Annals of R.S.C.B., ISSN:1583-6258, Vol. 25, Issue 3, 2021, Pages. 2327 - 2334
Received 16 February 2021; Accepted 08 March 2021.

The Effectiveness of Innovative Technologies in the Cultivation of New Hybrids of Corn

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Abstract: This article describes the resuls of scientific research on optimizing the sowing rate and bush thickness, which are the main elemens of the technology of cultivation of new hybrids of medium-ripe maize "Uzbekistan 601 ECB" and medium-early "Karasuv 350AMB" in meadow soils in the middle of the Zarafshan valley. The article examines the growth, development, yield, and sowing thickness of new hybrids “Uzbekistan 601 ECB” and middle-ripening “Karasuv 350AMB” included in the State Register of Corn in the Republic of Uzbekistan and shows that the optimal sowing rate is 75,000 seeds / ha. productivity 80.1; 65.7 s / ha The resuls of the study show that with the increase of sowing norms, the silage mass yield increases and the sowing norm (st) is 55 thousand seeds / ha. 47.1 tons, replanted Karasuv 350 AMB medium-early hybrid hybrid 24.5 respectively; A silage mass yield of 39.2 t / ha was obtained. Data on feed unit consumption per hectare and the amount of protein digested are also described.
Key words: “Uzbekistan 601 ECB”, “Qorasuv 350AMB”, corn, hybrid, grain, silage, yield, soil, medium-ripe, medium-early, meadow, feed unit, digestible protein.

1. Relevance of the topic.

In our country, agricultural producs are grown mainly on irrigated lands. The share of agricultural producs grown on dry lands is very low, crop yields are low and unsustainable. The shortage of water sources for irrigation in our country, the Aral Sea problem, limis the possibility of expanding new lands. Therefore, the effective, intensive use of irrigated lands in the acceleration of agriculture, the production of 2 and 3 crops a year is an important resource for increasing the production of grain, vegetables, melons, oilseeds and fodder in the country.

Cattle breeding, which is one of the leading branches of animal husbandry, plays an important role in providing the population with dairy and meat producs. It is necessary to increase the number of dairy cows, create a solid fodder base to increase their milk productivity, give a special place to succulens in the diet, create a reserve of quality milk-driving juicy silage and root crops in the organization of feeding dairy cows with a full ration in autumn and winter.

The use of corn in the preparation of silage is effective, as the yield of corn silage mass is high, as well as the amount of sugar, which ensures the quality of silage. The minimum sugar content is important in ensuring that the pH environment, which is one of the main quality indicators of silage, is sufficient, and the environment required for quality silage is 4-4.2 pH as a result of the formation of lactic acid in the presence of lactic acid bacteria. [5]

At present, various varieties and hybrids of corn are grown in the republic on farms specializing in animal husbandry as the main and secondary crop for grain, silage, green mass. Although the potential yield of hybrids included in the State Register of maize is 700-800 t / ha in the main crop and 350-400 t / ha in the secondary crop, the yield of corn hybrids sown for silage on most farms is 300-400 t / ha in the main crop and 200-250 t / ha in the secondary crop. e. One of the main reasons for low yields is the lack of optimal planting norms, bush thicknesses, taking

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into account the biological characteristics of hybrids and soil-climatic conditions of the region. Therefore, taking into account the biological characteristics of corn hybrids and soil-climatic conditions of the region, the optimal planting rate of hybrids for silage, determining the thickness of the bush is one of the most pressing issues in forage cultivation.

In recent years, the government of the republic has been pursuing a consistent policy to support the farming movement. During the years of independence, the composition of arable lands has changed dramatically, the area under cereals has expanded, the yield has more than doubled, and our country has achieved grain independence. At the same time, in the process of modernization of agriculture, programmatic work is being carried out on the intensive, efficient use of irrigated lands, improvement of soil reclamation. The soil and climatic conditions of the republic allow to get the second and third harvest by sowing secondary, fallow and autumn intermediate crops from the areas vacated by the harvest of cereals sown in autumn. In the use of ancient irrigated lands in the territory of Uzbekistan, farmers have allocated space for wheat and barley sown in the fall, millet, oas, oas, radishes, turnips, carros.

