

ISSN 2518-1467 (Online),
ISSN 1991-3494 (Print)

ҚАЗАҚСТАН РЕСПУБЛИКАСЫ
ҰЛТТЫҚ ҒЫЛЫМ АКАДЕМИЯСЫНЫҢ

Х А Б А Р Ш Ы С Ы

ВЕСТНИК

НАЦИОНАЛЬНОЙ АКАДЕМИИ НАУК
РЕСПУБЛИКИ КАЗАХСТАН

THE BULLETIN

OF THE NATIONAL ACADEMY OF SCIENCES
OF THE REPUBLIC OF KAZAKHSTAN

1944 ЖЫЛДАН ШЫҒА БАСТАҒАН
ИЗДАЕТСЯ С 1944 ГОДА
PUBLISHED SINCE 1944

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АЛМАТЫ
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ALMATY

2018

JANUARY
ЯНВАРЬ
ҚАҢТАР

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НАН РК сообщает, что научный журнал «Вестник НАН РК» был принят для индексирования в Emerging Sources Citation Index, обновленной версии Web of Science. Содержание в этом индексировании находится в стадии рассмотрения компанией Clarivate Analytics для дальнейшего принятия журнала в the Science Citation Index Expanded, the Social Sciences Citation Index и the Arts & Humanities Citation Index. Web of Science предлагает качество и глубину контента для исследователей, авторов, издателей и учреждений. Включение Вестника НАН РК в Emerging Sources Citation Index демонстрирует нашу приверженность к наиболее актуальному и влиятельному мультидисциплинарному контенту для нашего сообщества.

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«Қазақстан Республикасы Ұлттық ғылым академиясының Хабаршысы».

ISSN 2518-1467 (Online),

ISSN 1991-3494 (Print)

Меншіктенуші: «Қазақстан Республикасының Ұлттық ғылым академиясы»РҚБ (Алматы қ.)

Қазақстан республикасының Мәдениет пен ақпарат министрлігінің Ақпарат және мұрағат комитетінде
01.06.2006 ж. берілген №5551-Ж мерзімдік басылым тіркеуіне қойылу туралы куәлік

Мерзімділігі: жылына 6 рет.

Тиражы: 2000 дана.

Редакцияның мекенжайы: 050010, Алматы қ., Шевченко көш., 28, 219 бөл., 220, тел.: 272-13-19, 272-13-18,
www: nauka-nanrk.kz, bulletin-science.kz

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Типографияның мекенжайы: «Аруна» ЖК, Алматы қ., Муратбаева көш., 75.

Г л а в н ы й р е д а к т о р
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«Вестник Национальной академии наук Республики Казахстан».

ISSN 2518-1467 (Online),

ISSN 1991-3494 (Print)

Собственник: РОО «Национальная академия наук Республики Казахстан» (г. Алматы)

Свидетельство о постановке на учет периодического печатного издания в Комитете информации и архивов Министерства культуры и информации Республики Казахстан №5551-Ж, выданное 01.06.2006 г.

Периодичность: 6 раз в год

Тираж: 2000 экземпляров

Адрес редакции: 050010, г. Алматы, ул. Шевченко, 28, ком. 219, 220, тел. 272-13-19, 272-13-18.

www: nauka-nanrk.kz, bulletin-science.kz

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Bulletin of the National Academy of Sciences of the Republic of Kazakhstan.

ISSN 2518-1467 (Online),

ISSN 1991-3494 (Print)

Owner: RPA "National Academy of Sciences of the Republic of Kazakhstan" (Almaty)

The certificate of registration of a periodic printed publication in the Committee of Information and Archives of the Ministry of Culture and Information of the Republic of Kazakhstan N 5551-Ж, issued 01.06.2006

Periodicity: 6 times a year

Circulation: 2000 copies

Editorial address: 28, Shevchenko str., of. 219, 220, Almaty, 050010, tel. 272-13-19, 272-13-18,

<http://nauka-nanrk.kz/>, <http://bulletin-science.kz>

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Address of printing house: ST "Aruna", 75, Muratbayev str, Almaty

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AREA OF APPLICATION OF ENVIRONMENTALLY EFFECTIVE WAYS IN THE SOLUTION OF THE PROBLEM OF WATER TREATMENT

Abstract. Today, one of the most difficult issues in land development is the use of semi-desert lands in Kazakhstan, 29% of which are steppe, and 44% are desert territories. The main part is occupied by semi-deserts and desert territories. As foreign practice shows, these lands can be transformed into effectively used lands. Taking into account these issues, the efficiency of the drip irrigation of Israeli technology in the Mayakum village of the South Kazakhstan region of the Otyrar district was studied. Thus, this method of drip irrigation when grown in greenhouses and gardens of various cultures is widely used also in many regions of the country. In addition, the fermentation method is used by the pipeline system, that is, by feeding the fertilizer solution. This type of irrigation allows to use both fertilizer and water in the required quantity and is an effective way of saving water.

