



1ST EUROPEAN SORGHUM CONGRESS

WORKSHOP

CROP MANAGEMENT TECHNIQUES FOR A BETTER PERFORMANCE

SORGHUM GRAIN CULTIVATION UNDER STEPPE CONDITIONS IN UKRAINE

ENHANCING THE AGRONOMIC AND ENVIRONMENTAL ASSETS OF
SORGHUM CROPS

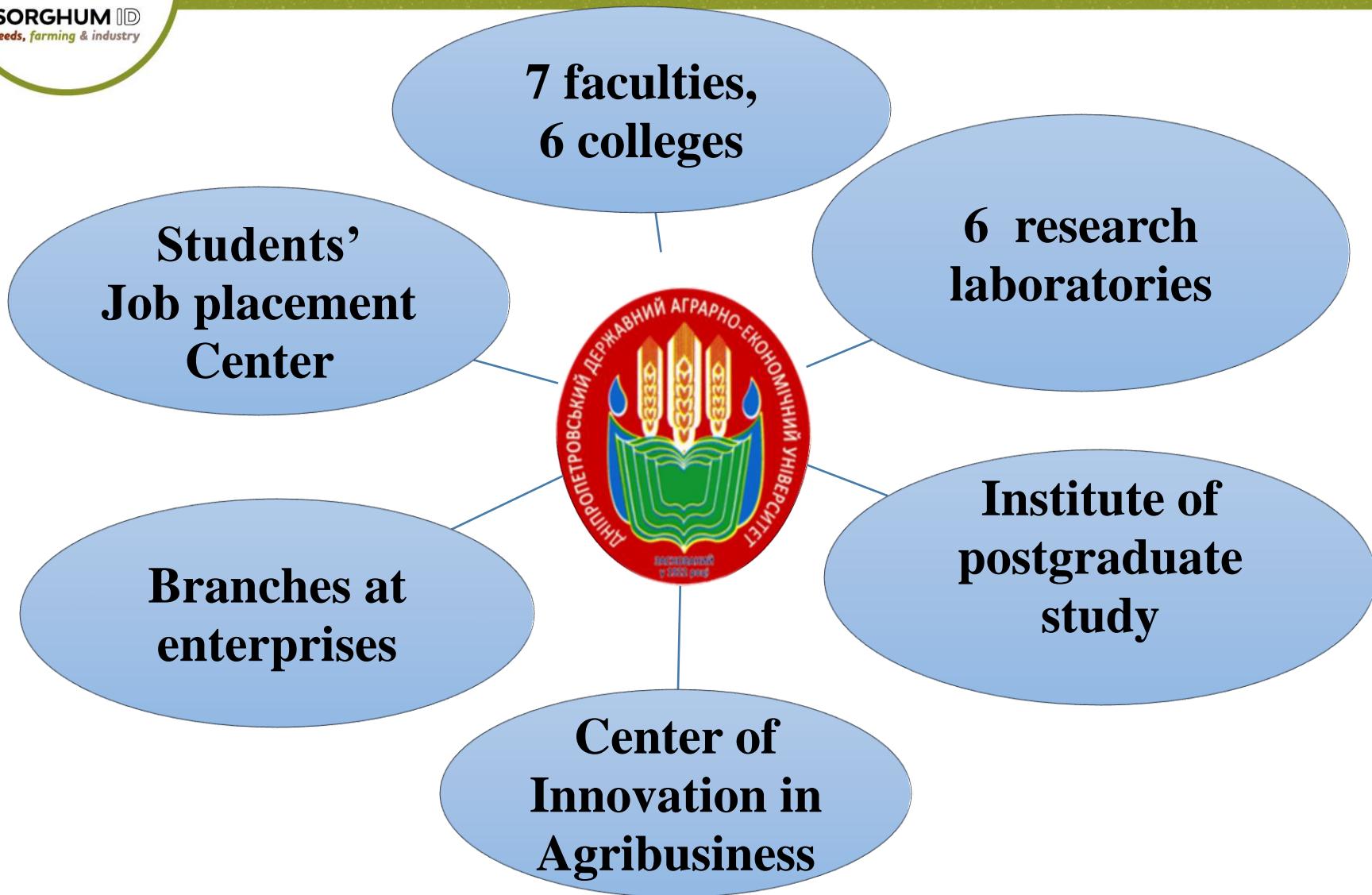


Dr Oleh OKSELENKO, Researcher, Dnipropetrovsk University UKRAINE

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UNIVERSITY DESCRIPTION