The main climatic factors that determine the possibility of replanting, sowing, autumn intercropping are the duration of the warm period after the harvest of cereals sown in the fall, the amount of precipitation, temperature, light. These factors are closely related to the maturity, yield and quality of the above crops.

After the harvest of cereals, there will be 130-140 days in the southern regions of the country, and 110-120 days in the rest of the regions. The sum of positive temperatures for plans during this period is 2400-3200^{0}C in the southern regions and 1300-1600^{0}C in the remaining regions, accounting for even more than half of the annual heat reserves. In the Zarafshan Valley, the total FAR (photosynthetically active radiation) in the post-harvest period of barley and wheat is 13.0-17.1 million MDJ, which is not used when solar energy is not replanted. Therefore, in order to make full use of FAR, moisture, soil fertility, mineral and organic fertilizers during the hot period of the season, corn can be planted as a second crop in the growing season as a second crop in areas freed from cereal crops. It is known that currently the level of use of bioclimatic resources and chemicals on irrigated lands in the Republic is very low.

The system of intensive use of irrigated lands, developed by many scientiss, the application of intensive technologies for the cultivation of cereals, fodder vegetables, melons, intermediate crops, provides two or three crops a year on irrigated lands, increasing soil fertility. Research by scientiss of the Institute and a number of other institutions shows that repeated, spring and autumn crops are not only a source of additional grain, vegetables, melons and fodder, but also play an important role in improving the physical, water and chemical properties of soil in weed control. These crops reduce the harmful effecs of water and wind erosion, enrich the soil with organic matter and increase is fertility.

In irrigated lands, it is common to provide a continuous vegetation cover to the soil surface, the soil surface does not overheat, moisture loss, soil salinization and drying are reduced. Repeated and fallow crops improve the crop microclimate, field phytosanitary condition, microbiological processes in the soil.

Corn is one of the main fodder crops in the country. Corn is grown on irrigated lands for grain and silage mass. Sowing for grain when sown in spring as the main crop, for silage mass when repeated sowing is widespread in our republic. Maize is grown as a high-yielding, high-value crop, mainly on irrigated lands of the republic. Currently, corn is grown as a staple food on farms specializing in animal husbandry.

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Corn is a valuable, high-yielding cereal, the most widely grown in the world, a foodstuff, of food, fodder, technical importance. Corn grains are used as food and concentrate feed. The grain is widely used in the preparation of mixed fodder. Is grain is nutritious and contains 68-75% starch, 8-13.5% protein, 4-8% fat, 2.0% cellulose, 1.4% ash, as well as mineral sals and vitamins. There are 34 feed unis. In the conditions of our country, as a result of sowing hybrids of medium and early ripening corn, it is possible to harvest twice a year and sow it in combination with other crops. Corn grain and silage mass are used as fodder. When is grain is harvested in the milk-wax ripening phase, high-quality silage is produced.

Juicy foods in the diet play a special role in increasing the milk yield of dairy cows. Feeding dairy cows with a full-value ration, especially during the fall and winter, requires the creation of a stockpile of quality silage. Corn silage is a milk-driving feed for dairy cows. Many scientiss have worked on creating a fodder base for livestock. (Balova E.R. (3), Abuzyarov R.X. (1), Khamroqulov R., (16), Vernigor V.A (7)).

The potential grain and silage mass yield of corn on irrigated lands is 110-120 and 800-1000 s / ha, respectively. However, due to the lack of scientifically based technology for growing silage in the main crop of corn on irrigated lands, is potential is not fully used, resulting in 40-50 t / ha of grain per hectare when sown as the main crop on most farms, 250-300 t / ha of silage in the secondary crop. is being harvested.

In recent years, new varieties and hybrids of corn have been created in the country and included in the State Register. However, due to the lack of planting norms and bush thickness in accordance with the biological characteristics of new varieties and hybrids, as well as soil and climatic conditions of the region, the potential grain and silage mass yield of new hybrids of corn is not fully used. Therefore, in the conditions of Samarkand region, one of the urgent problems in grain growing was to determine the optimal sowing rate and bush thickness, which will ensure a rich and high-quality yield of medium-ripe and early-maturing hybrids of maize as the main crop.

