

Some particularities of the use herbicide in presowing technologies of preparation the seeds of the rice by capsul's method



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Introduction

The use of herbicide in treatment of the seeds of agricultural cultures by capsules method is not learning yet, but, probably, it is efficient acceptance in fight with rubbish vegetation. Practicability of such approach is conditioned exact the dozes of the preparations, they are often toxic for warm-blooded and cultural plants, exception overland and way of air of the contributing the herbicides to the sowings that finally brings about essential spare chemical means's of protection plants and improvement of the ecological situation in agrarian region. It is an important to do a decision of the problem, connected with method of the fixing herbicide on surface of the seeds of the agricultural gropes and conservation to their efficiency of the action.

The purpose of the studies is concluded the development of technologies of the seeds treatment in the rice with herbicide and the regulator of the growing and developments of the plants, microelements of the feeding in composition of cover making polymeric systems by method of capsules, as well as study of the influence of the processing of the rice seeds before sowing by complex preparation with different spectrum of the action the sprout of the sowing material, suppression to rubbish vegetation and productivity of the plants of the rice in the field experience.

For the treatment of the rice seeds before sowing we used many components polymeric systems, consisting of water-soluble polysaccharide derivatives, microelements of the feeding the plants, regulator of their growing and developments, as well as herbicides [1-6]. In composition of these systems enter the regulator of the growing and developments of the plants Roslin [4], which consists of 10% of water solution sopolimers filament nitron with nitrolignin; the regulator Rostbisol, which consists of 60% of water solution of tetrametilendiamin of sorrel acid [4], microelements feeding the plants - a salts of molybdenum and manganese, fungicide the Topsin M, which consists of 70% of moistenning powder (acting begin - 1,2 - bis(3-methoxecarbonyl-2-thioureido)benzene); the herbicides - Gulliver - acting material -50% azimsulfuron - N- [[4,6-dimethoxy-2- (the company Du Pont, USA) [2-5] and Nomini 400 - acting material sodium 2,6-encore [(4,6- dimitoksi pirimidin 2- silt) ocsibenzoat (Kumiay Kemikl Industri Co., Japan) [6], which are used against Echinochloa and Cyperaceae as well water-soluble polymer Na-carboxymethylcellulose (Na-CMC).

Material and methods

The rice seeds of the sort Vanguard before sowing are treatment moreover in the first layer entered the amount a microelements of feeding the plants, regulators of the growing - Roslin or Bisol, Na-CMC, in the second - a herbicide Gulliver and Na-CMC. As standard used the herbicide Nomini by water way of the shoots in phase 3-4 leaves.

The seeds in the small places experience processed the following system:

- 1 - a checking without processing;
- 2 - NaCMC (capsulation of 2% solution 20 l/t of the seeds, as requested on processing of the seeds of grop cultures covered composition on base of water- soluble polymer NaCMC and PVA);
- 3 - a processing (watering) by amount of microelements of feeding (the molybdenum, manganese), as requested on befor sowing in processing of the seeds of agricultural plants;

4 - Roslin (the facilitator) (in water 1 l/t of the seeds, according to specified rates of the consumption in list allowed to using preparation in agricultures [4]);

5 - Nomini (80 g/h – a treatment the shoots of the rice in phase 3-4 leafs, according to recommendations on the use. Nomini as herbicide on sowing of the rice [6]);

6 - Gulliver (25 g/h - a processing the shoots of the rice in phase 3-4 leafs, according to recommendations of the company Du Pont on use Gulliver as herbicide on sowing of the rice [5]);

7 - Gulliver (treatment the seeds from calculation 110 g/t of the seeds with accompaniment NaCMC) according to earlier revealed optimum amount when treatment of the seeds of the rice;

8 – a processing covered capsulation (1 layer - an amount of microelements 350 g/t salts molybdenum and 450 g/t salts manganese, Roslin with NaCMC, (2% solution, 20 litres worker solution, 400 g/t)); 2 layer -Gulliver (110 g/t of the seeds, with NaCMC, (1% solution, 200 g/t));

9 – a the processing with layer capsulation (1 layer - an amount of microelements 350 g/t on molybdenum and 450 g/t on manganese, Yodomidol with NaCMC, (2% solution, 20 litres worker solution, 400 g/t)); 2 layer -Gulliver (110 g/t of seeds NaCMC, 1% solution, 200 g/t);

