





*Sorghum: the safe
bet for the future*

Some aspects of Sorghum production in Bulgaria

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Production of sorghum in Bulgaria for the period 2010-2017

Year	Harvested areas /ha/	Sorghum grain /t/	Average yield t/ha
2010	3542	8 612	2.43
2011	2843	5 554	1.95
2012	5328	10 765	2.02
2013	4339	11 625	2.68
2014	6706	18 347	2.74
2015	6821	17 041	2.50
2016	3286	7 705	2.35
2017	4238	12 219	2.88

SORGHUM SELECTION IN AGRICULTURAL INSTITUTE - SHUMEN

As a result of intensive research, hybrids for green mass and grain production are created.

By inbreeding and continuous selection perspective lines of different prematurity, height and type of brooms, grain color, high productivity have been created.



SOIL TREATMENT

Soil treatment should begin immediately after the field is released from the previous crop.

Prior to deep plowing, discourse can be done to reduce the loss of moisture.

Depth of tillage -22-24 cm for normal soils and 15-18 cm for sandy soils. Two cultivations before sowing, the latter being done immediately before sowing at 4-5 cm.

The preparation of the field is organized so as to minimize the evaporation of soil moisture.

Precursors - Wheat, barley - the best are the crops, which leave the areas clean of weeds

Sorghum could also be sown as a second crop.

One or two row cultivation are necessary.



PLANTING

Sorghum seeds are very small.

A fine but not too fine soil preparation is the key to optimize emergence & herbicides efficiency later on.

Optimum planting depth is between 2 and 4 cm

Sorghum is a tropical plant which requires warm soils, soil temperature must be $> 12^{\circ}\text{C}$ (usually beginning of May). Sorghum does not germinate in cold soils!

Planting on clean soil (no weeds)

Choose early or mid-early maturity hybrids to harvest before re-appearance of humid weather



PLANTING

Use a corn pneumatic planting machine but use disk of 72 holes
(do not use wheat planter!).

Low speed : 5km/h

Distance between rows :

Optimum : 45-70 cm

Usually sorghum farmers use the same distance as for corn (70cm)
to avoid changing elements & to allow row cultivation.

Densities :

280 to 350 thousand seeds / ha depending on the prematurity of the hybrid and
the soil type

The Drier is the climate, the lower should be the sowing density
(because not enough water in soil for all plants)



FERTILIZATION

Sorghum requires low level of fertilization

- Phosphorus : 20 to 60 units P_2O_5 , applied at the “3 leaves” sorghum stage (“starter”). Sorghum has low demand of Phosphorus.
- Potassium : 20 to 60 units. Apply only for poor soil.
- Nitrogen : 50 to 80 units before planting or latest at the “6-7 leaves” sorghum stage. Sorghum is acting as a nitrogen pump with its powerful root system.



FUNGICIDES & INSECTICIDES

- Sorghum is not sensitive to disease and has very few insects attacks.
- Moreover, its small surface cultivated avoid diseases & pest pressure
- For fusarium, no treatment, just choose tolerant hybrids.
- => All of this explains why sorghum is a low input crop.



HARVESTING

- Physiologic maturity : 30% moisture content (=> the plants stop feeding the kernel)
- Optimum moisture for harvest : 18-22% but necessity to dry
- Possible to harvest dryer 15% but choose a Early/Mid-Early hybrids tolerant to Fusarium
- Harvest with a WHEAT combine with a wheat header (KEY)
 - Make combine adjustments to sorghum kernel size (close to wheat adjustments)
 - combine drum speed (500-600 turns/min .
 - Make sure there are no more losses at the head or at the back of the combine
 - Harvest only at the brooms height to avoid harvesting also green stalk



HARVESTING

In Bulgaria, farmers who are also engaged in livestock after grain harvesting also use the remainder of the green mass for feeding mainly buffalo and cattle.

This is an additional advantage to make full use of sorghum potential.



HOW TO INCREASE THE PRODUCTION OF SORGHUM IN BULGARIA?

- To be Established a standard for the purchase of sorghum grain encouraging farmers to expand production from this crop.
- To develop and implement recipes for the production of feed mixtures with sorghum participation for the main types of farm animals.
- Encourage researchers efforts to create varieties adapted to country conditions. Projects in this area should be targeted and privileged.
- To organize demonstration fields annually to present the achievements in the selection of grain and green mass sorghum.

THANK YOU!

Agricultural Institute in Shumen is
interested in cooperation
on breeding sorghum!