So far, researchers in the field of biology and technology of cultivation of corn in the country and abroad have conducted research (Belyalova AA (4), R.Valiev., (6) I.Massino., (12,13) M.Kasimov., (17) A.Maxmatmurodov., (14) Sanaev S., (15), O.Loxmanova., (11) A.Zaginaylov (9), Allanov.X.K. (2), Boboev F., (5) , Kondrashov A.L. (10), Shpaar D (18), Yanosh N. (19)) but no scientific studies have been conducted on the optimal planting rate of new hybrids, bush thickness for grain and silage mass in repeated crops.

2. Methodology of the experiment.

The experimens were conducted in 2016-2018 at the Samarkand Institute of Veterinary Medicine (former Samarkand Agricultural Institute) Training and Experimental Farm.

The soils of the experimental field are meadow, groundwater is located at a depth of 2.5-3.5 m. The agrochemical definition of the field soils we tested is as follows: humus content in the 0-25 cm layer of soil is 1.20%, gross nitrogen 0.12%, mobile nitrate nitrogen 18.5 mg / kg, phosphorus 0.21%, mobile R2O5–24, 0 mg / kg, gross potassium 1.64%, exchangeable potassium - 245 mg / kg. In the 25-50 cm deeper layers of the soil, the amount of mobile nitrate, phosphorus decreases, and the exchangeable potassium increases. The bulk density of the soil also increased.

Analysis of soil and plant samples was carried out in the Central Research Laboratory of the Department of Botany and the Institute. Grain quality was determined by the methodology of studying the technological properties of grain quality determination (2009).

When placing field experimens, the size of the test tubes is carried out 4 times from 50 to 100 m^2. The ratio of the width of the tubes to the length was kept in the ratio 1: 5-1: 10. The tubes

Annals of R.S.C.B., ISSN:1583-6258, Vol. 25, Issue 3, 2021, Pages. 2327 - 2334
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are placed in a row, perpendicular to the one- and two-tiered irrigation ditches. The past tense is wheat. The object of the experiment is a hybrid of middle-aged Uzbekistan 601 ECB and middle-early Karasuv 350 AMB. 1 generation hybrid seeds were used for sowing. In the experiment, seeds of medium-ripe Uzbekistan 601 ECB hybrid 45, 55, 65, 75,85 thousand seeds per 1 hectare or 15.0,18.4,21.7,25.1,28.4 kg, medium-early Karasuv 350 AMB hybrid 45, 55, 65, 75, 85 thousand seeds per hectare or 14.3,17.5, 20.7, 23.8,27.0 kg were planted on 11 April. The sowing rate of varieties is different in terms of kg, the same in terms of grains is due to the fact that the mass of 1000 seeds is different.

In the experimens, soil moisture was maintained at not less than 70% of the limited moisture capacity (ChDNS). Irrigation is carried out at the rate of 800 m3 per hectare before planting. All technological methods, except for the ones studied in practice, are carried out on the basis of general agrotechnics accepted in the region.

In the experiment, the yield of corn was determined by harvesting in all varians. The yield was calculated as 100% purity at standard humidity (B.A. Dospekhov, 1985). (8)

Analysis of the obtained resuls. The resuls of the study showed that with the increase in sowing norms, a decrease in seed germination under field conditions was observed in both hybrids.

In our study, Uzbekistan 601 ECB hybrid 15.0kg or 43.3 thousand pieces of grass when sowing 45 thousand seeds, 50.8 thousand pieces of grass when sowing 18.4 kg or 55 thousand seeds, 59.5 thousand pieces of grass when sowing 21.7 kg or 65 thousand seeds, 25.1 kg or 75 thousand seeds 67.9 thousand pieces of grass, 28.4 kg of seeds or 76.1 thousand pieces of grass were produced when 85 thousand seeds were planted. Karasuv 350 AMB hybrid 14.3kg seeds or 45,000 seeds - 42.4 thousand grasses, 17.5kg seeds or 55,000 seeds - 50.5 thousand grasses, 20.7kg or 65,000 seeds - 58.4 thousand grasses, 23.8kg seeds or When 75,000 seeds were planted, 66.9 thousand grasses were harvested, 27.0 kg of seeds or 85,000 seeds were sown, and 75.8 thousand grasses were harvested.

Dependence of productivity of corn hybrids on bush thickness and planting schemes in the spring period, 2016-2018.