10 – a processing with layer capsulation (1 layer - an amount of microelements 350 g/t on molybdenum and 450 g/t on manganese, Topsin with NaCMC (2% solution, 20 litres worker solution, 400 g/t)); 2 layer - Gulliver (110 g/t of the seeds with NaCMC, 1% solution 200 g/t);

11 – a processing with layer capsulation (1 layer - an amount of microelements 350 g/t on molybdenum and 450 g/t on manganese, Bisol with NaCMC (2% solution 20 litres worker solution, 400 g/t)); 2 layer - Gulliver (110 g/t of the seeds with NaCMC, 1% solution 200 g/t);

12 – a processing with layer capsulation (1 layer - an amount of microelements 350 g/t on molybdenum and 450 g/t on manganese, Bisol-3 with NaCMC (2% solution 20 litres worker solution, 400 g/t)); 2 layer - Gulliver (110 g/t of the seeds with NaCMC, 1% solution, 200g/t).

For laboratory, vegetation and field experience of capsulation of the seeds of rice conducted in drajirator.

The accounts and observations conducted as requested Uzbek Institute of Plant protection. Move to the left the shooting of the seeds took into account in medium of the June, in these periods took into account rubbish vegetation. There were also organized accounts of the growing, developments of the plants in the main phases of the development of the culture of the rice and productivities.

Results and Discussion

As a result called on laboratory experience are revealed efficient concentrations regulator growing and developments of the plants in composition polymeric preparation forms. The Most efficiency was revealed in variant of the experience with treatment of the seeds of rice by preparation Bisol (his(its) different modifications) and Yodomidol. Considering that preparation Bisol is designed scientist of the Republic Uzbekistan, is enclosed in list pesticides and agrochemicals, allowed for using in agricultures of the Republic Uzbekistan [4], hereinafter when undertaking vegetation and field experience he was enclosed in composition polymeric of preparation forms as regulator of the growing and developments of the plants and his(its) efficiency in composition PPFG compared to efficiency of other regulator - a domestic preparation Roslin, also allowed to using in Republic Uzbekistan, selected as a result called on scrining and studied in composition PPFG in 2006 year.

As a result called on vegetation experience was shown that treatment of the seeds with new preparation forms of the herbicide Gulliver did not render the negative influence upon move to the left sprout of the seeds of rice. The use regulator in composition preparation forms brought about increase field sprout of the seeds and some reduction amount to rubbish vegetation. The last while in a complicated way explain though in general possible judge about synergism of the action preparation, being included in new preparation forms Gulliver.

At study of the influence PPFG on growing, the development and productivity of the plants of the rice in field condition in small place experience on production base of Plant Protection Institute of the Republic of Uzbekistan was installed that new preparation form Gulliver without introduction of the other meanses of protection plants promoted the some reduction of field sprout of the seeds of rice. Cut in composition given preparation form of regulator of growing and developments of the plants brought about increase of this factor. Herewith the most efficient were PPFG with introduction to their composition of the modified forms of the preparation Bisol. Some reduction field sprout promoted and introduction to composition of preparation forms of fungicide Gulliver Topsin with amount of microelements, then the treatment of seeds with microelements promoted essential increase field sprout. Probably, received effect possible to refer to mutual influence of Topsin, amounts of microelements of feeding the plants in composition of preparation forms, which brings about reception of the negative effect. Follows to note that processing of the seeds NaCMC brought about increase field sprout in contrast with checking. The received effect was earlier described as effect of the influence of the polymeric covering under capsulation of the seeds on growing and development of the plants on early stage of ontogenez [1].

For estimation of efficiency of the action new polymeric preparation forms of the chemical meanses of plants protection and regulation ofgrowing processes was beforehand given feature of rubbishing the places of sowing rice before processing herbicide (the standards) on variant of the experience. Some differences were revealed on amount of rubbish vegetation (the *Echinochloa*) on sowing places with different variant experience (the variants 1-6). The accounts of rubbish the sowing of the rice, called on for 30 days following sowing the seeds, have shown distribution to rubbish vegetation after processing variant experience 2-6 herbicides Gulliver and Nomini according to recommended technology of the contributing herbicide company - a producer preparation and have allowed to reveal efficiency of the processing seeds different preparation forms of the herbicide Gulliver was shown that all used by PPFG greatly suppressed the growing and development *Echinochloa*. Moreover efficiency in suppression of rubbish vegetation (the *Echinochloa*) varies from 88,9 % before 93,2% in variant with use new PPFG. The similar dependency was received and in the event of use new PPFG in suppression of the plants *Cyperaceae*. The degree of the suppression varied from 88,7% before 89,5%. It was installed that new PPFG promoted increase the growing of the plants in contrast with checking. The most efficient were a polymeric systems, including modification of the preparation Bisol. The cheese mass of the plants most was in variant of the experience, where used PPFG with cut-in Topsin and amounts of microelements feeding the plants.

