HYDROGEL BASED ON RICE STARCH AND ITS APPLICATION.

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Abstract: *The article provides information on the extraction of starch, its composition, and the milling of rice. In it, an understanding of the hydrogel processing technology was given and a hydrogel based on rice starch and carboxymethylcellulose was obtained. The article ended with the importance of starch in agriculture.*

Key words: *Hydrogel, KMS, wheat, cellulose, NaOH, starch, rice,IR spectrum of carboxymethylcellulose.*

Starch is formed in the leaves of plants. Starch consists of two types of polysaccharides - amylase and amylopectin. Starches are insoluble in cold water, alcohol and organic solvents[1;205b]. Starch extraction technology can be performed in room conditions. 100 g of potatoes are grated and mixed with 1 l of water, as a result, starch separates into water and settles after a certain time. Water is renewed 3-4 times to get clean starch. Starch is extracted from other plants based on the same technology.

Rice requires nitrogen, phosphorus and potassium elements from mineral nutrients. In the conditions of Uzbekistan, 2.3 kg of nitrogen, 0.8 kg of phosphorus and 3 kg of potassium elements are used to grow 1 s of grain and 1 s of straw [2]. Hydrogel preparation technology. Production and introduction of cost-effective technologies for agriculture in water-scarce regions is the need of the hour. For this, a hydrogel based on starch and KMS has been developed, and starch is first chemically modified.

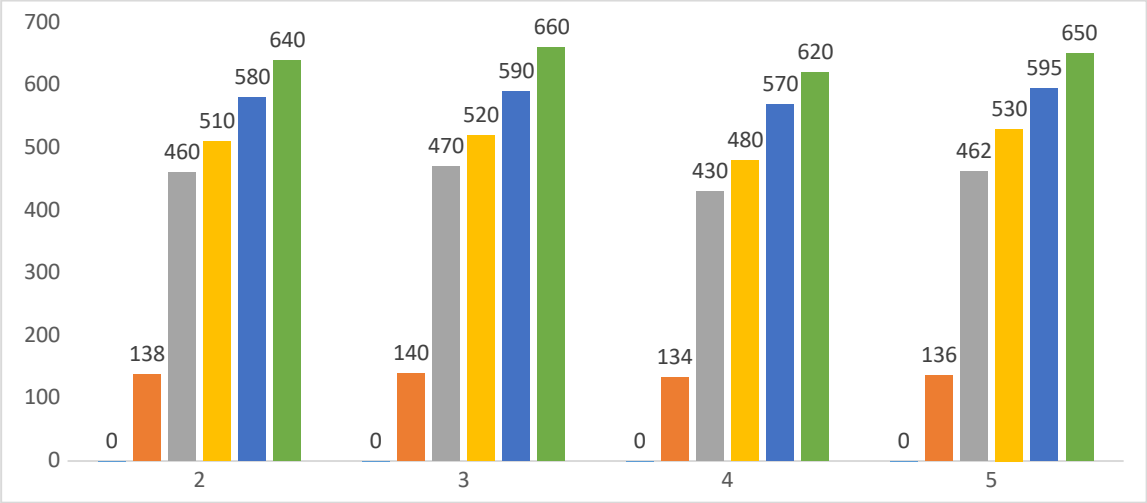
Table I.

Rice husking

№	Rice varieties	Degrees of bending over time %				
		1	2	3	4	5
1	Laser	144	520	690	620	660
2	Prospect	138	460	510	580	640
3	Vanguard	140	470	520	590	660
4	Nukus 2	134	430	480	570	620

5	Totheflame	136	462	530	595	650

Rice husking Figure 1.



Hydrogel is a means of collecting and holding moisture in the soil. Hydrogel is a moisture accumulator. It turns into water-soluble gels and is able to absorb 500 times its weight in water (experimented in distilled water)[3:81-86b]. During the experiment, a hydrogel based on rice starch and KMS (carboxymethylcellulose) was obtained. To obtain a hydrogel based on rice starch and KMS, 15 g of starch, 15 g of KMS, are mixed in 100 ml of water at a temperature of 70^0C for 45 minutes, then bentonin and N-N-methylenebisacrylamide are added to the mixture. The semi-finished product is mixed vigorously. Slowly raise the temperature to 70^0C. This process takes 150 minutes. Then it is hydrolyzed in a solution of 1M sodium hydroxide at a temperature of 950C for 90 minutes and placed in an oven for drying. The IR spectrum of the hydrogel was obtained and analyzed.

