

Back to basics with sunflower agronomy

By Ursula Human

The agricultural industry has undergone rapid change and, thanks to technological developments, intelligent farming systems can now monitor many aspects of agronomy. However, according to a recent article by the international seed company Nuseed, the secret to improving the profitability and performance of sunflower crops lies in a return to the basic principles of agronomy.

Know your soil

Producers must know which crops were previously grown in a specific field. All crops that were previously grown will have had an impact on the soil's condition, structure and fertility. The pest and diseases that were previously present, as well as planting time and planting method, will also have affected the soil. No matter how busy producers are, examining the soil helps to gain useful insight into the land.

According to the Nuseed article, it is important to remember that a significant part of the plant is underground, and many above-ground issues can be traced to soil conditions. A spade is an essential piece of equipment for any agronomist, along with a soil thermometer, pH meter, sharp knife and a soil penetrometer. Since soil penetrometers are usually expensive, a meat skewer or similar tool can be used as an alternative. The aim is to get a 'feel' for any compaction issues.

Optimising yield

Regardless of the planting method used, some basic principles must be considered when looking to increase yield. All inputs must be of high quality, including seeds. Seeds with high genetic potential will perform better than those with inherently lower potential, regardless of the agronomical conditions.

The industry commonly relies on hybrid sunflowers that are herbicide tolerant. Hybrid seeds are the result of crossing two different varieties to combine their



beneficial qualities. These seeds perform well in most production systems, and each variety serves different needs.

The article emphasises plant density as another important factor for achieving optimum yield. An increase in plant density results in a yield increase. During planting, seeds need to be placed the correct distance apart in order to achieve the ideal plant density. This is known as in-row spacing and there are several ways to calculate it, the easiest of which is to calculate the length of one row and divide it by the target plant population.

Nuseed uses the following example to illustrate this calculation:

- The length of a 1ha row is one hectare expressed as 10 000m², divided by the width of one row.
- For example, 10 000m ÷ 75m = 13,333m.
- In this case, the length of 1ha row is 13,333m.
- Then divide the length of 1ha row by the target plant population.
- For example, 13,333m ÷ 60 000 = 0,22m or 22cm.

This means that if you set up your planter to place seeds 22cm apart on 75cm row widths, you will achieve a plant population of 60 000 seeds per hectare.

Nutrition, pests and diseases

According to Nuseed, yield and oil quality depend on the nutrition

available in the soil. When fertiliser is applied to fields planted to sunflower, the soil should be tested to determine the availability of phosphorous and potassium. Consider the previous crop, soil type and the expected yield to determine the application rate of nitrogen. This element is important for optimum yields, but too much can reduce oil content and affect oil quality by reducing protein and oleic acid content. Avoid damaging sensitive sunflower seeds with fertiliser and limit the amount placed in close contact to the seed at planting.

The crop canopy's effective light interception also affects yield. This can be reduced by pests and foliar diseases, which reduces the canopy's photosynthetic ability. As leaves die from disease, they shrink and curl up, which means that much of the sunlight energy is wasted because it passes through the canopy.

Leaf area can also be reduced by pests that eat leaves. Consequently, the plants are exposed to potential secondary infections. The green leaf area can be maintained with well-timed sprays, and it is recommended that the upper leaves are sprayed until seed formation and filling ends. It is also necessary to monitor crops regularly for pests and diseases. 🌱

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