Key words: ecology, desertification, water resources, pollution, irrigation, drip irrigation, fermentation.

Today, one of the most difficult issues in land development is the use of semi-desert lands in Kazakhstan, 29% of which are steppe, and 44% are desert territories. The main part is occupied by semi-deserts and desert territories. Depending on weather conditions and soil fertility, the index of arable land in each region of the country is different [1].

As foreign practice shows, these lands have the potential to be transformed into a profession. Taking into consideration these issues, the Israeli technology was researched in Mayakum village, Otyrar district, South Kazakhstan region. Compared to other regions of the country, the less developed land use in the South Kazakhstan region is the hardness of the soil cover, the saline soils. Therefore, it is necessary to familiarize and use the world experience in the field of agriculture for the development of agriculture. Water shortage issue in Mayakum village of Otrar region of southern region is one of ecological crisis. The following figure 1 shows the satellite imagery of the village surveyed.

The Committee for Consumer Protection of the National Expertise Center of the Republic of Kazakhstan The structure of the heavy metal salt in the waters of the Syrdarya River of the Department of Consumer Protection of the South Kazakhstan region is significantly lower than norms, according to research data (figure 2) [2].

In foreign countries, the method of drip irrigation in greenhouses as well as in hanging gardens is widely used. Drip irrigation – the method of production, used for accurate and uniform delivery of agrochemicals, protecting water, fertilizer and plant pests from the roots of the plant. Drip irrigation pipes can be placed on top or bottom of the soil. You can also use the method of fermentation by pipes, that is, fertilizing in water. This type of irrigation allows you to use both fertilizer and water in the required amount, which means water conservation [3-5].

The introduction of the best international practices in agriculture is being made in Kazakhstan. The impact of anthropogenic action on the environment is constantly increasing year by year. The most unpleasant results of this activity are the spread of various toxic substances into the soil system, and chemical, radiation and other types of pollution. Substances that are pollutants and pollutants include petroleum products, heavy metals, radioactive particles and other ecotoxicants. Outbreaks of these pollutants are industrial enterprises, transport, energy complexes, agriculture and many other industries.

Therefore, we need to use advanced technology to reduce pollution. In connection with the market relations that have developed in agricultural production, it is possible to abandon the use of high doses of expensive mineral fertilizers and to introduce them in smaller quantities for various crops together with natural glauconite mineral, which is characterized by a whole set of chemical compounds and microelements necessary for mineral nutrition of plants [6-8]. Changes in the method of drip irrigation, occurring in the Republic over the last several years, are shown in figure 3.



