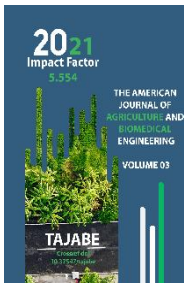
The American Journal of Agriculture and Boimedical Engineering
(ISSN – 2689-1018)
Published: February 28, 2021| **Pages:** 10-15
Doi: https://doi.org/10.37547/tajabe/Volume03Issue02-03

IMPACT FACTOR
2021: 5. 554

OCLC - 1121105746



Journal Website: http://theamericanjournals.com/index,php/tajabe

Efficient Use Of Collector-Drainage Networks (On The Example Of Bukhara Region)

Yozil Kasimovich Hayitov
Lecturers Of Bukhara State University, Uzbekistan

Nurbek Ahmadovich Toshbekov
Lecturers Of Bukhara State University, Uzbekistan

ABSTRACT

The article presents opinions and comments on the use of collector-drainage networks and water sources in Bukhara region. Their hydromorphological data on the main collectors located in the region are also given. The changes in the flow and mineralization rate of collector-drainage networks were studied. Suggestions and recommendations were also provided in order to increase the efficiency of secondary use of some types of agricultural crops as an additional source of water from the collector-drainage water in Bukhara region.

KEYWORDS

Collector, ditch, Northern ditch, Central Bukhara ditch, Ayak ogitma ditch, irrigation water, natural drainage, water mineralization, water resources, vegetation, saline washing, reclamation, irrigated lands.

INTRODUCTION

At present, the development of scientifically based recommendations and proposals on the basis of research on improving the reclamation of irrigated lands in the Bukhara oasis, increasing soil fertility, efficient use of available water resources in times of water scarcity, the use of additional water sources is a requirement of the time. Compared to other oases, the hydrogeological reclamation conditions of irrigated lands in this oasis have

The American Journal of Agriculture and Boimedical Engineering
(ISSN – 2689-1018)
Published: February 28, 2021| **Pages:** 10-15
Doi: https://doi.org/10.37547/tajabe/Volume03Issue02-03
IMPACT FACTOR
2021: 5. 554
OCLC - 1121105746

their own characteristics and are more complex.

Scientific research has been conducted on the irrigation of agricultural crops with improved drainage water, reducing the mineralization of existing collector-drainage water in the region. In our country, the area irrigated with ditches and groundwater for irrigation is increasing compared to areas irrigated with irrigation water.

When N.F. Bespalov studied the possibility of using mineralized water for irrigation and washing of land in Bukhara region, he found that it is possible to irrigate agricultural crops (without mixing fresh water) with drainage water with a salt content of up to 2 g / l. In the conducted experiments, it was observed that the mineral content obtained from collectors, drains and vertical wells is used for irrigation of crops from 0.5-1.0 g / l to 15-16 g / l. The results show that in the conditions of Bukhara region, especially in the years of water scarcity, the effective use of drainage water for irrigation of agricultural crops and leaching of soil salinity is established. It is known that when irrigating with ditch water, it is necessary to wash the soil in the autumn-winter period, because in the autumn the soil is a certain amount of salinity.

Changes in the level of mineralization of collector-drainage waters of Bukhara region

Table 1

Region	The degree of mineralization is g / l			
	2016	2017	2018	2019
Bukhara	2.35-5.25	2.23-5.10	1.96-5.98	2.22-6.03

Irrigated lands in the districts of Bukhara region and the level of their provision with reclamation networks

Table 2

Districts	Irrigated area (thousand. hectare)	Areas provided with ditches (thousand. hectare)	Division	
			With vertical drainage wells (thousand. hectare)	With closed ditches (thousand. hectare)
By regions	274.9	241.23	42.8	18.37
Buxoro region	30.5	28.42	6.46	1.5
Vobkent	21.5	14.92	8.60	-
Jondor	33.0	31.54	0.10	2.7
Kagon	18.6	17.47	7.65	2.3
Karakul	25.1	22.72	0.3	1.3
Karavulbazar	19.3	14.28	-	1.6
Alat	21.5	21.46	-	2.8
Peshku	22.6	14.35	3.75	1.0
Romitan	27.3	22.83	2.53	1.8
Shofirkon	28.4	23.16	7.95	0.5

Source: Information of "Amu-Bukhara" Irrigation Systems Department

The American Journal of Agriculture and Boimedical Engineering
(ISSN – 2689-1018)
Published: February 28, 2021| **Pages:** 10-15
Doi: https://doi.org/10.37547/tajabe/Volume03Issue02-03

