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INFLUENCE OF TECHNOLOGICAL METHODS OF WINTER TRITICAL GROWING ON DRY MATTER FORMATION

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Abstract. *The results of research on the study of the influence of technological methods of growing winter triticale on the yield per unit area of dry matter are presented. It is established that according to the level of dry mass formation winter triticale crops were the most highly productive in the flowering phase for sowing from 25.08 to 25.09 - 9.26-16.22 t / ha. In this phase, the maximum productivity was provided by triticale varieties AD 44, Polisky 29, AD 52 and ADM 9.*

Key words: *winter triticale, winter wheat, winter rye, variety, sowing period, dry matter.*

Introduction.

It is traditional in the early spring period to use winter rye for green fodder, which due to the rapid growth rate is actually the first. However, due to the short period of its use, rye is not able to fully meet the needs of animals at this time, because, unlike wheat, in the earing phase the vegetative mass of rye becomes unfit for feeding [3]. Thus, the optimal period of feeding rye lasts only about 6-8 days [4], then the feed is mowed perennial grasses, which at this time have still low yields, and winter wheat, which in production conditions, both economically and energetically is impractical. , because when harvesting wheat for green mass, the yield of fodder units from 1 ha is twice lower than the yield of rye harvested for green mass [2]. Thus, in many countries of the world there is a question of the maximum reduction of use of crops of winter wheat for forage purposes and its replacement by higher-yielding forage crop - triticale which, in comparison with wheat provides 3 times higher collection of forage units and 2 times digestible. protein. In addition, due to the high photosynthetic potential, even in the phase of entering the tube, which occurs at the end of harvesting winter rye for green fodder, triticale forms a higher yield of green mass and dry matter than winter wheat [1].

The purpose of research - to establish the influence of technological factors of cultivation on the formation of dry matter of winter intermediate crops of triticale on green fodder in the forest-steppe of Ukraine

Materials and methods of research.

Field experiments were conducted at the SS «Agronomic research station» of the NULES of Ukraine on chernozems of typical low-humus medium loam with a humus content of 4.51%, lightly hydrolyzed nitrogen - 111, mobile phosphorus - 64 and exchangeable potassium - 98 mg / potassium - 98 mg , pH of the salt extract - 7.1.

The object of research: wheat Polesskaya 90 (control), rye Kievskoe fodder (control) and triticale varieties (AD 3/5, AD 44, ADM 9, Polessky 29 ADM 11 AD 52), sown at five calendar dates: August 25, 5, 15, 25 September and 5 October. Predecessor – corn for silage

Research results.

The level of productivity and favorable conditions for growth and development for the realization of the biological potential of the culture is characterized by the formation and accumulation of dry mass of crops during the growing season [5, 6]. This characteristic of the vital activity of the plant organism is especially important when growing crops for green mass. In this regard, the study of the dynamics of dry matter accumulation by winter triticale crops, depending on the technological methods of cultivation, is of practical interest. It was found that the accumulation of triticale dry matter by plants varied significantly over the years of observation and significantly depended on the time of sowing, variety and phenological phases of plant growth and development (table).

Yield of dry matter depending on the variety, sowing period and phenological phase of growth and development of winter triticale, t / ha

Culture, veriety	Sowing period					Average	Difference to		
	25.08.	5.09.	15.09.	25.09.	05.10.		average	wheat	rye
Tubing phase									
Rye (к)	2,52	2,45	2,79	2,11	1,84	2,34	0,72	1,17	St
Wheat (к)	1,11	1,25	1,30	1,19	0,99	1,17	-0,45	St	-1,17
АД 3/5	1,71	1,84	2,14	1,66	1,39	1,75	0,13	0,58	-0,59
АД 44	1,57	1,58	1,83	1,42	1,29	1,54	-0,08	0,37	-0,80
АДМ 9	1,56	1,49	1,66	1,50	1,25	1,49	-0,13	0,32	-0,85
Polessky 29	1,58	1,62	1,77	1,45	1,19	1,52	-0,10	0,35	-0,82
АДМ 11	1,46	1,55	1,79	1,39	1,09	1,45	-0,17	0,29	-0,89
АД 52	1,68	1,83	2,06	1,65	1,32	1,71	0,09	0,54	-0,63
Середнє	1,65	1,70	1,92	1,55	1,29	1,62	St		
Difference to average	0,03	0,08	0,30	-0,08	-0,33	-	-	-	-
SSD_{05} = 0,19									
Earing phase									
Rye (к)	8,46	8,36	9,02	6,85	5,05	7,55	0,29	3,68	St
Wheat (к)	3,47	4,59	5,06	4,11	2,10	3,87	-3,39	St	-3,68
АД 3/5	8,19	8,49	10,88	7,93	5,54	8,20	0,95	4,34	0,66
АД 44	6,97	8,03	9,90	7,47	5,55	7,58	0,33	3,72	0,04
АДМ 9	7,56	8,15	10,27	7,87	5,62	7,89	0,63	4,03	0,35
Polessky 29	7,84	8,37	10,58	7,94	5,73	8,09	0,83	4,22	0,54
АДМ 11	6,57	7,24	9,50	6,91	4,30	6,90	-0,35	3,04	-0,64

