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Major achievements Rassmotreny sovremennyh nauchnyh of research, in kotorye provedeny, National unyversytete byoresursov of nature and Ukraine and proanalyzyrovano STATUS Using sovremennyh theories sveklouborochnykh machines and workers s organs, tehnycheskyy Level kotoryh corresponds to better myrovym counterparts.

Saharan beet, mechanization, sveklouborochnyy combine Mashinostroenie, korneplod

The main achievements of modern scientific research was carried out at the National University of Life and Environmental Sciences of Ukraine and analyzes the use of modern theories of beet machines and their working groups, technical level which corresponds to the best world standards.

Sugar beet, mechanisation, beet-harvesting combine, mechanical engineering, root crop.

UDC 631.33.024

**STUDY OF THE STATISTICAL CHARACTERISTICS
Side SCATTERING OF SEED AFTER SHOCK oblique
BA flat surface**

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Defined statistical characteristics of lateral deflection angle of flight trajectories seeds in the vertical plane relative to the central (theoretical) plane after the oblique shock seeds against a flat surface.

Oblique shot, the trajectory of seeds angle lateral deviation, statistical characteristics, coefficient of variation.

Problem. When performing subsurface variation-sowing seed drill coulters with lapovymy integral part of the process is scattering the seed furrow the area with relatively high uniformity. To achieve uniform distribution of seeds have special working bodies - reflectors distributor, which scatter the seeds.

The most reliable in the reflectors is that use reflection process from seed flat or curved surface, the process of oblique impact.

According oblique shock theory [1, 2, 3] direction speed and direction to kick velocity after impact are in the same plane, so theoretically a reflector distributor does not provide the seed distribution with high uniformity. However, experimental studies show that after some seed oblique shock move along trajectories that are rejected planes away from the central (theoretical) trajectories at different angles. That angle is a random variable. Information about statistical characteristics of lateral deflection angle of flight trajectories seeds provide a more accurate analysis of opportunities reflector distributor of this type. Because of their installation date.

Analysis of recent research. The research results of reflector distributor, which uses oblique shock process described in several publications [4, 5, 6]. But they only provided figures uniformity of seed placement on a horizontal surface. Information about the lateral deviation in literature.

The purpose of research. Determine the statistical characteristics of lateral deflection angle of flight trajectories oblique seed after hitting a flat surface.

Research results. To address this goal, a series of experiments that were performed in the laboratory using installation diagram is shown in Fig. 1. It consists of a platform which 1 using 4 stud mounted guide tube with a diameter of 3 10 mm. On the platform mounted reflector 2, which is a flat plate set at an angle to the horizon α , The value of which can be changed. The surface is covered with adhesive platform and is divided into sectors with a pitch 50. The main parameters of lateral scattering angle taken τ (See. Fig. 1) between the theoretical and actual flight destinations seed. In the corner τ measured flight range of seeds l_i and linear deviation from the theoretical plane c_i .

Experiments were performed as follows. In the guide tube put (without initial velocity) in one of 100 seeds, which after falling in the guide tube reflected by the reflector and flew on certain trajectories and fell to the platform in the sector. Then counted the number of seeds in each sector and measured values l_i and c_i . The results are processed to obtain statistical characteristics.

