UDC: 633.63:631.531.12.631.53.02

HYBRIDS CHS COMPONENT ELITE SEED DIFFERENT QUALITY INFLUENCE ON SUGAR BEET HYBRID SEEDS SOWING QUALITIES

Adamenko D.M., Candidate of agricultural Sciences, Senior Lecturer
Polishchuk V.V., Candidate of agricultural Science, Docent
Uman National University of Horticulture

It is shown the research results of sugar beet seeds elite ChS components fractional composition and seed fertility on hybrid seed sowing qualities influence. It is studied hybrid seed fraction size and fertility influence on sugar beet heterotic hybrids productivity.

Keywords*: seed, fractional composition, fertility, initial breeding material, O-type lines, CCHS counterparts, sugar beet, yield, sugar content, selection.*

Sugar beet intensive cultivation technology implementation, which final sowing density provides is possible only if that is seed high-quality not only a carrier of variety or hybrid instincts productivity, but also an important element of sugar beets growing technology. Best variety or hybrid advantages cannot be realized without seeds quality use. In recent years, demands for quality seed are increased significantly. If at this century beginning for sugar beet mechanized cultivation has been sufficient the seed with 80-85% germination and 85% one sprouting, on today, these indexes must be not less than 92 and 95 % respectively [2].

In botany and plant growing the "seed" term has a different meaning. In agricultural practice, sugar beet sowing material is called seed when in botanical relation is fruits and suplid (glomeruli) collection. According to Tabentskyy A.A. [1] sugar beet fruit is monogerm, without disclosing, with dry solid pericarp which must be regarded from the capsule to the nut transitional form.

At the end of nineteenth century in sugar beet seeding studies great attention was paid to relationship between the seed size and productivity. In numerous researches have been received very contradictory results. I.I Malyshev and S.M. Bogdanov believed that the large seed has no any advantage before the small. F.P. Havronskyy, A.T. Bolotov, N.E. Tsybel were concluded that: there is a direct correlation between germination and its particle size; large-scale seed has more spire nutrients, more embryos and strong sprout gives, which provides intensive plant growth and development and sugar beet higher productivity consequently [3]. Only seeds with a 3.00 mm less diameter are less fruitful with larger compared. However, great attention was paid to the sugar beet seed presowing soaking efficiency research. However, research results has shown that soaking does not provide roots yield and sugar content substantial allowances, but the beet stairs were generally more friendly [4, 5].

With the diploid and triploid monogerm hybrids creation based on cytoplasmic male sterility (CMS) and sugar beet intensive cultivation technology implementation is significantly increased for seed quality requirements (quality - is sugar beet seed characteristics and properties combination, describing their compliance with

prescribed requirements as to sowing material). The most important ones are: energy germination, germination, one sprouting, uniformity and stability in size and form.

Research methodology. In 2011-2013 years was planted roots in the testes that grown from various qualities hybrid Ukrainian ChS 72 ChS component breeding seed for hybrid seed obtaining and determine its sowing properties. ChS component with polyspermous pollen parent ratio was 4: 1, the planting scheme ChS and BZ components 8:2 lines if nutrition area 70 x 35 cm. Seed qualitative indicators determination was conducted in accordance with the existing methods [6, 7, 8]. Hybrids evaluate performance was carried out by the conventional method, the obtained results reliability was tested by R. Fischer [9] single factor dispersion analysis. Portland and Vesto hybrids were used as a standard.

1. Ukrainian ChS 72 hybrid component breeding seed various quality influence on harvested hybrid seeds sowing qualities, 2011-2012

Sowing variants content	Sterile plants, %	Monogerm plants, %	Seed yield, t/ha	Seed 3.5-4.5 mm fraction indexes			
				1000 seed mass, g	monogermity, %	energy, %	germination, %
Uterine sugar beet sowing by uncalibrated seed	69	58	0,93	11,1	88	83	91
Uterine sugar beet sowing by 3,00 – 3,75 mm fraction diameter seed	83	79	0,94	13,2	92	75	86
Uterine sugar beet sowing by 3,5 – 4.5 mm fraction diameter seed	75	52	0,90	10,2	90	82	92
Uterine sugar beet sowing by 4.5 – 5.5 mm fraction diameter seed	73	49	1,04	11,1	88	78	92
Uterine sugar beet sowing by rise from sieve 3.00 mm oblong seed	70	36	0,99	12,6	80	83	97
Uterine sugar beet sowing by 100% monogermity seed	80	66	0,90	11,3	92	81	95
Uterine sugar beet sowing by 96% monogermity seed	85	61	0,92	11,3	90	74	89
Uterine sugar beet sowing by 90% monogermity seed	88	64	0,94	12,7	88	73	92
Uterine sugar beet sowing by 70% monogermity seed	87	36	0,89	10,8	85	77	88
Uterine sugar beet sowing by 50% monogermity seed	75	32	1,13	10,2	85	81	95
Uterine sugar beet sowing by 30% monogermity seed	74	35	0,95	10,6	82	78	89
Uterine sugar beet sowing by two fruits seed	72	25	0,93	10,9	78	75	91

Research results. In Table 1 is shown hybrid seeds and it sowing qualities, depending on breeding seed various quality data. We can make the preliminary generalizations that Ukrainian ChS 72 hybrid component breeding seed fraction diameter in the range of 3,00-5,50 mm and monogerm percentage did not affect on hybrid seeds sowing qualities: germination energy is varies within in 73-83% germination – 86-97 percents.