Figure 1 – Satellite view of the village of Mayakum

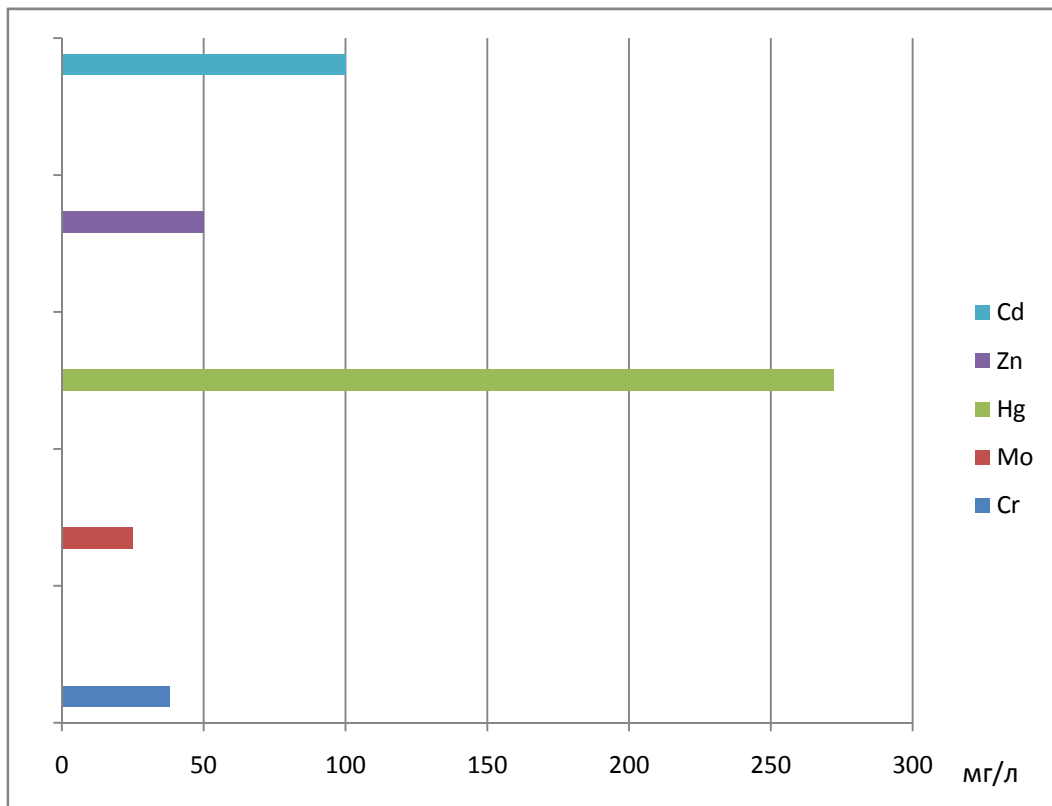


Figure 2 – The composition of heavy metal salts in the Syr darya river water

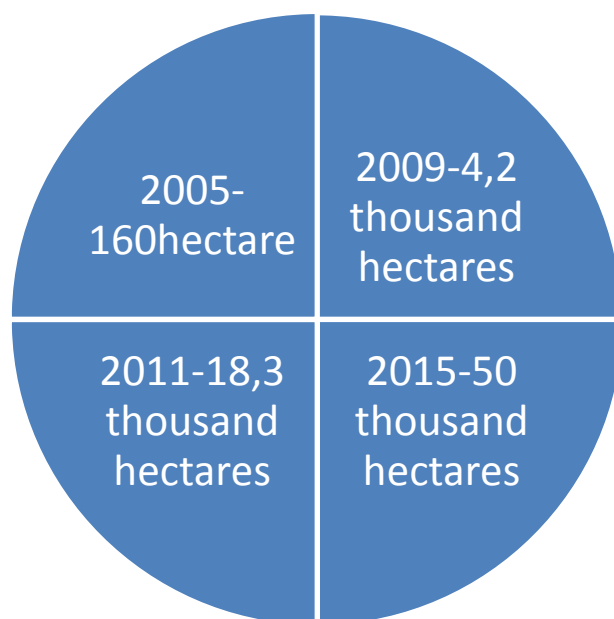


Figure 3 – Changes in drip irrigation method throughout the Republic

That is 300 times more than ten years. For example, if you plan to plant corn on a hectare of 10 hectares and use a drip irrigation system, you can get a product at least 4.5–5 million tenge a year. The cost of installing facilities and equipment, hinge system is compensated within one year. Annual irrigation of crops makes 4.1 billion tons. square meters of irrigation water is allocated. Consequently, water conservation in the field of agriculture is a key requirement of today. Rice cultivation uses more water than other crops. More precisely, it is found that it requires 3–4 times more. Therefore, introduction of water-saving technologies in the region is underway. That is, it is necessary to carry out work on increasing the productivity of agricultural crops on the basis of drip irrigation of arable land and gardens and planting of arable land by new technology. Another advantage of the new system is saving energy, water and fertilizer. In this regard, if we planted an intensive apple tree on a 3 hectare area. The peculiarity of this cord is that it can be produced in 3 years. There are 3750 at each hectare. In the area of 14 tons of products are harvested. 20 million tenge will be spent on 3 hectares. About 30% are funded by local social business corporation. In the third year, the gardens will produce 28–30 tons of fruit, and will eventually increase product volume. And each kg of 30 tonnes of products is sold at an average of 500 tenge, and it earns about 15 million per year. This loss can be compensated for 1 year.

