with sheep, however, this wasn't the recommended option provided by the Swedish farmers.



Volunteer control before (left) and after (right) using a spring tine harrow in one of the Scottish organic oilseed rape crops

A Note Of Caution

This technical guide has been produced based on the experience gained by the participants of the SCOCAN project over just one season, utilising information gathered from a limited number of treatments on a small number of farms using non-replicated pilot studies.

Remember growing organic oilseed rape is not just about having the right variety, sowing it and then just shutting the gate until harvest time. The 2019/20 season was a very low disease season, especially for Sclerotinia, and at the time of writing, the 2020/21 season has experienced relatively warm and wet growing conditions, which are likely to encourage disease. There are a number of organic options available which may aid disease control, but these haven't been investigated to any extent in SCOCAN as disease was not a major factor in the 2019/2020 season in which the project took place. Your advisor may be able to suggest some options if you are having issues.

Further Information

There are 3 videos which have been produced based on the demonstration events linked to the 3 pilot study farms, each one focussing on a different key stage in the organic oilseed rape (canola) crop's maturity. These can be accessed here: <https://vimeo.com/475418922>

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