АД 52	7,42	8,31	11,00	7,76	5,38	7,97	0,72	4,11	0,43
Середнє	7,06	7,69	9,53	7,10	4,91	7,26	St		
Difference to average	-0,20	0,43	2,27	-0,15	-2,35	-	-	-	-
SSD_{05} = 0,94									
Flowering phase									
Rye (к)	10,99	10,86	12,09	9,29	6,74	9,99	-0,32	5,28	St
Wheat (к)	4,25	5,58	6,22	4,59	2,93	4,71	-5,60	St	-5,28
АД 3/5	10,25	10,78	13,91	9,26	6,49	10,14	-0,18	5,42	0,14
АД 44	10,53	11,51	14,80	10,83	8,03	11,14	0,82	6,43	1,14
АДМ 9	12,37	13,07	15,19	12,11	8,69	12,29	1,97	7,57	2,29
Polessky 29	11,21	12,02	15,33	11,57	8,82	11,79	1,47	7,08	1,79
АДМ 11	10,05	10,94	13,67	10,27	6,83	10,35	0,04	5,64	0,36
АД 52	11,68	12,49	16,22	11,80	8,39	12,12	1,80	7,40	2,12
Середнє	10,17	10,91	13,43	9,97	7,12	10,32	St		
Difference to average	-0,15	0,59	3,11	-0,35	-3,20	-	-	-	-
SSD_{05} = 1,31									

On average over the years of research, the lowest yield of dry matter from triticale crops was observed in the tubing phase - 1.09-2.14 t / ha, depending on the time of sowing and biological characteristics of the variety. Under the same conditions, rye and wheat crops were accumulated for plant growth and development - 1.84-2.79 and 0.99-1.30 t / ha, respectively. Thus, the intensity of dry matter synthesis by plants during tubing was largely determined by the biological characteristics of the species than the variety, regardless of the rate of formation of vegetative mass. In addition, during the experiment, a high dependence of the intensity of dry matter accumulation by plants of all crops on the influence of weather factors was noted.

The maximum collection of dry matter per unit area of triticale can be obtained for sowing from August 25 to September 25. This is due to the more powerful development of plants and their photosynthetic apparatus. Among the studied varieties according to the intensity of organic matter synthesis in all calendar sowing periods, BP 52 (1.32-2.06 t / ha) and AD 3/5 (1.39-2.14 t / ha) were distinguished; the increase to winter wheat was 0.54 and 0.58 t / ha, respectively, which significantly exceeds the reliability limit of 0.19 t / ha.

During the further growth and development of plants, due to the higher energy of growth processes and a strong increase in the area of the photosynthetic apparatus, there was an increase in the level and intensity of dry matter accumulation, which provided a high yield per unit area of biological yield. Thus, in the earing phase, the dry matter yield from 1 ha of triticale was 4.30-11.00, wheat - 2.10-5.06, rye - 5.05-9.02 t / ha, depending on the date of sowing. Moreover, as during tubing, the synthesis of organic matter was significantly influenced by abiotic factors during the growing season, mainly overwintering conditions. The latter significantly influenced the formation of density and thickness of the stem, and, consequently, determined the

realization of crops of their potential productivity. According to the results of the experiment, before the onset of the earing phase, there was an increase in differentiation between crops of different sowing dates according to the intensity of organic matter synthesis. Thus, the least productive in terms of dry matter yield, as in the tubing phase, were October crops - 4.30-5.73 t / ha. Sowing on September 15, on the contrary, contributed to the accumulation of the maximum mass of dry matter - 9.50-11.00 t / ha. The dynamics of productivity of rye and wheat crops, depending on the sowing date - is similar.

Observations suggest that triticale varieties, although equally responsive to sowing dates in terms of intensity of biological crop accumulation, but the order of their ranking in terms of productivity has changed. Thus, for sowing 25.08-5.09 and 25.09 the best compared to other varieties were AD 3/5 and Polisky 29; 15.09 - AD 3/5, AD 52; 5.10 - ADM 9, Polisky 29. During all sowing periods low productivity of crops was observed on crops of ADM 11 variety - 4.30-9.50 t / ha; the increase to wheat was 3.04 t / ha.

According to the intensity of dry matter accumulation in the winter triticale earing phase, winter wheat prevailed by 3.04-4.34 t / ha, depending on the variety, and winter rye, except for the ADM 11 variety, by 0.04-0.66 t / ha.

Before the onset of the flowering phase, according to the results of observations, in all experimental variants there was an increase in the content of dry matter in plants. Despite the decrease in the area ofthe active photosynthetic surface, the accumulation of dry matter occurred mainly due to the growth of the stem and ear. On average, over the years of research during flowering triticale crops provided dry matter yield at the level of 6.49-16.22, wheat - 2.93-6.22, rye - 6.74-12.09 t / ha. Among the cultivars studied, the most intensive increase in dry matter during sowing on 25.08, 5.09, 25.09 was provided by ADM 9 and AD 52, 15.09 - Poliske 29 and AD 52, 5.10 - ADM 9 and Poliskii 29. In addition to cultivar ADM 11, which as under earing time, formed a low productivity - 6.83-13.67 t / ha of dry matter compared to other varieties there was a decrease in productivity of crops BP 3/5 - 6.49-13.91 t / ha.

Simultaneously with the increase in total productivity (yield of green mass and dry matter), the intensification of fodder production involves an increase in the production of fodder protein and fodder units, the yield of which per unit area is an important criterion for assessing grass productivity. This is especially important when planning the time of receipt of green mass for animals, as the latter must be provided daily with high quality plant mass.

Conclusions.

According to the level of dry mass formation, winter triticale crops were the most highly productive in the flowering phase for sowing from 25.08 to 25.09 - 9.26-16.22 t / ha. In this phase, the maximum productivity was provided by triticale varieties AD 44, Polisky 29, AD 52 and ADM 9.

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