REMOVAL OF CHEMICAL WEED KILLERS AND ORGANICS FROM IRRIGATED LAND

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Annotation: This article provides information on agricultural crops, their growth and development. And in the summary section there are ways to get rid of pests that harm them.

Key words: Redistribution, irrigated, cultivated, discharge water, ammonia, collector-drainage.

Introduction: It is established that, under endogenous using of irrigation water with water passed by from one land to another one, redistribution of chemical weed killers and organics in crop rotation massif will be happened. It is observed that in the beginning of watering carrying out chemical weed killers fall down harshly, it lessened the degree of possible pollution of collector drainage.

Field experiment was held in the massif area of Uzbekistan (Bukhara region) to establish number of activities of possible pollution of collector drainage water while watering. Two fields which lied on 2 tiers in the direction of general area were selected. Experimental fields' soil is old irrigated and middle loamy. Subsoil water was lied down 1,8-2,1m from soil's surface in spring. Square of watering areas which lied on parallel are in up tiers (1-2 areas). Along 1,2 h and in down tiers (areas 3-4) 0,3h.

Method of experiment: During vegetative watering irrigated water was given at the same time to irrigated area lied on up tier, from which it drop from which it dropped in irrigated area lie on down tier. In experimental land cotton was cultivated (Bukhara type). During the period of cotton plant 3 watering processes were done. Crops were treated by phosphate and polidophone on the basis of 1,5 kg (17th of June 2016) and by phosphate 1,5 kg/h (20th of July) or fighting against pests. Cotton defoliation was done on august 27 and September 9 by chlorate magnesium (10-15 kg/h) and butiphose (1,5-3,0 kg/h).

Comparing and analyzing facts are illustrated that during 1 watering in 1 irrigated area maximum concentration of phosphate in water was observed after 3 hours of watering -0,012 mg/l. Then irrigated water was overflowed in the 3rd area and the maximum content of phosphate was 0,018mg/l and it was also observed after 3 hours of watering. At the end of 1st watering vegetation in the water of 1st and 3rd land the content of phosphate was not high 0.003 mg/l.

At the second irrigated area, where additional cotton processing was done, the content of phosphate in the waste water is highest - 0.037 mg / l 3 hours after the beginning of irrigation. In the composition of the waste water 4 irrigation areas, where the irrigation water was overflowed from the second area, the content of phosphate is even higher - 0.040 mg / l, and at the end of watering in discharge water 2 and 4 irrigations is 2.5 times higher compared to 1 and 3 field and is 0.008 mg / l.

During the second vegetative irrigation in the discharge water from one irrigated area, the greatest amount of phosphate (0.06 mg / l) was observed 3 hours after irrigation, and in the third section it was almost twice as high and equal to 0.11 mg / l. At 2 and 4 irrigations, the phosphate content was, respectively, 0.04 and 0.22 mg / L.

At the third vegetative irrigation in the discharge water of 1 and 3 sites, the maximum concentration of phosphate 0.04 mg / l - was recorded 3 hours after beginning of irrigation, and at 2 and 4 irrigated ares it was, respectively, 0,09 and 0,15 mg/l.

Thus, when water is discharged from irrigated areas, the most intensive removal of phosphate is noted within 3-6 hours after the beginning of irrigation.

Defoliation of cotton with magnesium chlorate was performed before the third vegetative irrigation. The most intensive removal of pesticides is observed at the beginning of the surface discharge, which is 1.54-2.65 mg / l in aspect of comparable irrigated lands. In the first 3-6 hours after the beginning of watering, the content of toxic chemicals in waste water is also high. In quantitative terms, the content of magnesium chlorate is comparatively higher in the waste water of irrigated ares 3 and 4, where the water was allowed to pass with a number of located sites 1 and 2. These differences in the content of pesticides in waste water are also noted at the end of irrigation, although its concentration is quite high -0.56-1.24 mg / l. Technology ofl watering with water transfer from one site to another contributes to the redistribution of pesticides in the crop rotation zone, but it does not reduce the degree of contamination of soil and water.

It is established (Orlova, Yaroshenko, 1974, etc.) that from the various forms of nitrogen (nitrate, amide, ammonium), the nitrate form is relatively easily leached from the soil; the least susceptible to washing out ammonium. The degree of washing ability of phosphorus is rather low. In order to obtain information on the degree of possible involvement of nutrients in the contamination of the collector-drainage run off, we conducted field studies. During the vegetation period, 230 kg / h of ammonium nitrate and 220 kg / h of amorphous were applied to the soil.