Field germination of seeds, bush thickness of plans, 1m^2 pcs					**Productivity, s / ha**					
at the expense of seeds, pcs	**in fact**				**grain**		**feed unit**		**digestible protein**	
	Uzbekistan 601 ECB	**%**	**Karasuv 350 AMB**	**%**	**Uzbekistan 601 ECB**	**Karasuv 350 AMB**	**Uzbekistan 601 ECB**	**Karasuv 350 AMB**	**Uzbekistan 601 ECB**	**Karasuv 350 AMB**
45	43.3	96.2	42.4	94.2	55.3	44.9	74.1	60.1	4.31	3.50
55(st)	50.8	92.3	50.5	91.8	64.9	53.7	86.9	76.7	5.06	8.81
65	59.5	91.5	58.4	89.8	72.6	60.4	97.2	80.9	5.66	4.71
75	67.9	90.5	66.9	89.2	80.1	65.7	107.3	88.0	6.24	5.12
85	76.1	89.5	75.8	89.1	76.4	62.8	102.3	84.1	5.95	4.89

The resuls of the study showed that with the increase in sowing norms, a decrease in seed germination under field conditions was observed in both hybrids. The number of grasses per

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$1m^2$varied from 43.3 to 76.1 thousand (96.2-89.5%) depending on the planting norms in the mid-ripening Uzbekistan 601 ECB hybrid. In the mid-early Karasuv 350 AMB hybrid, these figures ranged from 42.4 to 75.8 thousand unis (94.2-89.1%), respectively. The low germination rate of seeds in field conditions was due to the fact that the number of grasses actually formed was lower than the number of seeds sown. With the increase in planting norms, the height of the plans was observed to increase in both hybrids. It was noted that the plant height was lower in the variant where 45,000 seeds were sown per hectare compared to the standard variant (55,000 seeds / ha). In medium-ripe Uzbekistan 601 ECB hybrids, plant height was higher than in all sowing norms and bush thickness compared to mid-early Karasuv 350 AMB hybrid.

Yields in the middle-aged Uzbekistan 601 ECB hybrid varied from 55.3 to 80.1 s / ha, depending on sowing norms and bush thickness. The highest grain yield was observed when 75 thousand seeds were sown per 1 (actually 67.9 thousand). When the sowing norms were 45 thousand, the yield was 55.3 s / ha, and the standard variant decreased by 9.6s / ha compared to 55 thousand seeds / ha. When sowing norms were increased to 65 thousand seeds / ha, the yield was 72.6 s / ha, when the sowing rate was increased to 75 thousand seeds / ha, the highest grain yield was 80.1s / ha or 15.2s / ha compared to the standard variant. When the bush thickness of the plans was increased again, the yield decreased by 3.7 s / ha compared to the sowing rate of 75,000 seeds / ha when the sowing rate was 85,000 seeds / ha.

The yield of mid-early Karasuv 350 AMB hybrid was found to be lower than that of medium-ripe Uzbekistan 601 ECB in all sowing norms. At the sowing rate of 45,000 seeds / ha, the grain yield was 44.9 s / ha and decreased by 8.8 s / ha compared to the standard 55,000 seeds / ha. When the sowing rate was increased to 75,000 seeds / ha, the highest grain yield was 65.7 s / ha, and the additional yield was 12.0 s / ha compared to the standard option. Increasing the sowing rate to 85,000 seeds / ha resulted in a 2.9 s / ha decrease in yield compared to 75,000 seeds / ha.

Depending on the sowing norms of maize sown as the main crop for grain, feed unit consumption varied from 74.1 to 107.3 s / ha in mid-ripening Uzbekistan 601 ECB hybrid and from 60.1 to 88.0 s / ha in mid-early Karasuv 350 AMB hybrid. The yield of the highest feed unit in both hybrids was 107.3 and 88.0 s / ha, respectively, when the sowing rate was 75,000 seeds / ha, and a reduction or increase in the sowing rate resulted in a decrease in the feed unit. Yield per unit yield in the mid-maturing Uzbekistan 601 ECB hybrid was found to be 19.3 s / ha higher than the optimal sowing rate in the 75,000 seed / ha variant compared to the mid-early Karasuv 350 AMB hybrid.

