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Experimental Studies on Estimation of the Design Work of the Proposed Equipment Elements of Idad, Tir and Other Systems

Z.H. Aliyev[1*], S.S. Seyfaddinov[2]

[1]*Institute of Soil Sciences and Agrochemistry of the Azerbaijan National Academy of Sciences of Azerbaijan. Institute of Erosion and Irrigation of ANAS.*
[2]*Institute of Agriculture, Ministry of Agriculture of Azerbaijan.*

***Corresponding Author**: Z.H. Aliyev, Institute of Soil Sciences and Agrochemistry of the Azerbaijan National Academy of Sciences of Azerbaijan.

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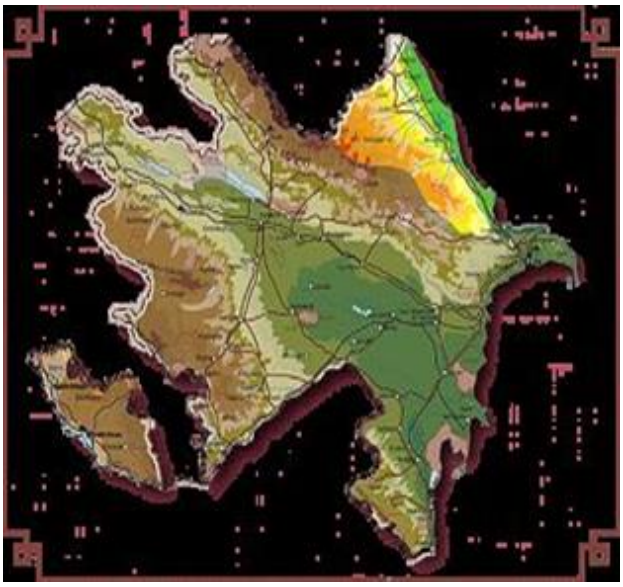
Abstract

The total area of the republic is 8641500 hectares, of which 55 per cent of its ie 4,756,500 hectares, is made suitable for agriculture. or 16.6 percent of the total area of 1,432,600 hectares, or some, of the irrigated lands.1808400 hectares of the total balance of the land is one of arable land available for agriculture. It should be noted that of the 181,600 hectares of the total available arable land is under occupation by Armenian aggressors Used. 224,700 hectares of arable land, permanent crops, 117.6 thousand hectares of hayfields, pastures 2560.0 thousand hectares, 45.7 hectares of fallow areas.

Keywords: *flow-pressure characteristics, nozzles, flow coefficient, low-pressure, nozzle, nutrient regime of the soil.*

Introduction



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Domestic households 258100 hectares (227600 hectares of arable land), 1.0388 million hectares included in the proportion of forest plantations areas. The results of field studies to assess the technological mode of operation of sprinkler nozzles are presented below.

Constructions according to the experimental data, Table 1, the graphical dependence of the flow rate of the nozzles on the pressure is presented below.

After processing the experimental data on a computer, the following dependencies were obtained to find the flow-pressure characteristics of the proposed nozzles with a diameter:

for d = 6 mm - h = 3 • 106 • q2- 9 • 10-11 • q + 2 • 10-13 (1)

for d = 8 mm - h = 3 • 106 • q2- 9 • 10-10 • q + 4 • 10-13 (2)

for d = 10 mm - h = 5 • 106 • q2- 9 • 10-10 • q + 4 • 10-13 (3)

for d = 12 mm - h = 8.5 • 106 • q2- 5 • 10-10 • q + 2 •

10-13 (4)

Table 1: Experimental data of flow-pressure characteristics sector-action IDAD nozzles

H, pressure	d= 6 mm, μcp=0,940	d= 8 mm, μcp=0,942	d= 10 mm, μcp=0,945	d= 12 mm, μcp=0,947
2	0,00076	0,00082	0,00122	0,00153
4	0,0008	0,00087	0,00152	0,00176
8	0,00082	0,00091	0,00163	0,00196
12	0,00087	0,00097	0,00185	0,00207
16	0,0009	0,0012	0,00209	0,00223
20	0,00092	0,0019	0,00213	0,00234
24	0,00097	0,002	0,00391	0,00253
28	0,001	0,0023	0,00297	0,00272
32	0,0016	0,0029	0,00303	0,00292
36	0,0018	0,00291	0,00305	0,00239
40	0,0019	0,0095	0,00309	0,00334
44	0,002	0,00297	0,00311	0,00351

The flow rate gives a qualitative assessment of the nozzle, it depends on the design and workmanship.

The investigated nozzles have a flow coefficient μcp = 0.908 -0 0.947. When plotting the flow-pressure characteristics of the IDAD nozzles, the dependences and reliability coefficients for the diameters were obtained, which are presented in Table 2.