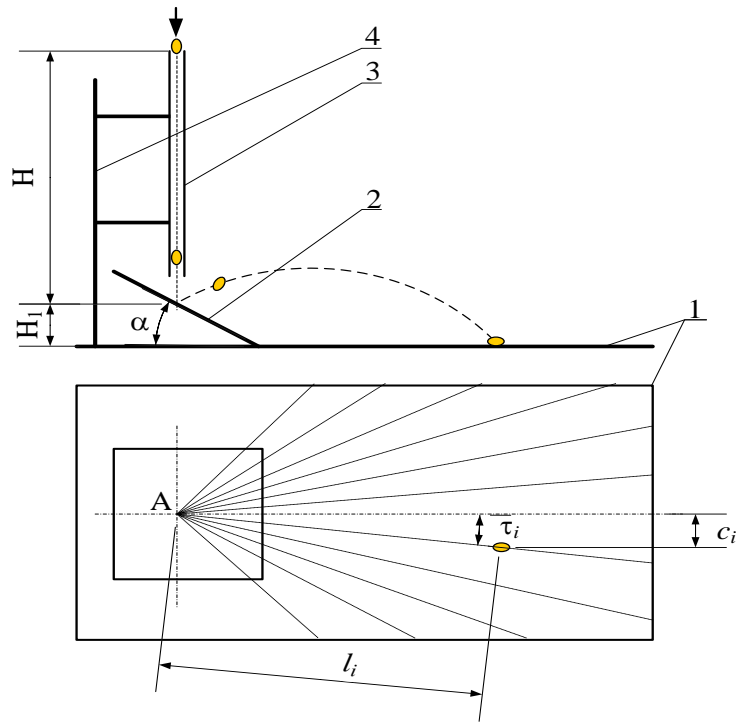


Fig. 1. Scheme of laboratory setup for determining the parameters of scattering seed after hitting a flat reflector.

Character placing seeds (100 pcs.) On the platform after reflection from the reflector and fall to the surface shown in Fig. 2 which shows that the seed is placed relatively evenly relative to the theoretical plane, and the angles τ have significant value.

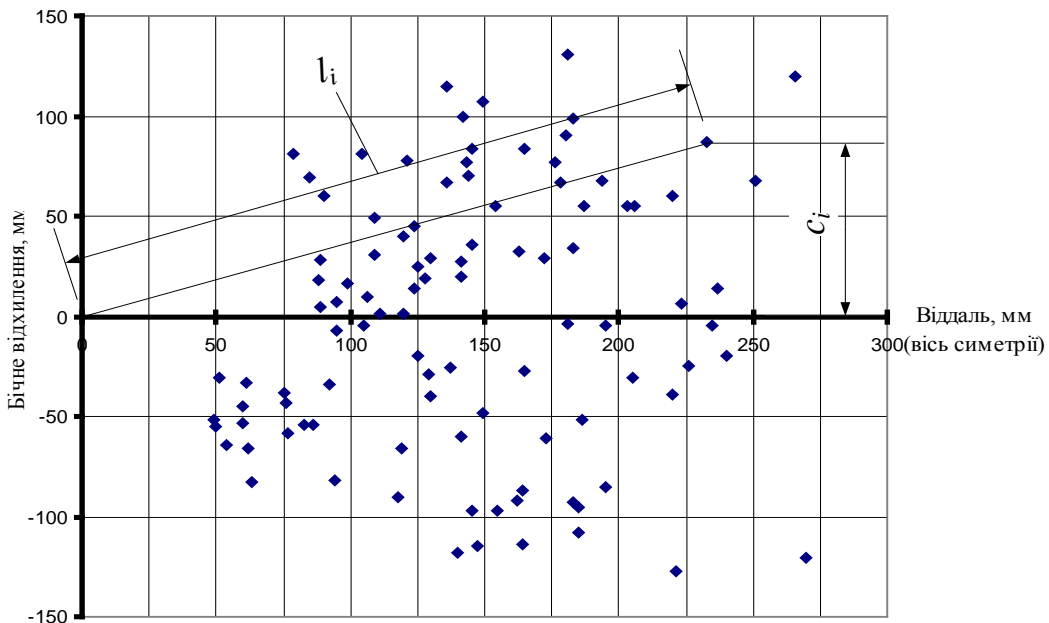


Fig. 2 Placement seeds (100 pcs.) On the platform after reflection from the reflector and fall to the surface.

Table 1 shows the frequency range of angles τ seeds for wheat and barley at different values of the angle of inclination reflecting plane α and the height of fall H . From the table we see that the angle τ ranges from 0 to 40°. A tendency to reduce the range of scattering at the angle α and height H . It would be logical to expect that the maximum frequency placing seeds will be in the range 0-50° for angle α . But for all options is shifted to areas larger values (10-15 and 15-20).

1. The frequency spacing angle τ at different values of the angle α and the height of fall H .

Kul-round	The angle of the reflector α , hail	Height of fall H , m	The frequency spacing angle τ Hail								
			0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45
Pshenythis	20	0.5	10	11	15	12	8	15	8	12	9
	30	0.5	17	12	23	8	13	14	8	3	2
	30	1.0	12	23	23	14	18	8	2	-	-
Barley	20	0.5	12	17	12	8	6	10	5	8	9
	30	0.5	13	18	19	16	13	10	4	2	4

After processing of the results determined statistical characteristics of the scattering parameters which are given in Table 2.