When corn is planted for grain, the amount of digestible protein in the grain varies from 4.31 to 6.24 s / ha in mid-ripening Uzbekistan 601 ECB hybrid, from 3.50 to 5.12 s / ha in medium-ripening Karasuv 350 AMB hybrid depending on sowing norms, and the maximum digestible protein sowing rate is 75 thousand seeds were found to be 6.24 and 5.12 s / ha, respectively, in hybrids. Increasing the sowing rate to 85,000 seeds / ha or reducing it to 75,000 seeds / ha resulted in a decrease in the amount of digestible protein.

When setting up field experimens, the calculated surface area of the experimental pelles was 100 m2, 4 repetitions. The ratio of the width to the length of the beads was maintained at a ratio of 1: 5-1: 10. The location of the furrows is placed perpendicular to the row, one- and two-tiered irrigation shaft ditches. The past tense is wheat. The object of the experiment is a hybrid of medium-ripe Uzbekistan 601 ECB and fast-ripening Karasuv 350 AMB. 1 generation hybrid seeds were used for sowing. In the experiment, seeds of medium-ripe Uzbekistan 601 ECB hybrids 55, 65, 75,85, 95, 105 thousand seeds per 1 hectare or 18.4,21.7,25.1,28.4, 31.8, 35.2 kg, fast-ripening Karasuv 350 AMB hybrids 55, 65, 75,85, 95 , 105 thousand seeds or 17.5, 20.7, 23.8, 27.0, 30.2,

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33.4 kg were sown on 30 June. The sowing rate of varieties is different in terms of kg, the same in terms of grains is due to the fact that the mass of 1000 seeds is different. (6)

In the experimens, soil moisture was maintained at not less than 70% of the limited field moisture capacity (CHDNS). Before planting, irrigation is carried out at the rate of 800 m3 per hectare. All technological methods, except for the ones studied in practice, are carried out on the basis of general agrotechnics accepted in the region. In the experiment, the yield of corn was determined by threshing the crop in all varians [2].

3. Analysis of research resuls.

In our study, the average maturity of 601 ECB in Uzbekistan was 18.4 kg or 55,000 seeds per hectare. kg of seeds or 85 thousand seeds, 76.1 thousand pieces of grass, 31.8 kg of seeds or 95 thousand seeds, 84.6 thousand pieces of grass, 35.2 kg of seeds or 105 thousand seeds, 93.1 thousand pieces of grass. Karasuv 350 AMB hybrid 17.5kg of seeds per hectare or 50.5 thousand pieces of grass when 55,000 seeds are sown, 58.4 thousand pieces of grass when 20.7 kg or 65,000 seeds are planted, 66.9 thousand pieces of grass when 23.8 kg of seeds or 75,000 seeds are planted, 27.0 kg of seeds or 75.8 thousand pieces of grass when 85 thousand seeds were sown, 83.2 thousand pieces of grass when 30.2 kg or 95 thousand seeds were sown, 92.2 thousand pieces of grass when 33.4 kg or 105 thousand seeds were sown. Fertility of seeds in the field varied from 92.3 to 88.7% with an increase in the sowing rate from 55,000 to 105,000 seeds per hectare in the hybrid "Uzbekistan 601 ECB" and from 91.8 to 87.8% in the Karasuv 350 AMB hybrid. Consequently, with the increase in sowing norms, it was observed that the germination of seeds in field conditions decreased in both hybrids.

The study found that planting norms had a significant effect on the silage mass yield of corn hybrids. The silage mass yield of 311 tons in the 601 ECB hybrid of Uzbekistan with the sowing rate of replanted corn is 55 thousand seeds / ha, 47.1 tons in the hybrid of 105 thousand seeds / ha, 24.5 in the Karasuv 350 AMB medium-early hybrid; 39.2 tons of silage mass was obtained. With the increase in sowing norms, an increase in silage mass yield was observed in both varieties. Medium-ripe Uzbekistan 601 ECB "was found to produce 7.4 to 7.9 tons / ha more silage than the medium-early Karasuv 350 AMB, but the mid-early Karasuv 350 AMB showed a higher grain hardening and full milk-wax ripening phase. This indicates that the quality of the silage mass is high.