The same applies to seed plants sterility that for all variants is in the 69-88% range. As for the monogerm plants number is observing the significant differences that depend on the elite seed fraction and monogermity. So when we using two fruits seeds and 3.00 mm "rise" sieve of oblong the monogerm plant number is 25 and 36 percent.

After seed cleaning and its fractionation into 3.5-5.5 mm fractions is observe the hybrid seeds lowered monogermity (78-82%) when using uterine seed for planting "rise" from sieve 3.00 mm oblong, with the 30% of monogermity.

In 2012-2013 it has been lead heterotic hybrids productivity indexes evaluation that was derived from various qualities seeds sowing. These research results are shown in Table 2.

2. Ukrainian ChS72 hybrid productivity depending on various quality ChS component elite seed, 2012-2013

Sowing variant	Productitvity indexes					
	absolute			% to standard		
	yield, t/ha	sugar content, %	sugar yield, t/ha	yield, t/ha	sugar content, %	sugar yield, t/ha
Standard Group	42,80	16,52	7,07			
Uncalibrated seed	42,37	16,19	6,93	99	98	98
ǿ 3,0-3,75 mm seed fraction	37,24	16,02	5,86	87	97	82,9
ǿ 3,5-4.5 mm seed fraction	43,23	16,69	7,21	101	101	102
ǿ 4.5-5.5 mm seed fraction	43,66	16,69	7,28	102	101	103
rise from sieve 3.00 mm oblong seed	42,37	16,69	7,07	99	101	100
Seed with 100% monogermity	42,37	16,52	7,00	99	100	99
Seed with 96% monogermity	41,94	16,69	7,00	98	101	99
Seed with 90% monogermity	42,80	16,35	7,00	100	99	99
Seed with 70% monogermity	43,23	16,52	7,14	101	100	101
Seed with 50% monogermity	42,80	16,69	7,14	100	101	101
Seed with 30% monogermity	43,23	16,69	7,21	101	101	102
Two fruits seed	43,66	16,69	7,28	102	101	103
SSD_{05}	1,16	0,28	0,50			

From the table data is shows that hybrids, with hybrid seed irregular fractions 3,0-3,75 mm diameter sown, uncalibrated seed and rise from sieve 3.00 mm oblong seed had lower roots yield compared with 3.5 -4.5 and 4.5-5.5 mm fractions**.**

ChS component elite seed monogermity degree does not affect on hybrids productivity indexes that are based on research results and located within SSD_{05}.

Conclusions. Hybrid ChS components various quality elite seed study influence on hybrid seed sowing qualities was established that the elite seed fraction value does not affect on monogermity indexes and seed sterility. Also does not established quality indicators significant differences in purified and fractionated to 3.5 - 5.5 mm seed size.

With regard to fertility influence should be noted that fertility level in some way affects both sterility indicators and seed plants monogermity and certified seed output to 3.5 - 5.5 mm seed fraction, which decreases with elite seed fertility increasing.

REFERENCES

1. Tabentsky A.A. Sugar beet anatomy and biochemistry / A.A. Tabentsky - K. - Gosizdat collective and state literature, 1940. – 165 p.

2. Hizbullin N.G. sugar beet seeds production improving by the vysadkovym method // CSP ISB. - K., Agricultural Science, 1997. - P.83-90.

3. Doronin V.A. Sugar beet seeding research results and prospects / Doronin V.A., Busol M.V., Musienko A.A., Dronova G.V., Bidulya K.G., Dihtyar N.G. // CSP ISB. - K., Agricultural Science, 1997. - P.108-121.

4. Gizbullin N.G. Sugar beet breeding and seed production a two-pronged process / N.G. Gizbullin // Sugar beet. - 2012. - № 3. - P. 20-23.

5. Gizbullin N.G. Sugar beet breeding and seed production a two-pronged process / N.G. Gizbullin // Sugar beet. - 2012. - № 2-3. - P. 11.

6. ISO 4231-2003 Sugar beet seeds. Requirements for provision. - Replaced GOST 28166-89, intr. from 01.10.2004 y - Kyiv issued. State Committee of Ukraine, 2004 – 5 p.

7. SO 2153-2006 Sugar beet. Terms and definitions. - Replaced GOST 2153 - 93, intr. from 01.07.2007 - Kyiv, Ukraine State Committee of Ukraine, 2007 - 51 p.

8. http://www.icqc.eu/ru/Standards-Legislation.php

9. Fisher R.A. Statistical methods for research workers. New Delhi: Cosmo Publications, 2006. 354 p.