According to the above-mentioned data, the technology of drip irrigation has shown its effectiveness in the issue of the production of vegetables and fruits.

One of the major sources of water in Kazakhstan is transboundary riverside water. It was mentioned that its size is decreasing from year to year. It is clear that in the future, it will be less. Nevertheless, the preservation of its current level of importance through the implementation of intergovernmental agreements that have already been adopted or adopted in the coming years will inevitably become a part of the country's water fund.

There are other ways in which the country can utilize its future water resources. One of them is artificial replenishment of water resources, unnecessary use. There is also a lot of opportunities in this direction. It is commonly known that frosts are frequent in every season, especially in the spring due to snow floods and floods. How much extra water would be generated if we increase the amount of absorption of these waters by using the local relief, using the appropriate recesses, creating appropriate conditions. On the other hand, if you stop using special fresh water supplies from remote areas to wash off vehicles, cars and other vehicles in major towns, towns, industries, and irrigate gardening in the summer months, how much water can be disposed of when the waste of in- saving.

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**ОБЛАСТЬ ПРИМЕНЕНИЯ ЭКОЛОГИЧЕСКИ ЭФФЕКТИВНЫХ ПУТЕЙ
В РЕШЕНИИ ПРОБЛЕМЫ НЕХВАТКИ ВОДЫ**

Аннотация. Сегодня одним из самых сложных вопросов в области освоения земель является использование полупустынных земель территории Казахстана, из которых 29% – степь, 44% – пустынная территория. Основную часть занимают полупустынные пустынные территории. Как показывает зарубежная практика, эти земли могут быть преобразованы в эффективно используемые угодья. Принимая во внимание эти вопросы, была изучена эффективность применения капельного орошения израильской технологии в селе Маякүм Южно-Казахстанской области Отырарского района. Таким образом, данный способ капельного орошения при выращивании в теплицах и садах различных культур широко используется также и во многих регионах страны. Кроме того, используется метод ферментации системой трубопровода, то есть подачей раствора удобрений. Этот тип ирригации позволяет использовать как удобрение, так и воду в требуемом количестве и является эффективным способом экономии воды.

Ключевые слова: экология, опустынивание, водные ресурсы, загрязнение, ирригация, капельное орошение, ферментация.

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**СУ ТАПШЫЛЫҒЫ МӘСЕЛЕСІН ШЕШУДЕГІ ЭКОЛОГИЯЛЫҚ ТҮРҒЫДАН
ТИІМДІ ЖОЛДАРЫН ҚАРАСТЫРУ**

Аннотация. Бүгінде жер игеруде ең күрделі мәселенің бірі шөлейтті жерлерді пайдалану. Қазақстан аумағының 29%-ы далалық, 44%-ы шөлді аумақ. Яғни жердің жартысына жуығы шөлді және шөлейтті. Шетелдік тәжірибеде көрсеткендей бұл жерлерді өндеп, кәсіп көзіне айналдыруға мүмкіндік мол. Осы мәселелерді ескере отырып, Израильдік технологияны орнату тиімділігі Оңтүстік Қазақстан облысындағы, Отырар ауданының Маякүм ауылына зерттеу жұмыстары жүргізілген. Бұл әдіспен өсімдіктерді тамшылатып суару жылыжайларда, сондай-ақ аспалы бақтарда өсіру жолы еліміздің көптеген аудандарында кең қолданыс тапқан. Сонымен қатар, құбырлар арқылы фертигация әдісін, яғни тыңайтқыштарды суға қосып қолдану әдісі де қолданылады. Суарудың мұндай түрі тыңайтқышты да, суды да қажет мөлшерде пайдалануға мүмкіндік береді және суды үнемдеудің тиімді жолы.

Түйін сөздер: экология, шөлейттену, су ресурстары, ластану, ирригация, тамшылатыпсуару, ферментация.

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www.nauka-nanrk.kz

ISSN 2518-1467 (Online), ISSN 1991-3494 (Print)

<http://www.bulletin-science.kz/index.php/ru/>

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Верстка на компьютере *Д. Н. Калкабековой*

Подписано в печать 16.02.2018.

Формат 60x881/8. Бумага офсетная. Печать – ризограф.

14,2 п.л. Тираж 2000. Заказ 1.