

# SORGHUM AS AN ALLROUNDER IN DAIRY CATTLE FEED

Drought, rising production costs and the search for sustainable cultivation strategies also require new impulses in dairy cattle feeding. Sorghum offers an interesting alternative to silage maize – a heat-loving C<sub>4</sub>-plant that scores highly in terms of dry matter yield, nutrient efficiency and animal health. Luuk Maas, product manager for feed quality at Deutsche Saatveredelung AG (DSV) at the Dutch breeding station in Ven-Zelderheide, takes a closer look at the crop. He provides us with exciting insights into the use of sorghum in dairy cattle feeding.

## BIOMASS TYPES



Sorghum belongs to the sweet grass family and, depending on the variety, offers a wide range of uses in forage production. Three types are distinguished in terms of their use (see Fig. 1):

- Biomass types achieve dry matter yields (DM yields) of 15–20 t/ha. These types provide structurally rich feed with a high cell wall content – ideal as a maize substitute with a pronounced rumination stimulus.

## QUALITY TYPES („DUAL TYPES“)



- Quality types („dual types“) yield 12–17 t DM/ha and are characterised by a higher grain proportion and thus a higher starch content. They are particularly suitable as an energy-rich supplement to the ration.
- Grain types have a higher grain proportion and a DM content of 38–46%. They are not suitable as forage feed but are intended for grain use.

## GRAIN HYBRID



All types can also be successfully grown in a mixture with maize, which allows the crop to be tested before switching to pure sorghum cultivation.

### Securing feed value – how to ensure a successful harvest

In tropical and subtropical regions, sor-

ghum, similar to grass, is harvested several times per year. Under Central European conditions, usually only one cut per year is possible. Sorghum can produce hydrocyanic acid (HCN) during vegetation, which serves as a natural protection against pests. This is not a problem for feeding if the crop is sufficiently developed. The German limit value after emergence is 50 mg HCN/100g dry matter. Once the crop has reached a height of around 50 cm, the hydrocyanic acid content is so diluted that it is harmless to animals. Sorghum can be harvested using the same technique as maize – at the same time and even mixed in the same silage (see Fig. 2).

Sorghum grains are about four times smaller than maize grains, which can pose challenges during harvesting. The narrow spacing in the corn cracker is not always sufficient to break open all the grains. However, research by DSV has shown that ensiling softens the grains, making them more easily digestible by ruminants. It is important not to harvest too late, as over-ripe grains can harden. The resulting silage is a bit lower in pH which makes it a very palatable structural ration addition. More palatable as for example chopped straw.

Fig. 1: Three types of sorghum for every need!



Fig. 2: Sorghum and maize combined in silage.

The combination of structurally rich plant material and easily digestible grains allows to produce balanced, high-performance silage – especially when the plants are harvested at the right time.

For optimal preservation, the dry matter content should be above 28% (see Fig. 3). While maize dries out towards the end of the growing season, sorghum remains green for a long time. The „stem twist“ serves as a test on site. If hardly any liquid can be squeezed out of the compressed stem, the correct harvest time has been reached.

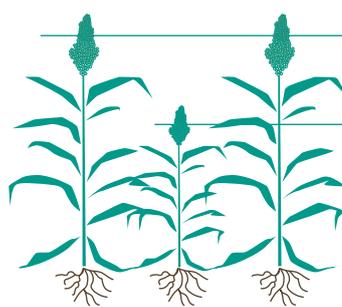
For quality types, grain maturity is also a key factor. As soon as the upper third of the panicle is at wax-ripe stage and the lower part is at milk maturity, the total dry matter content is around 30–32% – then harvest can begin.

### Practical experience

Dairy farmers in the Netherlands report that milk yield remains constant when switching from maize to sorghum, with an interesting side effect: the milk fat content increases, which has a positive effect on milk sales. Sorghum also appears to have health benefits. A shinier coat, fewer hoof problems and a generally more robust herd are frequently mentioned. This all has a link to increasing rumen function.

## POWER-STARCH-MIX – TWO LEVELS FULL OF ENERGY

With POWER-STARCH-MIX, Deutsche Saatveredelung AG (DSV) offers a practical combination of two types of silage sorghum. The mixture combines a very early quality hybrid



1  
2

Power-Starch:  
really good!

- Starch on 2 levels
- High lodging resistance
- Optimal use of growing space

### » The system works and generates high yields. «

Daniel Zapfe, Agrarproduktion GmbH Engerda-Heilingen,  
Saalfeld-Rudolstadt district, Thuringia



(170–190 cm plant height) with a longer silage variety (230–280 cm). The result is two levels of stronger panicles – with a reduced risk of lodging.

Background: The mass yield of sorghum depends heavily on the length of the plant. Although greater growth heights produce more biomass, they also increase the risk of lodging. Combining both types results in stable crops with a high starch content.

Practical tests confirm its performance: in a trial conducted by the North Rhine-Westphalia Chamber of Agriculture (Greven, 2024), POWER-STARCH-MIX achieved a relative dry matter content of 106% and a relative dry matter yield of 118 dt/ha.

### Cultivation instructions:

- Sowing density: 25–30 plants/m<sup>2</sup>
- Sowing depth: 2 to max. 4 cm
- Row spacing: 25–50 cm
- Sowing: mid-May to mid-June, soil temperature at least 12 °C

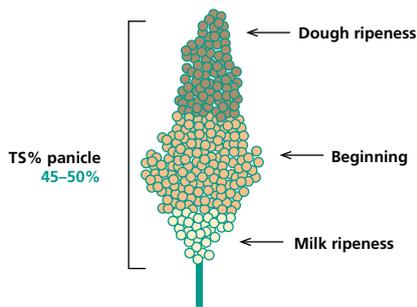
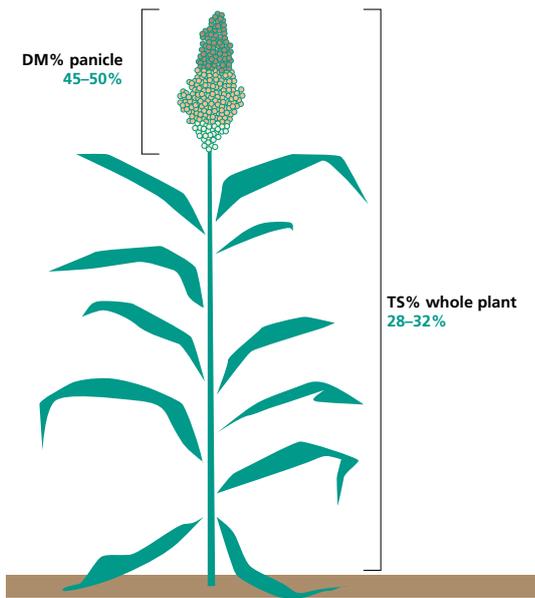


Fig. 3: Dry matter content (DM) of a sorghum plant.

### Plant with great potential

Sorghum is still a relatively new feed in Central European rations. There are occasional differences between calculated feed values and what cows actually need. More practical data, trials and experience are needed, but the prospects are promising.

### Conclusion

Sorghum is a valuable option, especially in regions with frequent dry periods or as a supplement to maize. Those who are open to alternatives and familiarise themselves with the specifics of the crop can benefit from a robust, versatile feed while also diversifying their crop rotation. The future of dairy cattle feeding requires more flexibility – sorghum could be a potential key.

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