IMPACT FACTOR
2021: 5. 554

OCLC - 1121105746

The total land area of the Bukhara oasis is 40.3 thousand sq. Km, and the area of irrigated land is 274.9 thousand hectares. The area provided with collectors in the oasis is 241.23 thousand hectares, of which 61.17 thousand hectares are vertical drainage wells and closed ditches. Areas of Jondor, Karakul, Bukhara, Alat districts are well provided with vertical drainage wells and closed ditches. In terms of the length of collectors per 1 hectare, Jondor, Kagan, Alat, Karakul districts are better provided than other areas. 33,000 hectares or 0.9% of irrigated lands in Bukhara region are not provided with ditches. It is important to reduce the level of groundwater in the oasis by using open, closed-bed, vertical drainage, as well as to improve the reclamation of lands.

In addition to expanding the construction of irrigation networks in the study area, many collector-drainage networks are being built. It is very difficult to fully assess the quality of collector-drainage water formed in the Bukhara oasis. This is because continuous observations in this regard have been made only periodically, mainly to determine the level of mineralization of water. Therefore, in order to comprehensively assess the quality of collector-drainage water in the future, to study its chemical composition and pollution on the basis of all criteria, to determine the amount of pollutants, a graph of some hydrochemical changes was analyzed on the basis of hydrological and hydrochemical experiments.

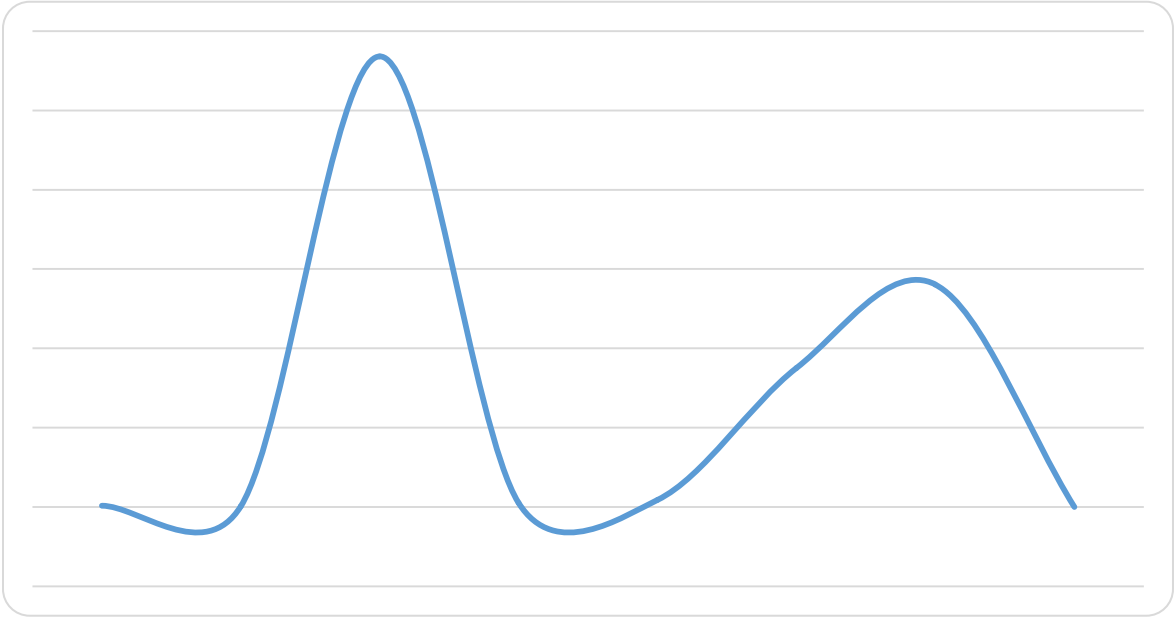
The American Journal of Agriculture and Boimedical Engineering
(ISSN – 2689-1018)
Published: February 28, 2021| **Pages:** 10-15
Doi: https://doi.org/10.37547/tajabe/Volume03Issue02-03

IMPACT FACTOR
2021: 5. 554

OCLC - 1121105746

Northern main ditch (28.10.2020)

The northern main ditch serves to divert back water from irrigation of agricultural crops in Gijduvan, Shafirkan, Romitan, Peshku, Vobkent districts.



