and tapes razostlannoy lnosolomы at pryhotovlenyy stlantsevoy trestы. Of research on surface temperature drop pod and tapes them with uchetom s and density in dnevnoy Night peryodы days.

Len-dolhunets, straw, ribbon, density, stlantsevaya trusts, pryhotovlenye temperature.

There was highlighted the connection of temperature of soil surface and strips of outspread straw during the preparation of scrub rotted straw. There was studied the temperature difference at the strips surface and under them, including their density at day and night periods of day.

Fiber flax, straw, ribbon, thickness, dew-retted flax straw, preparation, temperature.

UDC 6.31

BACKGROUND REQUIREMENTS seed drill For farms UKRAINE

VG Opalko Engineer

The ground needs a seed drill in terms of their use in agriculture.

In the analysis used the State Statistics Service of Ukraine. Identified specific number of farms where grain drills should be used type SZ 3.6. These include farms with acreage from 250 to 1,000 hectares. The share of these households is 15.5%.

Grain drill, sown area, grains and legumes.

Problem. Production of cereals are the main focus in agriculture Ukraine. The area under cultivation of grain after 2000 almost stabilized within 14-15 mln. Ha. The main crops in the structure of grain production in Ukraine are wheat (40-50%), barley (20-30%) and corn (20-25%).

The largest proportion of grain crops Wheat - accounting for almost half of all grain production in the country (45%). Its growing up of more than 24 thousand. Farms, the vast majority of them are sowing winter wheat varieties.

Wheat production (within the last three years of its gross yield averaged 21.2 million. Tons) exceeds domestic consumption almost doubled, making this export-oriented culture. After wheat barley - the second in terms of production culture in Ukraine grain farming. It accounts for about 25% of the structure of grain crops. Production of

barley in Ukraine for the last three years averaged about 11 mln. Tons. Domestic consumption of barley in Ukraine is estimated at 5 million tons. That is half the size of the harvested crop in recent years. The excess is sent for export - in 2010, 182 were engaged in trade in barley company, 15 of them have sold 76% of the total (in value terms).

Analysis of recent research [1] to determine the distribution of acreage under crops Ukraine (Table. 1).

Priority areas accounted for using grains and legumes (up 56.8%). One of the key parts of increasing grain yields, return on investments and labor inputs are equipping households seeding machines for sowing quality performance in optimal agronomic terms.

It should be noted that in the manufacturing process facilities occupy a prominent position different crops that require different seeding conditions. In addition, during the sowing short fields to be sown, different size, different types of soils and so on. This requires both planters and working bodies that meet the requirements for quality agro-technical operation of sowing particular culture according to soil and climatic conditions of the economy [5].

1. Structure of the acreage of major crops (percentage of zahalnoi).

Agricultural-forming culture	Years							
	1990	1995	2000	2005	2008	2009	2010	2011
All sown area	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Cereals and legumes	45.0	45.7	50.2	57.6	57.6	58.7	56.0	56.8
winter crops	59.1	44.6	46.3	48.6	52.0	52.5	52.4	50.8
including								
wheat	51.9	37.6	38.9	41.2	43.5	41.2	40.7	41.3
rye	3.6	4.3	4.9	4.2	3.0	3.0	1.9	1.8
barley	3.6	2.7	2.5	3.2	5.5	8.3	9.8	7.7
spring cereals and legumes	40.9	55.4	53.7	51.4	48.0	47.5	47.6	49.2
including								
wheat	0.1	1.3	2.2	3.2	2.0	2.1	2.1	1.8
barley	15.1	29.2	26.7	26.8	21.5	24.0	20.0	16.4
oat	3.4	4.0	3.8	3.1	2.9	2.7	2.2	1.8
maize	8.5	8.3	10.0	11.4	16.1	13.6	18.0	23.0
millet	1.4	1.2	3.2	0.9	1.0	0.8	0.6	1.1
buckwheat	2.4	3.2	4.2	2.8	1.9	1.7	1.5	2.0
rice	0.2	0.2	0.2	0.1	0.1	0.2	0.2	0.2
legumes	9.8	7.8	3.0	2.8	1.7	2.3	2.8	2.4
of them								
peas	8.8	7.0	2.2	2.2	1.3	1.8	2.0	1.7
vetch and wikis mixture of grain	0.5	0.5	0.4	0.3	0.1	0.2	0.2	0.1
Industrial crops	11.6	12.1	15.4	20.2	25.0	24.3	27.1	26.9

Potato and vegetable and melon	6.4	7.0	8.4	7.8	7.3	7.2	7.3	7.3
Forage crops	37.0	35.2	26.0	14.4	10.1	9.8	9.6	9.0

Short (1 month) spring period, a rapid increase positive temperature after the start of field works not effectively forming task to decide posivnoho additional layer obrobitkamy. Domestic drills enable earlier start of spring field work.

