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THE IMPACT OF THE FERTILIZER GRAIN CROP ROTATION ON CROP HUSBANDRY BY-PRODUCT OF WINTER WHEAT IN THE FOREST-STEPPE ZONE OF UKRAINE

Found that the yield of winter wheat straw rich soil leached on max depending of the use of fertilizer by 8.3 t / ha manure N_{43} P_{43} K_{43} rotation by rotation and $N_{60}P_{60}K_{60}$ under winter wheat ranged from 8.89 to 4.77, and the output of renewable energy vid160020 do85860 MJ.

Keywords: *straw, winter wheat, fertilizer, energy.*

Introduction. Productivity of crop rotation, characterized not only by preparing basic products in the form of grains, root crops, but side-products is about - straw, sugar beet tops, corn stalks, most fully characterizes the performance of photosynthesis in the form of accumulation of organic matter. When harvesting cereals as passing, receiving not a renewable crop of grain yield (NCHV) in the form of straw and chaff, which now hardly used, and its plowing under in powdered form in the soil or burned. [1,2,3]. Straw yield of winter wheat depending on the varietal characteristics and soil - climatic conditions and can vary in the range from 3.5 to 7.8 t / ha, and in some years 9 - 11t/ha,. [4] In rotation with cereals to saturation 30% can be obtained from 15 to 20 tons of straw in terms of energy performance can reach 270000 ... 360000 .. mJ.

In Ukraine, the annual harvest of grain such as 50 million tons of grain in relation to non- grain crop of NCHV 1:1.5 simultaneously receive about 75 million tons of grain will not yield - which can be used for bio-fuels.

Purpose of research: determine the effect of fertilizer beet seed crop rotation on yield of winter wheat by-products and renewable energy output power.

Research methods. Research conducted at White Church Experimental Breeding Station, in the long stationary experiment on system maintenance rotation. Rotate crops in rotation were as follows: use - oats, winter wheat , sugar beet , barley, canola , winter wheat . Soil research field black soil typically vyluhuvanyy characterized by following agrochemical parameters: humus content by Tyurin - 3.5%, mobile phosphorus and exchangeable potassium by Chirikov 200 - 70 mg / kg soil. Fertilizing crop rotation system is shown in the table. During winter wheat used $N_{60}P_{60}K_{60}$ where N_{30} in feeding the spring. Bio-energetic index was calculated according to available estimates, the total energy of 1 kg of dry straw combustion 18mJ.

Research results. Studies conducted to study the performance of winter wheat showed that the yield of by-products, such as grain and straw fertilization depends on the system.

Thus, in the embodiment without the use of fertilizers straw yield was 3.90 t / ha, and the yield of renewable energy-70200mDzh, indicating low battery in the soil as a result of long-term fertilization of the soil and do not use battery plants during crop rotation.

Under the influence of fertilizer increased yield of main and by-products (increased.) In an experiment using 8t/ha manure + N_{43} P_{43} K_{43} rotation by rotation, N_{60} $P_{60}K_{60}$ directly under winter wheat, straw yield was 6.96 t / ha, and the yield renewable energy - 125280mDzh that was at 3.06 and 55080mDzh more from unfertilized option.

From increasing standards of fertilizer to restore soil fertility , using 8.3 t / ha manure + N_{65} P_{43} K_{43} for rotation + N_{90} $P_{60}K_{60}$ under winter wheat straw yield reached 7.42 t / ha , and the yield of renewable energy - 13350mDzh .

Table 1

Influence of fertilization system on winter wheat by-products yield and output of renewable energy