Alkalinity, sediments, dry matter, hardness, sodium nitrogen, chlorides, sulfates, fluorine

Dynamics of hydrochemical change of the northern main ditch (29.10.2020)

The American Journal of Agriculture and Boimedical Engineering
(ISSN – 2689-1018)
Published: February 28, 2021| **Pages:** 10-15
Doi: https://doi.org/10.37547/tajabe/Volume03Issue02-03

IMPACT FACTOR
2021: 5. 554

OCLC - 1121105746

The Northern Highway was commissioned in 1948 and is 139.9 km long. Water permeability is 56.5 m3 / s. The northern main ditch flows through the above districts and flows into Lake Karakir.

During the experiment, the water temperature was + 1000C and + 1300C, and the turbidity was 1.8 milligrams per 1 liter of water. The alkalinity of the northern ditch water is 3.2 milligrams. The dry residue in 1 liter of water was 1136.0 mg / dm3, total hardness 10.8 mg / dm3, nitrogen nitrite 0.01 mg / dm3, nitrogen nitrite 18.1 mg, chlorides 350.0 mg / dm3, sulfates 561 mg / dm3, fluorine 0.03 mg / dm3. The amount of specific substances (phosphate, copper, lead, zinc) specific to local substances was not determined from the composition of the Northern main ditch water.

The results of the observation show that the level of mineralization of collector-drainage water in Bukhara region has been changing over the years. Horizontal and vertical drains are widely used in the oasis for irrigation of agricultural crops.

We express the following views on the effective use of collector-drainage water in Bukhara region.

- Significantly reduces water shortages in irrigation of agricultural crops.
- Allows to use other water sources for irrigation of crops in the oasis, ie water from ditches and vertical drainage wells.
- The soil layer in which the roots of plants develop after the end of the growing season serves to reduce salinity and create a solid ground for next year's harvest.

When there is a shortage of irrigation water, the mineralized drainage water from the collectors is pumped to irrigation canals, where it is used for saline washing and vegetative irrigation. The main main drainage ditches of the reclamation networks in the region are Central-Bukhara, North, Parallel-Dengizkul, Ayak-Ogitma.

CONCLUSION

In summary, we believe that in conditions of water scarcity, it is advisable to use water treatment methods to facilitate the efficient use of drainage water, as well as to use it directly with irrigation water or in addition to water in the irrigation system. It should be noted that in the future it is necessary to widely apply the effectiveness of the most optimal biological method for the treatment of drainage water. There should be a program of science-based development in the implementation of eco-amelioration measures.

REFERENCES

1. Y.K. Khayitov, N.A. Toshbekov., Some hypotheses of return waters. Volgograd 2018 No. 10 (56). C 36-40.
2. Y.K. Khayitov, N.A. Toshbekov., T.A. Zhumaeva., Criteria and scales of the secondary use of collector-drainage waters (on the example of the Bukhara oasis). Bulletin of the Karakalpak branch of the Academy of Sciences of the Republic of Uzbekistan 2019 55-58
3. Y.K. Khayitov, N.A. Toshbekov., Hydrological basis for the use of drainage networks. MONOGRAFIA POKONFERENCYJNA SCIENCE, RESEARCH, DEVELOPMENT # 26 v. 2 Poznan / 27.02.2020- 28.02.2020 186-189.
4. Y.K. Khayitov, N.A. Toshbekov., T. A. Zhumaeva., Hydrological Assessment Of The Meliorative Condition Of Collector Drink Water In Bukhara Region. Nature and Science. MARSLAND PRESS. Volume

Published: February 28, 2021| **Pages:** 10-15
Doi: https://doi.org/10.37547/tajabe/Volume03Issue02-03

18 - Number 4 (Cumulated No. 157), April 25, 2020.99-101.

5. Y.K. Khayitov, N.A. Toshbekov., T. A. Zhumaeva., EFFICIENT USE OF WATER RESOURCES OF THE AMU-BUKHARA CANAL. ACADEMIK. An International multidisciplinary Research Journal 05/30/2020, 15-18.
6. Y.K. Khayitov, N.A. Toshbekov., T. A. Zhumaeva., The Formation of Water Collector-Resources Drainage Network of Zarafshan Oasisand the Questions of Recycling. TEST Engineering & Management. May-June 2020 ISSN: 0193-4120 Page No. 27380 - 27385.
7. Xikmatov F.X, Zaitov Sh, Halimova G., Nematov A.N., Assesment of local water resource in Kuljuktov mountain system. TEST Engineering & Management. March-Aprel 2020 ISSN: 0193-4120 Page No. 8665 - 8668.