Angle τ within 0-59,6°, and its average value is 16,8-22,1°. Smaller values τ with a higher value of the angle α and the height of fall H . The coefficient of variation of the angle τ lies within 0,60-12%. Range seeds l within 0,04-0,41 m, the average value of - within 0,15-0,23 m and the coefficient of variation ν - 35-45-2%.

Lateral displacement c within 0-0,132 m for different cultures. Options scattering isotropic. Napryklad not differ at $\alpha = 20^\circ, H = 0,5$ of wheat and barley averages τ are 22.1 and 24° and averages l - 0.157 and 0.150 m, respectively.

Angle τ within 0-59,6°, and its average value is 16,8-22,1°. Smaller values τ with a higher value of the angle α and the height of fall H . The coefficient of variation of the angle τ lies within 0,60-12%. Range seeds l within 0,04-0,41 m, the average value of - within 0,15-0,23 m and the coefficient of variation ν - 35-45-2%. Lateral displacement c within 0-0,132 m for different cultures. Scattering parameters differ not much. For example, when $\alpha = 20^\circ, H = 0,5$ of wheat and barley averages τ are 22.1 and 24° and averages l - 0.157 and 0.150 m, respectively.

2. The results of experimental studies options lens seed after hitting a flat reflector.

Culture	The angle of the reflector α , deg.	Height of fall H, m	Performance	The value of statistical characteristics				
				min	max	mean, m	avg. square feet. deviation. σ	coefficient. variations ν
Wheat	20	0.5	τ Hail.	0.5	52.8	22.14	13.18	0.6
			l City	0.06	.296	0.157	0,054	0.34
			c City	0,001	.131	0,056	0,034	0.62
	30	0.5	τ Hail.	0.0	49	18.05	11,45	0.64
			l City	0.06	.246	0.128	0.047	0.37
			c City	0.0	0,126	0,038	0,027	0.71
	30	1.0	τ Hail.	0.3	59.6	16.8	10.3	0.62
			l City	0.08	0.41	0.23	.078	0.35
			c City	0.01	0.16	.064	0.04	0.63
Barley	20	0.5	τ Hail.	0.0	64.4	24.0	17.21	0.72
			l City	0.04	0.31	0.15	.061	0.41
			c City	0.0	0.18	0,054	0,039	0.73
	30	0.5	τ Hail.	0.5	46.8	16.73	10.9	0.66
			l City	0.06	.316	0.15	0,062	0.42
			c City	0.02	0,132	0.04	0,031	0.75
Peas	20	0.5	τ Hail.	0.0	53.5	15.7	13,15	0.84
			l City	0.07	0.259	.122	0,038	0.31
			c City	0.0	.154	0,031	0,027	0.89

Conclusions

1. In an oblique stroke seed against a flat surface plane trajectories of individual seeds rejected by the central (theoretical) plane at an angle τ , Whose value is random and has the following statistical characteristics: mean 16,8-24,0o; coefficient of variation - 60-72%.

2. With increased angle of inclination to the horizontal plane reflectivity α speed drop (drop height) trend decrease angle τ .

3. Statistical characteristics of the scattering parameters of different crops (wheat, barley) differ not much.

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Opredelenyi statistycheskiye characteristics lateral deflection angle trajectories Airplane semyan in vertykalnykh planes in relationships for tsentralnoj (teoretycheskoy) plane after oblique blow at semyan ploskuyu surface.

Obliquely blow traektoryya Airplane semyan, ugol lateral deflection, statistycheskiye characteristics, utilization rate variation.

Identified the statistical characteristics of a lateral deviation angle trajectories seeds in vertical planes relative to the center (theoretical) after the oblique hitting a flat surface of the seed.

Oblique impact, Trajectory of seed, angle of lateral deviation, statistical characteristics, coefficient of variation.

UDC 534.1

DIRECT METHOD OF ANALYSIS MODES linearization stimulated (sub / SUPERHARMONICHNYH) VIBROUDARNYH VIBRATIONS MECHANICAL SYSTEMS

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The proposed method of direct linearization JG Panovka analysis modes super- and subharmonic forced oscillations in

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vibroudarnykh systems. The resulting closed form solution by the action of an arbitrary periodic force.

Physical and mechanical modeling, mathematical and analytical software, computer aided design (CAD), vibroudarni mechanical system, method, direct linearization, analysis, profiles, forced oscillations, super- and subharmonic modes closed form solution, the effect of periodic power.