



Salt Washing is a Guarantee of a Bounty Harvest

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Abstract: *This article contains recommendations for conducting salt washing activities in the saline areas of Bukhara region. Mechanical and chemical analysis of the soil before salt washing and a number of other recommendations are given.*

Keywords: *Brine washing, irrigation, irrigation technique, irrigation technology, salt washing criterion, cyritic depth, mechanical composition of the soil.*

Our motherland and its water resources are the greatest wealth of our nation. The condition of high yield of agricultural crops is of great importance for the growth of the standard of living. The salinity of the cultivated areas requires the washing of soil salinity and the implementation of a number of reclamation measures before planting cotton and other agricultural crops.

45% of the irrigated lands in our republic are saline to varying degrees. This figure is 86% in Bukhara region and 99% in Khorezm region. Among the main factors affecting salinity in these regions are the location of seepage waters above the kritic depth, relatively high air temperature, the usual intensive irrigation of the main agricultural crops, and the imperfect location of irrigation networks. Harmful salts, which dissolve quickly in water, are the biggest threat to sustainable crop yields in irrigated areas. It is important to carry out salt washing on time and in good quality in saline areas.

It is of great practical importance to correctly determine the period of salt washing of the land. The duration of salt washing depends on the level of salinity and the mechanical composition of the soil, and it is carried out in two periods in the conditions of Uzbekistan. In low-saline, light mechanical composition soils, current salt washing is carried out in early spring (February, March), medium and strong saline soils, with heavy mechanical composition, in autumn-winter-spring months (November, December, February, March) will be held.

In addition to evaluating the salinity of the field soil, it is also necessary to determine where the washed water will be taken out in order to wash off the salinity of the land on a separate farm. What is the water level in the field? Are there working wells and collectors? If water removal is not ensured, if the seepage water is on the surface (for example, about 1 meter), it is not required to carry out salt washing, because it leads to deepening and swamping of the salinization process. Salt washing should be carried out when the sizot waters are at their deepest point (usually after autumn and January) and when the weather permits.

It is not recommended to pre-wash salted lands in the fall, because as a result of watering in small quantities and dry winter, salt washing in the fall is less effective, and re-salinization may occur in the spring.

Medium salinity soils can be washed according to egats, if their mechanical composition is light sand. Medium salinity (sand and clay) as well as strong salinity lands can be washed only by checks.



According to the checks, salt washing should be carried out in the months when the sizot waters are deep (January-February). In order for the water to be evenly distributed across the field, the check size should not exceed 50x50 meters. The norm of watering is 3-4 thousand per hectare in medium salinity (in 2 strokes) and up to 5-6 thousand in strong salinity (in 3 strokes).

According to the recommendations of the Scientific Research Institute of Cotton Production of Uzbekistan given below, the values of norms and periods of salt washing in saline irrigated lands of the Republic of Uzbekistan can also be used in practice.

1-table

The mechanical composition of the soil	Salinity level	Brine washing periods			Brine washing standards (thousand/)
		Mirzachol	Ferghana	Bukhara	
Light	weak	I-II	II-III	III	2,0-2,5
Light	medium	I-II	II-III	III	2,5-4,0
Light	strong	I-II	II-III	III	4,0-5,0
Medium	weak	XI-I	I-II	I-II	3,0-3,5
Medium	medium	XI-I	I-II	I-II	3,5-5,0
Medium	strong	XI-I	I-II	I-II	5,0-6,5
Heavy	weak	XI-XII	XII-I	XII-II	4,0-5,0
Heavy	medium	XI-XII	XII-I	XII-II	5,0-6,5
Heavy	strong	XI-XII	XII-I	XII-II	6,5-8,0

2-table.

The mechanical composition of the soil	Salinity level	Brine washing periods		Brine washing standards (thousand/ha)
		In the Khorezm region of the Kyrgyz Republic	In the deserts of Karshi and Sherabad	
Light	weak	III-IV	III	3,0-3,5
Light	medium	III	II-III	3,5-5,0
Light	strong	III	II-III	5,0-6,5
Medium	weak	III	III	4,0-5,0
Medium	medium	II-III	II-III	5,0-6,5
Medium	strong	II-III	II-III	6,5-8,0
Heavy	weak	XI-I, 2/3 of the norm	XI-I, 2/3 of the norm	5,0-6,0
Heavy	medium			6,0-7,5
Heavy	strong	III, 1/3 of the norm	III, 1/3 of the norm	7,5-9,0

In the summer and winter periods of the year, as a result of sufficient water supply and stable operation of ditches, groundwater desalination is inevitable, only then the seasonal accumulation of salt does not take place at such a rapid pace.

It is appropriate to carry out activities based on scientifically based information on the washing of saline areas. First of all, information about the mechanical composition and chemical properties of saline leached soils is needed.

According to the chemical and mechanical composition and physico-chemical properties of salt-washed soils **3-table**.

Groups of soils according to their mechanical properties and physico-chemical properties	Salt content of soils			
	Chloride makes up 40-60% of dry residue.	Sulfate makes up 25-30% of the chloride dry residue.	Chlorine sodium sulfate makes up 10-20% of the solid residue.	Sulfat Chlorine sodium sulfate makes up 0-10% of the solid residue.
It is light in terms of mechanical composition, and contains salt	0,62	0,72	0,82	1,18
Inhomogeneous layered mechanical composition of soils similar to them in terms of average loam or salt content.	0,92	1,02	1,12	1,48
Clay loam soils with low salt content	1,22	1,32	1,42	1,78
Heavy loamy soils with very little salt content	2,70	2,80	3,0	3,30

Brine leaching to remove salts from the soil depends on many factors:

- chemical composition of salts,
- initial soil salinity and saline moisture,
- mechanical structure,
- physical and chemical properties of water,
- duration of salt washing, degree of artificial removal of toxins,
- the method of preparing the land for washing, etc.

What is important when preparing land for salt washing:

- Before preparing the lands for salt washing, it is necessary to clean the irrigation networks and especially the ditches from vegetation and mud.
- Floors taken for salt washing should be level, so that water is used efficiently and salt washing is carried out evenly.
- Before salt washing, plowed land areas are plowed to a depth of 30-40 cm with the PY-3-35 device on "Magnum" or chain tractors.





In conclusion, in order to obtain a high and stable yield from agricultural crops, it is necessary to carry out salt washing activities on a scientific basis. It is necessary for farm managers and specialists to follow the above recommendations. Up to 30% of river water can be saved as a result of high-quality salt washing activities.

If the land users implement the above-mentioned recommendations in practice and carry out high-quality salt washing activities, and if the negative effects on the technical condition of the existing drainage networks are eliminated, a stable high yield of agricultural crops will be achieved.

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