Table 2: Flow rate data

Nozzle diameter	dependence	Confidence factor
d 12	У=0,833 e601,13к	R2 = 0.964
d 10	У=1,66788e577 72к	R2 =0.9438
d 8	У=1,5516e723,29к	R2 =0.9023
d 6	У=1,6922e870,23к	R2 =0.9268

The results of the study of the parameters characterizing a single sectorial nozzle developed by us with a nozzle diameter of 6.0 mm are presented in Table 3. To assess the effectiveness of low-pressure sprinkler systems, this sector-type nozzle was tested on IDAD with a nozzle diameter of 6.0 mm and a head in front of the devices 8 m.

Table 3: Rain test results using nozzles type IDAD and МДП

Pressure, m	wind speed, m / s	Nozzle diameter mm	Parameters characterizing the nozzle and the quality of the rain											
			qo	qf	μ	f	F0.5h	RH	RK	гш	p	pmax 5%	pmax	dr
15	0.80	6	1.70	1,33	0,908	117,5	57,3	0,9	9,3	14,2	0,144	0,56	0,62	0,89
25	1.15	8	2.70	1,91	0,939	126,4	72,3	1	10,4	15,4	0,281	0,84	1,07	0,61
34	1.30	12	3.20	2,37	0,946	158,0	86,9	1,1	11,8	16	0,314	0,94	1,16	0,47

Here,

Qo-flow rate of the nozzle at a given pressure according to the flow-pressure characteristic, l / s;

qf is the nozzle flow rate over the irrigation area, l / s;

μ-coefficient, flow rate;

f - irrigated area, m2;

f 0.5p-area, limited by isohyeta 0.5p, m;

ГН, Гк, Гш - dimensions of the wetting circuit: distance from the nozzle to the beginning of the wetting circuit, to the end and width of the wetting circuit, m;

p is the intensity of rain without overlapping, mm / min;

Pmax is the maximum intensity for 5% of the irrigated area, mm / min, Pmax is the absolute maximum intensity, mm / min; dr is the average cubic diameter of the drop, mm.

Research has established that the flow rate at a head of 5 m varied within the range of 1.2-1.7 l / sec (table 4).

Table 4: Experimental research results with IDAD and MDP

Nozzle type	Consumption, l/s	Average intensity, mm/min	Rain coverage m2	Average droplet diameter, mm		Irrigation uniformity Christiansen
				вцентре	вконце	
Standard sector nozzle	2,2	1,74	61,9	0,89	1,64	0,63
Sector nozzle developed by Research Institute "Erosion and Irrigation"	1,7	1,45	59,8	0,47	1,1	0,72

The average volumetric diameter of droplets falling out when using IDAD and MDP of the sector nozzle developed by the Institute of Erosion and Irrigation of ANAS is 1.89-1.49 times less, and the irrigation uniformity is 1.5 times higher than that of the standard sector nozzle of the "Rosa-3" type.

Better rain quality was achieved with the sector sprinkler head with an enlarged deflector. The maximum precipitation layer was observed at a distance equal to 0.6-0.7 rain capture radius.

The average volumetric diameter of droplets increased at a distance from the center of the radius of capture to its end by 2.3 times for the sector sprinkler nozzle of the Institute of Erosion and Irrigation of ANAS and by 1.84 times for the standard sprinkler nozzle.An increase in the head leads to an equalization of the droplet size over the irrigated area.

Doge structure

The proposed baits are closer in quality to natural rains, although the intensity corresponds to the intensity of very heavy natural rains.For a comparative assessment of the effectiveness of various designs of packings, bench tests were carried out on a stand in the field at the SEB of the Institute of Erosion and Irrigation of ANAS in the Shemakhi region and the SEB of the Kuba RACN in the Kuba region. Two design options were compared.

Table 5: Influence of mineral fertilizers on the yield of perennial grasses and mixtures of herbs on eroded gray-brown soils of Absheron, in s/ha.

Experience options	repetitions			Average	Increase
	I	II	III		
Control b / fertilizers natural grass	5,4	6,2	5,2	5,6	-
Alfalfa + fescue + ryegrass	7,5	12,46	9,34	9,76	4,16
Esparcet + fescue + ryegrass	8,2	10,3	7,67	8,7	3,1
Alfalfa + cereals + N30P30K30	9,4	13,6	10,9	11,3	5,7
Sainfoin + cereal + N30P30K30	8,9	11,6	8,82	9,77	4,17
Alfalfa + cereals + N45P45K45	10,1	16,0	12,13	12,7	7,1
Sainfoin + cereal + N45P45K45	9,2	12,7	9,53	10,5	4,9

Variants of the replication experiment Average Increase

As a result of studies carried out on moderately eroded gray-brown soils of winter pastures of Absheron in mixed crops of perennial grasses with cereals and the introduction of mineral fertilizers,

The positive effect of mineral fertilizers on the yield of perennial and cereal grasses has been established, which, in turn, improving the nutrient regime of the soil, conditions, biochemical processes, including microbiological, activate the nitrification process associated with the assimilation of nitrogen nutrition.

Improving the nutritional regime increases the productivity of pastures, which is seen as a method of combating the desertification process.

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