

Canola fits into crop rotation systems in northern irrigation areas

By André Agenbag

The Canola Development Plan of 2014 stated that an area of approximately 172 000ha is suitable to produce grain crops in the central and northern irrigation areas of South Africa. If canola is planted once in a period of four years as a winter crop, 43 000ha can be used annually to produce canola in these areas. This could be a huge boost for canola production in South Africa.

During 2016 and 2017, canola trials were planted in the Beestekraal (Brits) and Groblersdal irrigation areas to identify the best adapted cultivars (early or late maturing) and optimal planting dates in these areas. Four canola cultivars, Hyola 50 (medium maturing), 44Y89 (medium-early maturing), Belinda (medium-early maturing), and Diamond (early maturing) were planted.

Timely planting of crops

To fit into existing crop rotation systems with maize planted during the summer season, 15 April, 30 April and 15 May were used as possible planting dates. These dates would make it possible to harvest the canola no later than October to allow the timely planting of summer crops.

In these trials phosphorus and potassium were applied according to soil analyses, aiming at a content level of

34mg P (Bray1) and 80mg K (ammonium acetate) per kilogram of soil. Planting densities were adjusted between 3 and 4kg/ha for different cultivars according to the size of the seed, aiming at plant populations of 50 plants m².

From Table 1 it is clear that planting

canola between mid-April and mid-May in the northern irrigation areas of South Africa will ensure that plants will flower from approximately the end of July until the end of August, depending on the maturity group of the cultivar and specific planting date.

Table 1: Canola flowering (FD) and physiological maturity dates (PMD) obtained at two localities under irrigation during 2017.

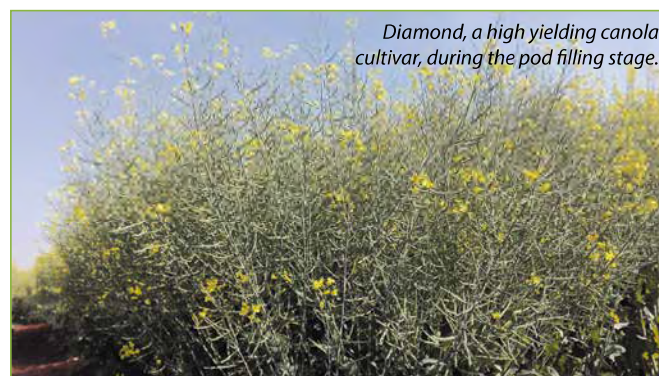
| Groblersdal | 2017 | | | | | |
|-------------|------------------|---------|---------|---------|--------|---------|
| | Date of planting | | | | | |
| | 18 April | | 2 May | | 17 May | |
| Cultivar | FD | PMD | FD | PMD | FD | PMD |
| Diamond | 26 July | 15 Sept | 28 July | 15 Sept | 15 Aug | 28 Sept |
| 44Y89 | 28 July | 17 Sept | 30 July | 17 Sept | 19 Aug | 30 Sept |
| Belinda | 5 Aug | 22 Sept | 7 Aug | 22 Sept | 22 Aug | 8 Oct |
| Hyola 50 | 5 Aug | 24 Sept | 7 Aug | 24 Sept | 26 Aug | 10 Oct |

| Beestekraal | 2017 | | | | | |
|-------------|------------------|---------|--------|---------|--------|---------|
| | Date of planting | | | | | |
| | 20 April | | 4 May | | 19 May | |
| Cultivar | FD | PMD | FD | PMD | FD | PMD |
| Diamond | 18 July | 6 Sept | 4 Aug | 20 Sept | 18 Aug | 28 Sept |
| 44Y89 | 23 July | 10 Sept | 8 Aug | 22 Sept | 20 Aug | 30 Sept |
| Belinda | 25 July | 16 Sept | 14 Aug | 29 Sept | 24 Aug | 8 Oct |
| Hyola 50 | 1 Aug | 20 Sept | 14 Aug | 29 Sept | 26 Aug | 10 Oct |

FD = 50% flowering date; PMD = physiological maturity date



Canola under irrigation in the Groblersdal irrigation area.



Diamond, a high yielding canola cultivar, during the pod filling stage.

Physiological maturity, which gives an indication of the date when plants start to ripen and become ready for swathing, will be reached between mid-September and approximately 10 October, depending on cultivar and planting date. Cultivar selection and planting date will therefore enable producers to fit the canola crop into their existing production systems and avoid frosty periods.