So, it was found that when the hydrogel obtained on the basis of rice starch and KMS is 50/50, its swelling properties are much higher. Also, the hydrogel obtained on the basis of potato and corn starch and KMS in a ratio of 50/50 has been found to have high swelling properties.

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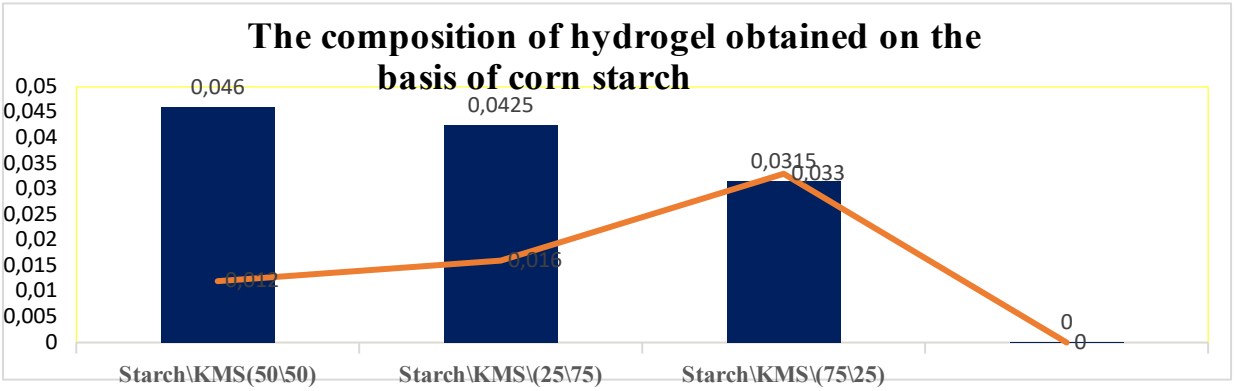
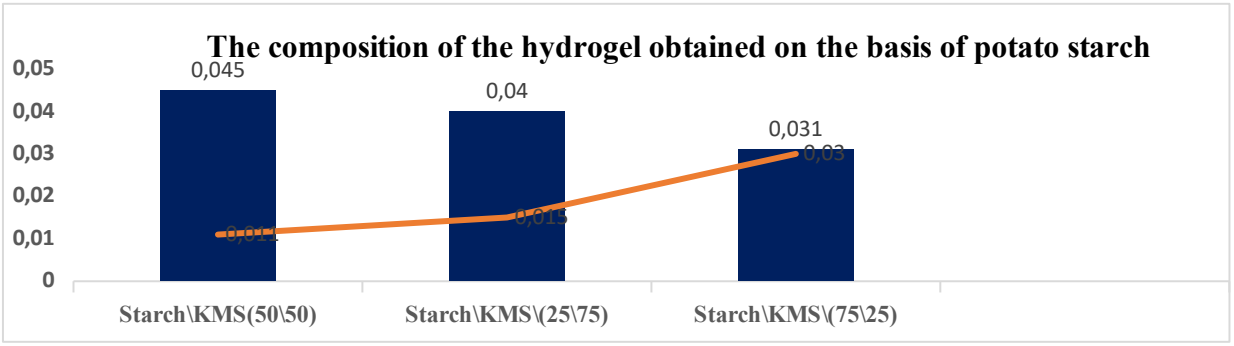
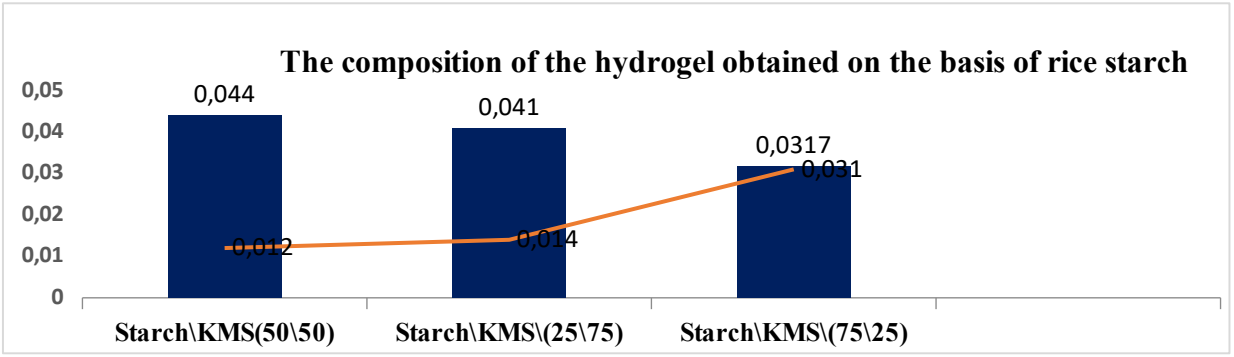
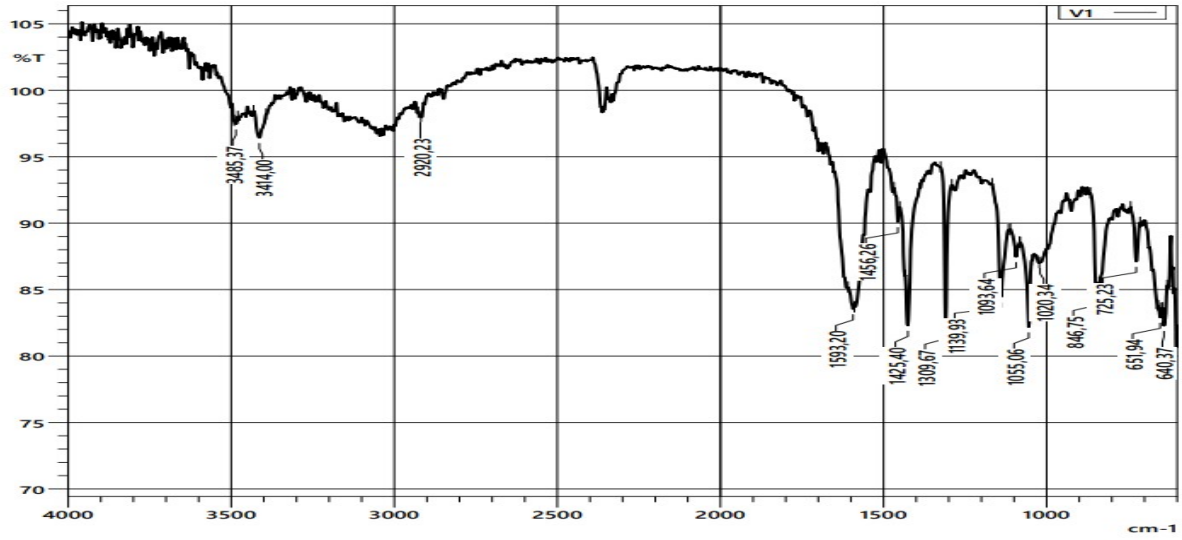
Physical properties of hydrogel. Figure 2.







Spector. Starch/AK/NaOH/KPS/MBA hydrogel. Figure 3.



According to IR spectra. Starch//AK/NaOH/KPS/MBA hydrogel – asymmetric valence 3485 cm-1 and 3414 cm-1 of the spectrum belonging to CONH2 and –CO2 groups, absorption peaks corresponding to amino group and water molecule also changes during the reaction, the symmetric valence belonging to the group is at 2920 cm-1 a new peak appears The above results showed that the characteristic absorption peak of OH and –CONH2 groups in starch changed after the copolymerization reaction. Because this reaction is fast and easy in an alkaline environment. The absorption bands related to the valence vibrations of the S=O group are observed in the range of 1593-1425 cm-1 of the IR spectrum, in which the initiator also participates in its transition. Conclusion: hydrogel can be used for planting corn crops on the territory of our republic with low water supply and different levels of salinity, in dry lands, in forestry - planting various tree seedlings, saxophones, planting lawns, flowers and similar ornamental crops. widely used. Hydrogel allows to maintain moisture, and through this moisture, mineral fertilizers and trace elements in the soil layer. As a result, productivity increases, the number of irrigations during the growing season is reduced, and a large amount of water and mineral fertilizers are saved.

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