

Name of the project: IRN AP19174468 Transfer and adaptation of the technology of growing flax of Kazakh and Chinese varieties to increase productivity in the production of oil, fibers in Northern Kazakhstan

Relevance: Recently, there has been an expansion of the acreage of oilseeds in Kazakhstan, which is a reasonable trend, since the need to grow crops such as soybeans, rapeseed, flax is obvious, these are economically viable, promising crops necessary for life. The government of the country has developed State agricultural programs in this direction, for example, in the 2017 Program, the expansion of flax sowing areas is expected by 44%, while according to the forecasts of Oil World analysts, already in 2019 Kazakhstan became a leader not only in acreage, but also in the production of oilseed flax, having collected a record harvest in volume of 700 thousand tons. Today in Kazakhstan, oilseed flax is one of the promising highly productive and significant crops, the area of flax in Kazakhstan is 683.6 thousand hectares. Currently, 5 varieties of oilseed flax are zoned in Northern Kazakhstan - Karabalyk 7, Kustanai amber, Lirina, Kazar, Severny. The annual area of oilseed flax crops in the world is about 2.5-3.2 million hectares. The main crops of this crop are concentrated in Canada, India, China, the USA, Argentina and Russia, where the gross harvest of flax seeds ranges from 1.9 to 2.7 million/ton. With the development of agricultural science and the emergence of promising varieties that are characterized by a better ratio of fatty acids and the acid composition of oil, such a crop as flax-curly is advancing to the agricultural market. An important role in solving the raw material problem belongs to the introduction of new flax varieties into production, the use of which, without additional costs, allows 25-30% increase in the yield of flax products, improve the quality of flax fiber and increase the efficiency of flax growing. However, the main problem is the lack of cultivation technology that does not allow economic losses, taking into account the biological characteristics of the culture and climatic changes in the region. The aim of the project is to transfer and adapt the most effective technology of flax cultivation of varieties of Kazakh and Chinese selection, to increase productivity in the production of oil and fiber, based on field and laboratory studies in the conditions of Northern Kazakhstan.

The purpose of the project - is to obtain high-quality oil and fiber from flax varieties of Chinese and Kazakh selection, by transferring and adapting flax cultivation technology in the conditions of Northern Kazakhstan.

Expected and achieved results: Within the framework of the project, the technology of growing flax varieties of Chinese and Kazakh selection will be adapted to produce oil and fiber in the conditions of Northern Kazakhstan. Will be determined: weed vegetation in flax crops, and their influence on the growth and development of the studied flax varieties was evaluated; the quality of the oil obtained depending on the varietal characteristics of flax; the YAM-relaxation characteristics of protons of triacylglycerines of linseed oils with different mass fractions of linolenic, oleic, palmitic and stearic acids were revealed. The quality of the obtained fiber will also be determined by selecting an acceptable method for obtaining flax fiber of Chinese and Kazakh breeding. Mathematical processing of the obtained data will be carried out using Statistical and Anova, and an assessment of the economic efficiency of obtaining flax oil and fiber. As a result of the implementation of the tasks, when the goal is achieved, the following results will be obtained: 1) at least 2 (two) will be published articles in journals from the first three quartiles by impact factor in the Web of Science database or having a percentile by Cite Score in the Scopus database of at least 50;

Members of the research group:

The project manager - Yelnazarkyzy Rakhiya, in 2016 she entered the doctoral program of the Kazakh National Agrarian University with a degree in Agronomy. In 2020, she defended her doctoral dissertation at the Dissertation Council at Kaznu under Protocol №. 18 of July 3. Work experience - from 2014 to 2022 she worked at the Kazakh Scientific Research Institute of Agriculture and Crop Production LLP, a researcher.

From 2019 to 2022, she worked at the Kazakh National Agrarian Research University JSC at the Department of Agronomy, Faculty of Agrobiological Sciences, Associate Professor. From 2022 to the current time, NAO "Kazakh Agrotechnical University named after S.Seifulinna" has been working at the Faculty of Agronomy, senior lecturer. More than 36 scientific papers have been published under her authorship, there are 4 articles in the Scopus database, 4 patents, 4 recommendations in the Scopus h-index – 1 database.

Scientific consultant - Stybaev Gani Zhasymbekovich Candidate of Agricultural Sciences, Professor, h-index – 2, has been engaged in research in the field of plant agrotechnology, the development of conservation technologies, feed preparation technology for more than 20 years; was the head of republican grant and international projects. He completed a scientific internship at domestic and foreign research institutes, including the University of Missouri, USA. He has prepared 1 PhD, 18 masters, more than 30 bachelors. The direction of work in the project: conducts consultations on setting up field experiments; analysis of the data obtained; publication of research results, preparation of reports. Has articles in the journals of the Web of Science database (Researcher ID ABC-8535-2020), Scopus (ID – 56381546800), ORCID

Information for potential users: According to the results of the study, the quality of the obtained fiber will be determined by selecting an acceptable method for obtaining flax fiber of Chinese and Kazakh breeding.