MAP OF UKRAINE OF SORGHUM GRAIN CROP PRODUCTION AREAS





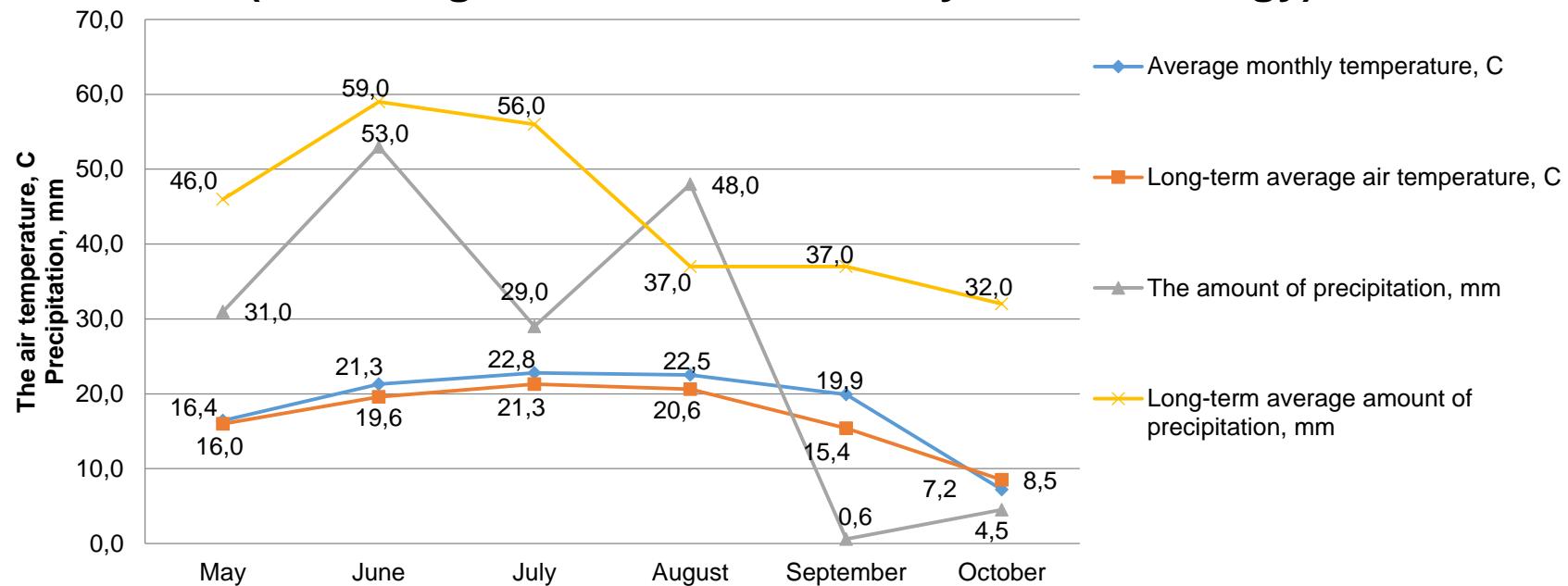
THE DENSITY OF SORGHUM PLANT STANDING IN GROWING ZONES IN UKRAINE

Growing zones	Standing density, thousand/ha
Southern Steppe	120-140
Northern Steppe	140-180
Forest Steppe	180-200

PURPOSE OF THE RESEARCH

- Improve the technology of sorghum grain growing of Dash-e hybrid in the conditions of Ukrainian steppe