One of the important indicators of fodder crops is the amount of feed unit per 1 hectare. In our experiment, with the change of sowing norms from 55 thousand seeds / ha to 105 thousand seeds / ha, the feed unit per hectare in the hybrid "Uzbekistan 601 ECB" is 6.70 to 9.89 t / ha, in the middle-early Karasuv hybrid 350 AMB these figures are 5.14 to 8.23 t / ha. was observed.

The highest feed unit consumption was 9.89 and 8.23 tons / ha, respectively, in the 601 ECB hybrid of Uzbekistan and Karasuv 350 AMB hybrids with a sowing rate of 105,000 seeds / ha per hectare. It was found that the amount of differences in planting norms, the increase in nutrient unit obtained with increasing bush thickness, is relatively small.

Table

Dependence of silage mass yield of corn hybrids on sowing norms and bush thickness in repeated cropping, 2016-2018.

	Plant bush thickness, 1m^2 pcs		**Productivity, t / ha**		
	At the expense	**In fact**	**sillage**	**Feed unit**	**Digestible protein**

Annals of R.S.C.B., ISSN:1583-6258, Vol. 25, Issue 3, 2021, Pages. 2327 - 2334
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№	of seeds, pcs	Uzbekistan 601 ECB	%	Karasuv 350 AMB	%	Uzbekistan 601 ECB	Karasuv 350 AMB	Uzbekistan 601 ECB	Karasuv 350 AMB	Uzbekistan60 1 ECB	Karasuv 350 AMB
1	**55(st)**	50.8	92.3	50.5	91.8	31.9	24.5	67.0	5.14	0.57	0.44
2	**65**	59.5	91.5	58.4	89.8	36.3	29.3	76.2	6.15	0.65	0.53
3	**75**	67.9	90.5	66.9	89.2	40.7	33.9	85.5	7.12	0.73	0.61
4	**85**	76.1	89.5	75.8	89.1	43.1	36.6	9.05	7.69	0.78	0.66
5	**95**	84.6	89.0	83.8	88.2	45.3	38.1	9.51	8.0	0.81	0.68
6	**105**	93.1	88.7	92.2	87.8	47.1	39.2	9.89	8.23	0.85	0.70

From 1st tsentnersillage - 21 o.b. and 1.8 kg of digestible protein

The amount of protein digested in silage mass is one of the main quality indicators of feed. The amount of protein digested in 1 quintal of silage mass was 1.8 kg. The amount of digestible protein varied depending on the sowing norms of seeds, and in the variant sown with 55 thousand seeds per hectare, the hybrids of Uzbekistan 601 ECB ”were 0.57 and Karasuv 350 AMB hybrids were 0.44 tons / ha. Control When the sowing rate was increased to 105 thousand seeds / ha compared to the sowing rate of 55 thousand seeds, the amount of additional digestible protein in the hybrid of medium-ripe Uzbekistan 601 ECB was 0.28: 0.26 tons / ha more than in the hybrid Karasuv 350 AMB.

4. Conclusion.

In summary, in the meadow soils of Samarkand region, the optimal sowing rate for medium-ripe maize hybrids Uzbekistan 601 ECB and medium-early Karasuv 350 AMB is 75 thousand seeds / ha and the accepted sowing rate (st) for farms is 55.2 seeds / ha, respectively 15.2; It was found to provide an additional grain yield of 12.0 s / ha. Depending on the sowing norms, the feed unit consumption varied from 74.1 to 107.3 t / ha in mid-ripening Uzbekistan 601 ECB and from 60.1 to 88.0 t / ha in mid-early Karasuv 350 AMB. The highest nutrient unit yield and digestible protein content were observed in both hybrids when the sowing rate was 75,000 seeds / ha. Decreasing or increasing planting norms has led to a decrease in nutrient content as well as the amount of protein digested

When irrigated corn is sown as a repeat crop for silage on irrigated lands free of wheat, in meadow soils the sowing norms are increased from 55 thousand / ha to 105 thousand / ha in mid-ripening Uzbekistan 601 ECB and mid-early Karasuv 350 AMB hybrids. provides a significant increase in unit consumption as well as the amount of digestible protein. It was noted that the quality of the silage mass improved compared to the silage mass of the Uzbek 601 ECB hybrid due to the hardening of the grain during the re-sowing of the mid-early Karasuv 350 AMB hybrid and the transition to the full milk-wax ripening phase.

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