The purpose of research: justify the effective use of grain drills SZ-type 3.6 for growing grains and legumes. Research Objectives: 1) Determine the distribution of farms for use for grains and legumes. 2) To prove the feasibility of using seeders type SZ-3.6 for individual households based on acreage crops. 3) Identify the need seeders type SZ-3.6 for sowing cereals and legumes.

Methods of research. In studies used patent information retrieval [2], statistical and morphological analysis [3, 4].

Results. Bahatorichna practice indicates that zernovi sivalky type SZ-3.6, which are intended for use on backgrounds vidvalnyh reliably perform workflow in difficult conditions, on medium and heavy-textured soils with high humidity, presence of plant residues and insufficiently treated background.

Machine and tractor fleet farms Ukraine is characterized by extreme wear. From year to year decreases in the number of seeders economy: in 1991 there were 135 674 grain drills, in 2011 - only 71265. By reducing Park seeding equipment, moral and physical aging dramatically increased burden on the seeder. Thus, the norm is less than 150 hectares, it increased to 250-300g [5, 6].

Today, agricultural producers offer different models of grain drills both domestic and foreign production. While keeping in producing simple in design and purpose vehicles intensively developed more complex and expensive tools and machines.

The main domestic producer of seeding equipment was and is JSC "Red Star" [7, 8].

For sivby seeds of cereals, legumes and grasses with simultaneous application of granular soil fertilizers JSC "Red Star" produces sivalky type SZ-3,6 various modifications. These machines efficiently perform sowing in soils that differ mechanical composition, quality preplant obrobitku, naralnykovymy completed, the two-disc single-row, single-plate, two-disc coulters two rows.

If you do not take into account the technical policy 20-30 large agricultural holdings, which have large investment funds, agricultural, processing 100 to 10 thousand. Ha, so far very limited funds. Therefore, the most popular in the Ukrainian market today are sowing JSC "Red

Star". They are easy to use and maintain, relatively safe, and most importantly - significantly cheaper. Although the price is increasing from year to year, today, depending on the model, is from 50 to 120 thousand. USD.

According to a new study "APK-Inform" - "Portrait of agricultural producer Ukraine: large, medium and small farms" - the most important problem of logistics agriculture has not yet been solved [8].

The annual replenishment park planters in the country does not exceed
1-2 thousand. Units. In Ukraine in 2009 was produced in 2542 all kinds of drills in 2010. - 2005 and 2011 - 4939. Over the past 8 years the country has given the entire industry to agriculture less than 46 thousand. Seeders [4].

According to the report of JSC "Red Star" sivalok grain output (all modifications) dynamics in the 3 last years are: 2009 - 907 pcs., In 2010 - 1415, 2011 - 2467 pieces [7].

According to the study "Portrait of agricultural producer Ukraine: large, medium and small farms", 38% of medium and large farms updating technique every 5 years. At the same time, if the financial capacity allows, farmers said the acquisition would primarily tractors and seeders [9].

Domestic industry should provide farms versatile, multifunctional machines with the required set of working groups to quickly convert sivalky i convenient modification of one another, which is suitable for agro-climatic zone definite according to recommended techniques sowing.

To justify the need for seed drill we had taken into account the structure of grain crops, area and size of farms, technical, operational and economic characteristics of vehicles (Table. 2 - 4).

2. Structure of grain and leguminous crops and farms by category (percentage of total).

Years	1990	1995	2000	2005	2008	2009	2010	2011
				Farms				
Cereals and grains, legumes	97.2	91.9	81.6	75.7	79.0	77.9	75.8	77.9
				Households				
Cereal and grain and legumes	2.8	8.1	8.4	24.3	21.0	22.1	24.2	22.1

A comprehensive study of the optimal number of sown machines require special mathematical methods, but you can manually preliminary calculations to determine all the factors that determine the choice of certain machines. The required number of seeders determined taking

into account their performance. Performance characterizes the intensity of use of technology within a certain period of time, depending on the parameters and modes of tractors and machines, the length of the unit during the day and all the time the operation [10].

3. Grouping of companies for their number and size of crop acreage in 2011.

Indicator	Number of companies		Area businesses	
	all	grain and leguminous crops Closed	all	grain and leguminous crops Closed
	Units		Thousands of hectares	
Enterprises - all	44 919	36 808	19493.5	11742.5
one of the area, ha				
to 50.00	24 464	20004	536.9	388.5
50.01–100.00	4236	3497	309.7	258.8
100.01–250.00	4582	4199	749.3	689.7
250.01–500.00	3199	2765	1153.9	1001.8
500.01–1000,00	2901	2925	2091.9	2109.5
1000.01–2000,00	2777	2226	3976.9	3113.9
2000.01–3000,00	1322	674	3215.9	1624.5
more 3000.00	1438	518	7459.0	2555.8