The called on accounts in phase of bushes has shown that height of the plants of the rice varied within from 54,3 refer to before 67,7 refer to depending on variant of the experience. Herewith new PPFG on this factor were found at a rate of checking importances. The cheese mass young plants was greatly above in variant of the experience with use in composition of preparation forms of Bisol. The high factors also were noted under joint use in preparation form Roslin and amounts of microelements. The similar dependency was received at study of the dry mass of the plants of the rice.

Hereinafter, the influence new PPFG was studied on biometric factors of the plants of the rice. It was installed that preharvest standings of the plants of the rice depended on the using of the new preparation forms of the herbicide Gulliver and varied from 62,0 sht/ kv.m before 73,0 sht/kv.m. Cut-in in composition of the compositions preparation Bisol enlarged this factor. The similar effect was revealed at analysis amount escape. The treatment of the seeds of the rice with new PPFG brought about increase the length main whisk brooms and promoted essential increase the mass grain main of the whisk broom. Particularly high factor was noted in variant with processing of the seeds PPFG with cut-in Bisol. The mass grain lateral whisk brooms also was high in variant with processing of the seeds with different PPFG. In variant with processing of the seeds with Bisol small increased and mass 1000 grains and several fell empty grains.

The total effect of the influence new PPFG was shown in productivities of the culture of the rice (the table 1). In all variant of the experience he exceed checking importances. Practically in all variant was received reliable gain to productivities. The most high harvest was received in variant of the experience with Yodomidol and Bisol.

Table 1. Influence new PPFG on productivity of the culture of the rice

№	harvest				middle harvest , c/he	adding to the control c/he	adding to the standard c/he
	I	II	III	IV			
1.	35,0	36,0	38,5	36,5	36,5	-	-18,5
2.	50,5	56,0	59,5	57,0	55,7	19,2	0,7
3.	50,5	57,5	60,5	59,0	56,9	16,4	1,9
4.	54,0	56,5	57,5	60,0	57	10,5	2,0
5.	52,0	54,5	57,5	56,0	55	18,5	0
6.	54,5	59,0	56,5	56,0	55,5	19,0	0,5
7.	54,0	59,0	60,5	59,5	58,2	21,7	3,2
8.	55,5	59,5	62,5	60,5	59,2	22,7	4,2
9.	59,5	63,0	64,0	61,5	62	25,5	7,0
10.	59,0	62,5	65,0	61,0	61,8	25,3	6,8
11.	57,0	58,5	63,5	65,0	61	24,5	6,0
12.	57,0	62,5	66,0	63,5	62,2	25,7	7,2

Conclusions

Thereby, is installed that treatment the seeds before sowing of the cultures of the rice new PPFG method of capsulation promoted the improvement of the leading indexes of the growing, developments of the plants of the rice on background of the suppression to rubbish vegetation in small places field experience. Particularly advantage before sowing treatment of the seeds with new PPFG were revealed on such important factor as productivity of the culture of the rice. It exceed not only checking importance's, but also was above in contrast with standard (processing herbicide Nomini and Gulliver sowing of the rice on vegetation according to recommendation of the companies -a producers these preparation).

References

- 1 S.Rashidova et al (1996) *Biologically active agricultural polymers* (Mechanism of action on plants. Polymeric Materials Encyclopedia USA (1) 615-628.
- 2 T. Iskandarov (1999) *Toksikologo-hygenic conclusion on herbicide Gulliver*. Report Thread to sanitations, hygiene and professional deseases. Tashkent 10.
- 3 M. Kreydi (1998) *Toxicological passport of the herbicide Gulliver*. Geneva 38 .
- 4 The list of pesticides and agrochemicals, allowed for using in agricultures of the Republic Uzbekistan on 2007-2011 jj. (2007) Tashkent 162-200.
- 5 Avenue of the company Du Pont. Gulliver - a new herbicide for rice against Echinochloa and Cyperaceae (1999) 7.
- 6 Avenue of the company Godmother of a child Chemical Industri Co. Ltd. Nomini - new herbicide for sowing rice (2000) 14.