Weather conditions in 2015
Average monthly temperature and amount of precipitations
(according to the DMC data for Hydrometeorology)





AGROCHEMICAL CHARACTERISTICS OF THE SOIL

Soil	Humus layer, cm	Content of humus, %	Contents of mobile forms, mg/100g soil			Soil density, g/cm ³
			N	P ₂ O ₅	K ₂ O	
Ordinary black soils humus-poor medium-powerful silty medium loam	75	3,9	8,5	10,0	15,0	1,14



TECHNOLOGICAL MAP OF SORGHUM CULTIVATION FOR GRAIN

No	Operation	Timing of the works	Machine, tools, machinery	Agrotechnical requirements
The predecessor is winter wheat				
1	Peeling	July	T-150К+ ЛДГ-15	10-12 cm
2	Autumn plowing	September	МТЗ-82 + ПЛН-3-35	22-25 cm
3	Early spring closing of moisture	Ripeness of the soil	МТЗ-82 + БЗСТ-1,0 + СГ-21	2-3 cm
4	Application of soil herbicide	Before cultivation	ЮМЗ-6Л+ОП-2000	0 cm
5	Pre-sowing soil treatment	Before sowing	ЮМЗ-6Л + КПС-4	4-5 cm
6	Sowing	At t +12°-+14°C soil on depth of seed placement	МТЗ-82 + СУПН-8; T-25 +CH-16	4-5 cm
7	Applying of the insurance herbicide	Phase of 3-5 leaves	ЮМЗ-6 Л+ОП-2000	0 cm
8	Inter-row cultivations	Phase of 7 leaves	ЮМЗ-6 КЛ + КРН-5,6; ЮМЗ-6 КЛ +УСМК-5,4Б	6-8 cm
9	Spraying with the tank mixture of insecticide and fungicide	When lesion more than 10-15 % of the plants	ЮМЗ-6 Л+ОП-2000	0 cm
10	Harvest	Full ripeness of grain	SAMPO-500	20 % moisture in the grain and less 20 %

PANICLE HEIGHT AT 3 INTER-ROWS



NUMBER OF GRAINS AT 3 INTER-ROWS





NUMBER OF GRAINS FROM THE PANICLE

(2015, Pcs)

Inter-row spacing, cm	Dose of fertilizers		
	Without fertilizers	$N_{30}P_{30}K_{30}$	$N_{60}P_{60}K_{60}$
30	1077	1242	1466
45	1174	1280	1541
70	1217	1325	1623

GRAIN WEIGHT AT 3 INTER-ROWS





GRAIN WEIGHT FROM PANICLE

(2015, Grams)

Inter-row spacing, cm	Dose of fertilizers		
	Without fertilizers	$N_{30}P_{30}K_{30}$	$N_{60}P_{60}K_{60}$
30	30,9	36,9	45,0
45	33,1	37,5	47,0
70	33,7	38,3	49,0

THOUSAND GRAINS WEIGHT AT 3 INTER-ROWS





THOUSAND GRAINS WEIGHT

(2015, Grams)

Inter-row spacing, cm	Dose of fertilizers		
	Without fertilizers	N ₃₀ P ₃₀ K ₃₀	N ₆₀ P ₆₀ K ₆₀
30	28,7	29,7	30,7
45	28,2	29,3	30,5
70	27,7	28,9	30,2



GRAIN YIELD

(2015, Tons/ha)

Inter-row spacing, cm	Dose of fertilizers		
	Without fertilizers	$N_{30}P_{30}K_{30}$	$N_{60}P_{60}K_{60}$
30	4,94	5,90	7,20
45	5,30	6,00	7,52
70	5,39	6,13	7,84



CONCLUSION

- As climate changes require a review of the rotation in favor of drought-resistant crops, sorghum is one of the most promising crops for grain cultivation in Ukraine.
- In our experiments the highest yield of grain sorghum is obtained on the row spacing width of 70 cm with the dose of mineral fertilizers $N_{60}P_{60}K_{60}$



THANK YOU

