In order to spread risk, sunflower producers are advised to plant more than one cultivar and ensure that cultivars are suitable for the region, the time of planting and disease incidence.

GETTY IMAGES

Sunflower & soya bean trial results

The Agricultural Research Council Grain Crops Institute tested seven new sunflower cultivars and eight new soya bean cultivars for South Africa’s 2015/2016 growing season. Wilma den Hartigh reports on the trials and recommendations.
The Agricultural Research Council Grain Crops Institute (ARC-GCI) has released its sunflower and soya bean cultivar recommendations for the 2015/2016 growing season.

**SUNFLOWER TRIALS**

In the 2014/2015 growing season, field trials were conducted on 21 cultivars, of which seven are new.

The cultivars were evaluated by the ARC-GCI, several seed companies, and the Oil and Protein Seed Development Trust. The new cultivars are:
- NK ADAGIO CL
- NK ADAGIO C
- NK TUTTI
- PAN 7031 C
- PAN 7117 CL
- SY 3970 CL
- SY 4065

**Yield probability**

According to Dr André Nel, senior researcher at the ARC-GCI, yield is the result of numerous factors and producers should therefore adopt an holistic approach when selecting cultivars for the upcoming season.

**‘MAINTAINING A HIGH LEVEL OF EFFICIENCY IS THE BASIS FOR THE FINANCIAL SUCCESS OF SUNFLOWER PRODUCTION’**

He advises farmers to spread risk by planting more than one cultivar, keeping in mind that cultivars should be suitable for the environmental conditions of a particular growing region, its disease profile and the time of planting.

“Maintaining a high level of efficiency is the basis for the financial success of sunflower production,” Nel explains.

“The aim of the sunflower cultivar trials is to generate information from which a sensible selection of cultivars can be made.”

The yield probability of a cultivar is the chance to obtain an above-average yield at a particular yield potential, according to him. For example, if the yield probability of a cultivar at a specific yield potential is 60%, the possibility of achieving a yield above the mean of all cultivars is 60% with a 40% chance of obtaining a yield below the mean.

If a farmer plants in mid-January, which Nel considers to be late-season planting, he or she should select a cultivar with a shorter growing season to avoid the risk of frost damage.

“Keep in mind that a crop planted later in the season will also have a lower yield potential. If possible, plant in November.”

He explains that as new cultivars are introduced and some are removed annually, a multi-season reliability analysis is possible only for a limited number of cultivars.

<table>
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<tr>
<th>Cultivar</th>
<th>Days to 50% flowering</th>
<th>2013/2014</th>
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The long-term mean yield of a particular land is usually a good indicator of the yield potential and can therefore serve as yield target.

Cultivars with the highest yield probability values are those with the best chance of performing well under the specific conditions (see Table 3).

**Cultivar trends**

In recent years, Nel has noted the development and introduction of Oleic sunflower cultivars. These are high in monounsaturated fatty acids and considered healthier than polyunsaturated fats. He says that the introduction of Clearfield cultivars, which enable improved weed control, are also growing in popularity.

Sunflower can be planted from September to January because it has a relatively short growing season. However, Nel still recommends that farmers plant in November.

Given weather extremes, he says that sunflower performs relatively well under drought conditions.

“Last year, farmers in North West claimed that they did better with sunflower than maize. We usually see this trend in a year of drought, whereas in the wet season maize outperforms sunflower.”

**SOYA BEAN TRIALS**

As part of the trials, eight new cultivars were tested:
- NS 5009 R
- DM 5.1i RR
- DM 5953 RSF
- NS 5909 R
- LS 6466 R
- NS 6448 R
- DM 6.8i RR
- NS 7211 R

**Increased production**

According to ARC-GCI researcher Annelie de Beer, soya bean production is the fastest-growing grain commodity in South Africa. It is also one of the most important oil and protein sources in the world and can be cultivated under a wide range of climatic conditions.