4. The relative number of enterprises by size of agricultural cropping in 2011.

Indicator	The relative amount%			
	Enterprises of total		Area to the total area	
Enterprises - all	100.0	100.0	100.0	100.0
one of the area, ha				
to 50.00	54.5	54.3	2.8	3.3
50.01–100.00	9.4	9.5	1.6	2.2
100.01–250.00	10.2	11.4	3.8	5.9
250.01–500.00	7.1	7.5	5.9	8.5
500.01–1000,00	6.5	8.0	10.7	18.0
1000.01–2000,00	6.2	6.1	20.4	26.5
2000.01–3000,00	2.9	1.8	16.5	13.8
more 3000.00	3.2	1.4	38.3	21.8

To justify the operational performance of the machine determining agronomic conditions are requirements that govern their work. Agro-technical requirements defining the terms of work and working hours. This refers to the calendar of deadlines, the duration of its implementation in weekdays and during the day.

According to ahrovymohamy main sowing crops in Ukraine is made within 10 days of autumn and spring 7 days, while the working hours can be 7-10 hours.

Operating speed of the unit as determined by cultural practices requirements. Increased operating speed unit leads to loss of performance. The permissible speed of the sowing units are 7-11 km / h.

As a result of the calculations [10] the performance of the seed drill unit NW 3.6-hour alternating time of 2.4 hectares unit with three drills SZ-3.6 - 6.8 ha / year. If the duration of the 10 hour shift performance will be 24 hectares and 68 hectares respectively. Annual output unit of seed drill SZ-3.6 will be equal to 340 hectares, taking into account the coefficient of KZ = 0.85, and the unit made up of three seed drills SZ-3.6 - 980 ha. The obtained results show that for the effective use of seeders type SZ-3,6 advisable to have grain sown area kulturv range from 300 to 1,000 hectares.

According to most experts, the effective grain production in high cost of inputs may be an area of 500 hectares. In addition, technical equipment and financial capacity to manufacture products in agricultural enterprises are much higher than in households.

In Educational and Research Technical Institute of the National University of Life and Environmental Sciences of Ukraine reasonably rational minimum amount of acreage in crop that will provide acceptable loading of complex machines use rate equal to 0.7: Polissya- 400-500 hectares of forest - 450-600 ha Step - 500-650 ha.

The main producers of grain in Ukraine agricultural enterprises (Table. 2). Each year, three-quarters of grain yield obtained in this category farms. The proportion of households in cereal production is quite low, although formal land use population is almost 35% of the total arable land in Ukraine. However, land-use population implied small parcels of land - 5 hectares, which is insufficient to conduct effective agricultural production, especially grain.

If the land reform in Ukraine dominated by agricultural land with size on average 3.0-3.5 thousand hectares per farm, for the period of land reform was formed economic structures based on various forms of ownership and management, with a much smaller dimensions of land use.

The structure of modern agricultural enterprises in Ukraine shows that most of them have a small area of land. In 2011 there were 3190 farms with an area under cereals and legumes from 250 to 1,000 hectares, which is 15.5% of the total number. These companies generally use 3111.3 thousand hectares of farmland, representing 26.5% of the total number.

According to calculations made by us, for timely and quality sowing crops of the surface area of different sized farms must provide drills SZ-3.6: farms ranging in size from 250 to 500 hectares - one machine; farms ranging in size from 500 to 1,000 hectares - three.

The total demand for Ukraine will be 9150 seeders.

From the analysis of literature and experience economy, we can conclude that in the severe shortage of seeding equipment and low purchasing power of rural commodity grain drills type SZ-3, 6 remain in the coming years, the main sowing machines in the country.

By seeders always stringent agronomic requirements, including quality seeding. Almost all types of grain seeders production of JSC "Red Star" with proper use ensure high quality of work and agrotechnical effectiveness largely depends on the level of technical excellence and production of all elements of drills.

In the current market conditions of agriculture an important role for the formation of product quality issues on the stage of its production to flow to the consumer.

Unfortunately is stated lack of reliable data on the technical condition of machinery and its safety - both for the technical system and the environment and, above all, man.

The technical level of domestic drills in pre-perestroika period determined by the "system of machines" in the development of which involved DSKB plants and allied industry research and educational institutions.

Ostannm time due to lack of clear coordination of design and production of basic plant sowing machines develops spontaneously. In the domestic market were foreign sowing machines that are of high quality manufacturing, equipped with control of the process of their work. However, they have some drawbacks, such as assonance domestic ahrovymoham, especially in unstable weather conditions and high cost, both the machines and spare parts

Compounding the negative trend is also the fact that in Ukraine sowing machines produce non-core businesses. Without sufficient scientific potential in new to the field and design experience designing machines, such enterprises develop seeders up foreign companies that are unpromising.

