SORGHUM CROP, AN ALTERNATIVE FOR DOBROGEA FARMERS

Technical & economic references for sorghum production in South-West of Romania

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SHORT HISTORY

- IX siecle in Zanzibar
- The first cultivation of sorghum in the East India
- Sorghum in Italy XIII siecle
- In 1943 Romania exported Italian sorghum
- In 1986 Romania cultivated 90000 hectares with an average of 1860 kg/ha
- In 2003 Romania cultivated 11092 hectares in 8765 farms

EXPERIENCE OF SORGHUM IN CONSTANTA COUNTY 1961-REASEARCH STATION VALU LUI TRAIAN

Hybrid	Plant height cm	Vegetation period days	Yields Kg/ha	+ -
HD 302 (corn)	220	132	5054	-
NK 300	156	143	8152	3098
NK 120	118	128	7905	2851
X 3000	109	125	7646	2592
X 3021	129	135	7611	2557
X 3057	170	130	7476	2422
X 3007	108	148	7322	2268
NK 310	113	146	7057	2003
NK 230	103	136	6867	1854
NK 145	225	130	6815	1761
NK 135	122	131	6670	1616
NK 135 11	136	145	6657	1603
X 3037	102	145	6459	1405
NK 140	118	138	5741	687
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ARABLE CROP IN DOBROGEA

	Sorghum	Wheat	Winter Barley	Corn	Sunflower
Cultivated area 2017 (ha)	1 050	186 855	28 410	41 032	118 635
Yield (kg)	~3500	4682	5116	6906	2927

Rainfall average 1961-2016	464 mm
Sum T° base 6	1950 to 2200°C
Soil type	cambic chernoziom, with a profile deeper than other chernozioms, a blackish-brown soil of 40-50 cm thickness, medium texture
Main rotation	Sunflower – wheat (cereals- oilseeds)

PRODUCTION SYSTEM IN AMZACEA

	Corn	Sorghum	Sunflower
Precocity group	Early	Early	Mid late
Water resource	Rainy- No irrigation	Rainy - No irrigation	Rainy - No irrigation
Seedling density (seeds/ha)	80 000	230 000	70 000
Seed origin	100 % Certified	100 % Certified	100 % Certified
Soil pest protection	✓	✓	✓
Fungicidal protection			✓
Insecticide protection			
Weeding	Pre- emergence and Post-emergence	Pre and Post-emergence (root penetration + foliar + contact)	Pre-emergence crop and Post-emergence
Mineral fertilisation N (en kg/ha)	160	120	55
Mineral fertilisation P2O5 (en kg/ha)	70	60	70
Mineral fertilisation K2O (en kg/ha)	0	0	0
Harvest moisture content (en %)	≈ 15%	16%	< 9%

ECONOMICAL DATA – AMZACEA – CONSTANTA COUNTY 2017

	Corn	Sorghum	Sunflower
Mechanical works	316	269	329
Seeds	125	101	149
Fertilizers	165	156	130
Pesticides	183	51	156
TOTAL COST/HA	**789**	**577**	**764**
Average Production KG/HA	8364	8859	3800
Price €/T	130	130	294
REVENUE	**1087**	**1151**	**1117**
MARGINS	**298**	**574**	**353**

KEY POINT FOR A SUCCESS SORGHUM CROP IN DOBROGEA

- The experiments were carried out in 2016 on 6 hybrids.
- Most of the hybrids were sown one month earlier (9 April) compared to the classic technology.
- Data regarding sorghum productivity consisting in very high yields of about 10-11 tons / ha for most hybrids, due to the change of the sowing date which the plants benefit from the moisture accumulated in the soil during the winter and also avoid the drought crashes begin in June.
- We made a second experience, one hybrid was sown on 4 May. On this hybrid we got 3436 kg/ha less than the same hydrid sowed in 9 april.

DEMONSTRATIVE PLOTS FOR SORGHUM - AMZACEA 2016

Hybrid	Pre-emergent plant	Surface sqm	Seeds/ha	Sowing date	Emergence date	Yields kg/ha	Harvest time
A	Wheat	2195	230000	9 April	18 April	10013	02.sep
B	Wheat	2195	230000	9 April	18 April	12340	02.sep
C	Wheat	2195	230000	9 April	18 April	11785	02.sep
D	Wheat	2195	230000	9 April	18 April	11919	02.sep
E	Wheat	2195	230000	9 April	18 April	10022	02.sep
E	Wheat	2195	230000	2 May	14 May	7810	18.sep
F	Wheat	2195	230000	9 April	18 April	8601	02.sep

DEMONSTRATIVE PLOTS FOR SORGHUM - AMZACEA 2017

Hybrid	Pre-emergent plant	Surface sqm	Seeds/ha	Sowing date	Emergence date	Yields kg/ha	Harvest time
A	Wheat	2195	220000	4 April	14 April	10439	24.aug
B	Wheat	2195	220000	4 April	14 April	11504	24.aug
C	Wheat	2195	220000	4 April	14 April	10336	24.aug
C	Wheat	2195	220000	4 May	16 May	6900	5.sep
D	Wheat	2195	220000	4 April	14 April	10130	24.aug
E	Wheat	2195	220000	4 April	14 April	8859	24.aug
F	Wheat	2195	220000	4 April	14 April	10645	24.aug

DEMONSTRATIVE PLOTS FOR SORGHUM - AMZACEA 2018

Hybrid	Pre-emergent plant	Surface sqm	Seeds/ha	Sowing date	Emergence date	Yields kg/ha	Harvest time
A	Wheat	2195	240000	11 April	24 April	10100	22.aug
B	Wheat	2195	240000	11 April	25April	11000	22.aug
C	Wheat	2195	240000	11 April	25 April	10669	22.aug
C	Wheat	2195	240000	20 April	28 April	8634	09.sep

KEY POINT FOR A SUCCESS SORGHUM CROP IN DOBROGEA

- At Sport Agra Amzacea, there have been experimented in the last few years new and improved sorghum crop technologies in order to adapt to the new climate changes. These technologies comprise the following technological elements:
  - Selecting early hybrids to overcome the drought periods that occur between the 5-10th of June until the 20-25th of August. There are recommended hybrids with shorter vegetation period.
  - Changing the sowing age - the hybrids were sown one month earlier (4 and 9 April)
    The results from comparative crops in a 3-year dynamics have demonstrated sorghum crops with outstanding yields of over 10 t/ha.
  - The agricultural crops in this area are not irrigated, so the farmer proposed a new technology, with the sowing of the two crops earlier by about a month. This way the plants will benefit from the moisture from the soil accumulated in the winter and avoid the attack tanymecus sp.
- Recommendation of shorter vegetation hybrids, Sowing the sorghum between April 20th-May 10th according to classical technology (Trotus et col 2015.), Provide a minimum of 120-140 kg / ha of nitrogen, Treatment of seeds before sowing with chemicals containing thiamethoxam to combat tanymecus sp. in the early stages of vegetation, Pre-emergence herbicide with Dual Gold (metalaclor) 1,5 l/ha and post-emergence with Buctril Universal 0,8 l/ha (bromoxinil+2,4D).


THANK YOU FOR YOUR ATTENTION