№ p/p	Fertilization system in crops-rotation	Straw, t/ha				Bioenergetics evaluation, MJ			
		year				year			
		2011	2012	2013	medium	2011	2012	2013	medium
1	without fertilizers from 1976	2,56	6,29	2,81	3,90	46080	113220	50580	70200
2	8,3 t/ha manure + $N_{43}P_{43}K_{43}$ / $N_{60}P_{60}K_{60}$	7,18	9,19	6,35	7,57	129240	165420	114300	136260
3	8,3 t/ha manure + $N_{43}P_{22}K_{22}$ / $N_{60}P_{30}K_{30}$	4,98	8,61	5,32	6,30	89640	154980	95760	113400
4	aftereffect 2 NPK+ manure from 2 chain of 3 crops-rotation	3,94	6,71	3,73	4,80	70920	120780	67140	86400
5	8,3 t/ha manure + $N_{43}P_{22}K_{43}$ / $N_{60}P_{30}K_{60}$	5,11	8,56	4,61	6,10	91980	154080	82980	109800
6	8,3 t/ha manure + $N_{43}P_{0}K_{43}$ / $N_{60}P_{0}K_{60}$	4,46	8,10	4,40	5,65	80280	145800	79200	101700
7	8,3 t/ha manure + $N_{65}P_{43}K_{43}$ / $N_{90}P_{60}K_{60}$	6,87	9,43	5,96	7,42	123660	169740	107280	133560
8	8,3 t/ha manure + $N_{43}P_{43}K_{65}$ / $N_{60}P_{60}K_{90}$	6,04	8,94	5,46	6,81	108720	160920	98280	122580
9	8,3 t/ha manure + $N_{43}P_{43}K_{43}$ / $N_{60}P_{60}K_{60}$	7,22	8,89	4,77	6,96	129960	160020	85860	125280
10	$N_{43}P_{43}K_{43}$ / $N_{60}P_{60}K_{60}$	6,52	8,70	4,36	6,53	117360	156600	78480	117540
	$HIP_{0,5}$				0,78				

Numerator: for rotation

Denominator: under winter wheat

In an embodiment of the restoration of soil fertility, which used 8.3 t / ha manure + N_{43} P_{43} K_{43} and N_{60} $P_{60}K_{60}$ under winter wheat crop of winter wheat straw was 7.57 t / ha , and the yield of renewable energy 136 260 mJ . In an embodiment of the restoration of soil fertility , using 8.3 t/ha manure + N_{43} P_{22} K_{43} rotation by

rotation and N60 P30K60 under winter wheat was obtained 6.10 t / ha of straw and 10980 mJ renewable energy inferior to the full rate of fertilizer on 1.47 t / ha of crop straw and 26460 mJ, the output of renewable energy. it was almost two times more than in unfertilized option. The same pattern was observed in the version which used half the rate of phosphorus- potassium fertilizers, both rotation and rotation directly under winter wheat. Reduction rules applying phosphorus fertilizer to 8.3 t / ha manure + $N_{43}P_0K_{43}$ by rotation and rotation $N_{60}P_0K_{60}$ under winter wheat crop straw reduced to 5.65 t / ha and yield of renewable energy to 101700 MJ. On the organic mineral fertilizer the most significant effect on the yield of potassium fertilizers have haulm. Increased use of potassium standards $K_{90}\,N_{60}\,P_{60}$.

Delay of organic-mineral fertilizer for 12 year after application, contributed to higher crop straw to 0.80 t / ha, and the output of renewable energy for 14,400 mJ under unfertilized variant of the experiment. Thus the use of organic -mineral fertilization in crop rotation systems there is a significant increase in crop byproducts.

Conclusions. The harvest of winter wheat straw fertilization depends on the system. The highest straw yield 7.42 t / ha and 133 560 MJ of renewable energy derived from the use of 8.3 tons of manure + $N_{60}P_{60}K_{60}$ by rotation and rotation $N_{90}P_{60}K_{60}$ under winter wheat fertilization for recovery. Mineral fertilizer system that applied in rotation had a slight decrease in crop byproducts.

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Анотація

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Вплив системи удобрення зерно просапної сівозміни на урожай побічної продукції озимої пшениці Лісостепу України

Встановлено, що врожай соломи озимої пшениці на чорноземах вилугуваних залежить від системи удобрення за використання 8,3 т/га гною + $N_{43}P_{43}K_{43}$ за ротацію сівозміни і $N_{60}P_{60}K_{60}$ під пшеницю озиму може становити від 8,89 до 4,77 т/га, а вихід відновлювальної енергії від 160020 до 85860 Мдж.

Ключові слова: *солома, пшениця озима, удобрення, відновлювальна енергія.*

Аннотация

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Влияние системы удобрения зернопропашной севооборот на урожай побочной продукции озимой пшеницы Лесостепи Украины

Установлено, что урожай соломы озимой пшеницы на черноземах выщелоченых в зависимости от системы удобрения при использовании 8,3 т/га навоза + N_{43} P_{43} K_{43} за ротацию севооборота и $N_{60}P_{60}K_{60}$ под пшеницу озимую может составлять от 8,89 до 4,77т/га, а выход возобновленной энергии от 160020 до 85860 Мдж.

Ключевые слова: *солома, пшеница озимая, удобрение, возобновленная энергия*