High level of quality agricultural machinery can be achieved through state regulation of agro-industrial production. The main mechanism of this control is the activity of the State Committee for Standardization in Ukraine.

If we consider the development of seeding equipment in the near future, then snap it agricultural production can occur in the first place, by

the most common designs planters that will meet all the requirements of technical regulations and national standards.

Conclusions

In the severe shortage of seeding equipment and low purchasing power of rural commodity grain drills type SZ-3, 6 remain in the coming years, the main sowing machines in the country.

According to the calculations for timely and quality sowing of cereals, the surface area of different sized farms must provide drills SZ-3.6: farms ranging in size from 250 to 500 hectares - one machine; farms ranging in size from 500 to 1,000 hectares - three.

The total demand for Ukraine in planters 3,6stanovyt type SZ-9150 units.

References

1. *Security* Ukraine economy. Statistical Yearbook. State Statistics Service of Ukraine. - K., 2012. - P. 31.
2. *GOST 3575-97* Patent research. The main provisions and procedures [*Official Publication].* - K .: State Standard of Ukraine, 1997. - 16 p.
3. *Guidance* on Scientific and Technical prediction: temat. Sat. c. / Per. with the English. ; Ed. *LI Gromov*.- M .: Progress, 1977. -350 pp.
4. *Rublëv VI* Fundamentals of research in the region nauchnыh economy and management in trans: Uchebnoe posobye / *Rublëv VI, Sudakova TV, Saklakova EV* - Stavropol: Sev.Kav.HTU, 2003. -200 pp.
5. *Letter* President of Ukraine Verkhovna Rada of Ukraine. - 2003 - P. 37.
6. www.chervonazirka.com
7. *Prong MV* Actual problems of technology policy in the agricultural sector of Ukraine / *Prong MV Gukov JS, MI Grytsyshyn* - K .: Dia, 2007. - 80 p.
8. *Sainsus OD* Five years in the third millennium / *OD Sainsus* // Technology APC.- 2006.- № 1-2. - P. 6-8.
9. *Studies* "APK-Inform" - "Portrait selhozproyzvodytelya Ukraine: Large, srednye and melkye economy." http://www.apk-inform.com
10. *Hrechkosey VD* Design processes in the plant. Textbook / *VD Hrechkosey, VD Voytyuk, RV Shatrov, II Miller, JM M., V. Opalko*. - K .: Nauka, 2011. - 363 p.

Powered rationale potrebnosty in grain seyalkah in terms selskohozyaystvennom s Using in production. In Data Analysis yspolzovaly Gosudarstvennoye sluzhbы Statistics of Ukraine. Opredeleno udelnoe Quantity farms, where advisable Require zernovыe seyalky type SZ-3.6. K it otnosjatsja economy with posevnoy ploschadyu from 250 to 1,000 hectares. Udelnoe Quantity эtyh farms sostavljaet 15.5%.

Zernovaya seyalka, posevnaya the Square, zernovыe Zernobobovyie and culture.

The need for grain seeders in conditions of their use in agricultural production is proved. In analysis used data of State Statistics Service of

Ukraine. The specific number of farms where appropriate to use grain seeders type SZ-3,6 is defined. These include farms with cultivated area from 250 to 1000 hectares. The specific number of these farms IS 15.5%.

Grain drill, cultivated area, grain and leguminous crops.

UDC 621.43.068.4

STAGE AND ENVIRONMENTAL STANDARDS FOR DIESEL ENGINES TIER SILSKO-
And forestry tractors and self-propelled machines

OA Beshun, Candidate of Science

The modern environmental standards for diesel silsko- and forestry tractors and self-propelled machines and Stage Tier, which operating in countries EU and US respectively, and are technologies to fulfill emission regulations and smoke exhaust gas of standards.

Tractor, engine, the standard toxicity, opacity, ecology, economy, rule, Stage, Euro, Tier.

Problem. Saving energy and reducing impact on the environment is by far the most difficult problems in the world. Obviously, the urgency to tackling these problems will only be strengthened over time. No exception in this respect is the industry silsko- and Forestry, which involves a large number of vehicles equipped typically diesel engines. The latter is known to be one of the biggest polluters of the environment and, in practice, not exhausted its potential improvement.

Two factors have recently stimulate dvyhunobudivni leading corporations and firms drastically improve engines including and diesel using advanced new technologies enter in law strict regulations toxicity and smoke SH (exhaust gas) railroads and stiff competition. This is promoted as the rapid development of microprocessor technology, digital technology, sensors and actuators, which are integral components of modern engines and systems.

Analysis of recent research. In the European Union (EU) to reduce the intensity of air pollution emission regulations imposed VG and Euro Stage, and in the US - the rules EPA Emission Standards and EPA Tier. To the main (road) technology standards are Euro and EPA