According to the 29 September 2015 Crop Estimates Committee report, the soya bean production area in South Africa increased from 502 900ha in the 2013/2014 planting season to 687 300ha in the 2014/2015 planting season. This is an expansion of 26.8%. Estimates also show that the 2014/2015 yield will be the first ever to exceed the one million ton mark, despite a below-average production year.

Continued on next page
However, De Beer says that despite the increase in planted and national production figures, production per hectare remains a challenge. The average is estimated at 1,54t/ha.

“The low production yield per hectare can be due to below-average [rainfall] as well as farmers planting soya beans for the first time,” she explains. “This is why we recommend that farmers, when planting for the first time, start small to learn the tricks of the trade.”

**The characteristics of a good cultivar**
The best-adapted cultivar is one that will, in the long term, give the best yield and quality for a production area within a specific geographical area. Those with above-average values should provide the best chance of a stable and successful yield.

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**SEATING SHOW THAT THE 2014/2015 SOYA BEAN YIELD WILL EXCEED ONE MILLION TONS**

GCI statistics show that the following are the best-performing cultivars in terms of average tonnage achieved per hectare (t/ha values given in brackets below), over a three-year period, for various growing regions:

- **Cool growing regions**
  - PAN 1583 R (2.97)
  - PAN 1664 R (2.88)
  - LS 6248 R (2.88)
  - PAN 1500 R (2.82)

- **Moderate growing regions**
  - LS 6261 R (2.82)
  - PAN 1664 R (2.79)
  - LS 6161 R (2.77)
  - PAN 1583 R (2.73)

- **Warm growing regions**
  - LS 6161 R (3.62)
  - LS 6261 R (3.57)
  - LS 6164 R (3.41)
  - PHB 95 Y 20 R (3.41)

The GCI recommends that farmers choose shorter growing season cultivars if they anticipate a late planting date. Planting in October, particularly in areas with a higher altitude, is recommended where soil and air temperatures reach acceptable levels early in the growing season. In such a case, planting should take place in narrow rows with a higher plant population to increase pod clearance.

- **Temperature**
  Soya beans grow more slowly in the Highveld than in the warmer Lowveld. Cultivars with a longer growing season will perform better in warmer growing areas, cultivars with a medium growing season will perform better in moderate growing areas, and varieties with a shorter growing season will perform best in cooler production areas.

There are however, exceptions to the rule. “It’s recommended to also use yield performance and cultivar adaptation in combination with length of growing season during cultivar selection for a specific area,” says De Beer.

- **Seed shattering**
  Resistance against seed shattering can play an important role during unfavourable harvesting conditions. Shattering occurs when soya bean plants re-seed over time.

“This differs from cultivar to cultivar and depends on the climate conditions,” explains De Beer.

For example, if a production area receives rain during harvesting, followed by high temperature, soya beans tend to shatter more. She explains that producers
can limit shattering by staggering planting dates or planting cultivars with different maturity groupings to spread harvesting. Information obtained during the national soya bean cultivar trials indicates that cultivars with a relatively short growing period tend to shatter more than cultivars with a longer growing period.

- **Growth habit**
  Cultivars with a determinate growth habit are preferable under irrigation, while indeterminate cultivars that do not stop vertical growth during flowering perform best under dry land conditions.

- **Careful selection is key**
  De Beer says that an increasing number of seed companies are showing an interest in soya beans, making a greater number of cultivar options available for farmers.

  “As eight of the 29 cultivars included in the cultivar trials were new entries, it’s very important for producers to make a careful selection,” she says.

  This process should include an assessment of the cultivar attributes and yield potential, as a combination of these factors could make a significant impact on profit margins.

  “The right cultivar choice can be cream in the coffee for a farmer,” says De Beer.

- **Sources:**
  - bit.ly/1QRS1Od
  - bit.ly/1PzDzNA
  - bit.ly/1LDsnt4
  - bit.ly/1ZWBJtK
  - Phone the ARC-GCI on 018 299 6100 or email jamesm@arc.agric.za.
  - Visit www.arc.agric.za/arc-gci/Pages/ARC-GCI-Homepage.aspx.

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