Grain yields

Despite problems with diseases (*Sclerotinia*) at the Beestekraal locality during 2016 and early lodging due to excessive vegetative growth at the Groblersdal locality during 2017, grain yields of more than 4,5t/ha were still achieved during these problem years (Table 2).

During 2016 at Groblersdal and 2017 at Beestekraal, when diseases were successfully controlled and no lodging occurred, yields of more than 5,5t/ha were achieved. Such yields will ensure that canola, at present prices, will show higher profit margins than wheat. In areas where *Fusarium* diseases hampered the production of maize and wheat, the inclusion of canola may also result in higher yields with maize and wheat,

because canola will act as a break crop to reduce the incidence of this disease.

From this table it is clear that although all cultivars tested performed well, the highest yields were recorded with the early maturing cultivar Diamond, while the later maturing cultivar Hyola 50 showed lower yields, especially at later planting dates.

With regard to planting dates, a general trend showing a decline in yields with later planting dates were observed. Although optimal planting dates, as shown in Table 2, may differ between years, it is recommended that canola should not be planted later than the first week in May in the northern irrigation areas.

It is, however, important to note that canola is frost sensitive (temperatures lower than -3°C) during flowering stage (Table 1), and later maturing cultivars or later planting dates should be used in frosty areas.

Optimise canola yields

Key factors that will optimise canola grain yields:

- **Establishment:** Canola seed is much smaller than that of maize and wheat and should be planted at an even depth of 1-2cm in a firm seedbed to

Canola cultivar trials planted 20 April (left), 4 May (centre) and 19 May (right) at the end of June 2017 at Beestekraal, Brits.



ensure good seed to soil contact. For this reason, planting in seedbeds with a lot of residue from the previous crop may create uneven germination and establishment. A plant population of 40-50 plants per m² are required for optimum yields and higher plant populations may result in plants having thin stems, which make them prone to lodging at pod filling stages.

- **Sclerotinia stem rot disease:** Canola, like soya beans, is very susceptible to *Sclerotinia* and spraying with a registered fungicide at 20-30% flowering is recommended. If soya beans form part of the crop rotation system, a second spraying three weeks later may be necessary.
- **Harvesting of canola:** Canola pods are prone to shattering during ripening and canola seed is very small. For these reasons, harvesting losses and losses during the transport of canola after harvesting may have a negative impact on yields. It is recommended that canola in irrigation areas be swathed before harvesting. If suitable swathers are not available, chemical ripening should be used before the canola is harvested.

Although there is no doubt that canola can add great value as a break crop to cropping systems in the northern irrigation areas of South Africa, producers are advised to start off with no more than 30-50 hectares of canola, as this will give them the opportunity to master the techniques for canola production before large areas are planted. 🌱

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Table 2: Canola-grain yield (kilogram per hectare) obtained at two localities under irrigation during 2016 and 2017.

| Groblersdal | 2016 | | | 2017 | | |
|-------------|------------------|-------|--------|------------------|-------|--------|
| | Date of planting | | | Date of planting | | |
| | 21 April | 9 May | 24 May | 18 April | 2 May | 17 May |
| Diamond | 5,842 | 4,186 | 3,812 | 4,408 | 4,166 | 4,733 |
| 44Y89 | 4,029 | 3,029 | 3,117 | 3,033 | 3,483 | 2,541 |
| Belinda | 4,863 | 3,549 | 2,721 | 4,021 | 3,854 | 2,966 |
| Hyola 50 | 4,724 | 3,334 | 3,058 | 3,524 | 3,708 | 3,349 |
| Mean | 4,865 | 3,525 | 3,177 | 3,747 | 3,803 | 3,397 |

| Beestekraal | 2016 | | | 2017 | | |
|-------------|------------------|--------|--------|------------------|-------|--------|
| | Date of planting | | | Date of planting | | |
| | 25 April | 11 May | 17 May | 20 April | 5 May | 19 May |
| Diamond | 4,427 | 4,977 | 3,507 | 5,412 | 5,557 | 5,562 |
| 44Y89 | 3,988 | 4,235 | 3,191 | 5,391 | 5,253 | 5,532 |
| Belinda | 4,419 | 3,871 | 3,650 | 5,236 | 5,512 | 5,537 |
| Hyola 50 | 4,113 | 3,801 | 2,819 | 5,303 | 5,486 | 4,578 |
| Mean | 4,237 | 4,221 | 3,291 | 5,336 | 5,452 | 5,302 |