Results: At the first irrigation in1st irrigation are, the maximum content of nitrates in waste water was observed in the first 3-6 hours after the beginning of irrigation - 4.43-7.07 mg / l. In the 3 section, where the water for irrigation was switched from the first, in the waste water, the content of nitrates is even higher-7.09-8.86 mg/l. At the end of the first vegetative irrigation (after 48 hours) in the discharge water of 1 and 3 irrigated areas, the content of nitrates, respectively, was 0.8 and 3.1 mg/l.

In the 2nd section, the maximum nitrates in the amount of 4.43-7.08 mg / l were contained in waste water in the first 3-6 hours after the beginning of irrigation. On the 4th irrigation land, where irrigation water was transferred from the second, the content of nitrates in the amount of 6.65-8.86 mg / l was also observed in the initial period.

During the second and third vegetative watering, a comparatively intensive elimination of nitrates by waste water was also observed in the initial period. Subsequently, the content gradually decreased. However, in quantitative terms, the content of nitrates in waste water is higher at 2 and 4 irrigated lands, where water was passed from 1 and 3 (Table).

Removal of ammonia by discharge waters is comparatively less in comparison with nitrates. Their maximum content in waste water was mainly observed during the first vegetative irrigation. For example, at the first site at the beginning of the discharge, it was 2.24 mg / l, and after 3 hours - 1.15 mg / l. At the 3rd irrigation site, where cotton was watered with water, which was bypassed from the first, the ammonia content in the waste water, respectively, was 2.34 and 1.47 mg / l. Subsequently, the ammonia content of the waste water decreases sharply and amounts to 0.01-0.02 mg / l in irrigated plots 3 and 4, where the water for irrigation was transferred from 1 and 2 plots in the waste water of which one day after watering I was not detected. During the second and third vegetative irrigation, the removal of ammonia by the waste water is sharply reduced, although the general regularity is that the irrigation technology with water transfer from one field to another leads to a redistribution of pesticides along the seed-rotation massif. Due to this, in the discharge water from the lower irrigation plots the ammonia content is higher

(Table).1

Removal of nitrates and ammonia from cotton lands of waste water (mg/l)

Vegetative watering	Number of watering	Date of observing			
		Beginning of watering	After 3 hours beginning of watering	After 6 hours beginning of watering	At the end of watering
Nitrates					
First	1	3,1	4,43	7,07	0,80
	3	3,2	8,86	7,09	3,1
	2	4,44	7,08	4,43	3,3
	4	8,86	7,97	6,65	3,50
Second	1	4,48	5,3	3,15	0,90
	3	5,3	6,65	4,44	3,1
	2	5,6	4,4	3,5	0,85
	4	6,65	4,45	3,7	3,0
Third	1	3,0	3,2	2,5	0,86
	3	3,6	6,0	3,1	1,95
	2	3,9	3,6	2,8	0,83
	4	5,3	4,05	3,4	1,76
Ammonia					
First	1	2,24	1,15	0,13	0,00
	3	2,34	1,47	0,14	0,00
	2	0,92	0,45	0,34	0,00
	4	2,04	1,45	0,37	0,00
Second	1	0,15	0,13	0,07	0,00
	3	0,35	0,18	0,10	0,00
	2	0,45	0,25	0,12	0,00
	4	0,77	0,50	0,34	0,01
Third	1	0,09	0,07	0,04	0,00
	3	0,24	0,12	0,08	0,01
	1	0,06	0,05	0,03	0,00
	4	0,29	0,18	0,10	0,01

Due to the comparatively low solubility and mobility of phosphates removal of their waste water from the irrigated areas is negligible. During the first vegetative watering, the phosphate content in waste water.

Conclusion: Removal of nitrates and ammonia from the cotton field with waste water (mg / l) 1 and 2 irrigations, respectively, are 0.05-0.08 and 0.06-0.10 mg / l. On the third and fourth irrigation lands, where the water was passed from the nearby 1 and irrigation lands, the phosphate content in the discharged water varied in different ways. At the same time, there is a general tendency to reduce phosphates in waste water from the first to the third vegetative irrigation. The results of the conducted experiments indicate that with endogenous use of irrigation water the removal of pesticides and biogenic elements into the collector-drainage network-watercourses is sharply reduced, and thus the degree of possible contamination is reduced.

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