**Brief information about the project**

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| URN and project name: | AR0120213 "Study of the introduction potential of medicinal plants of north-eastern Kazakhstan" |
| Implementation Timeline: | 12.05.2021-31.12.2021 |
| Relevance: | The popularity of natural, ecological products, including preparations from medicinal plants, is growing all over the world. Many countries have created national brands based on herbal teas, many of which have export scale ("Evalar", "Altai Cedar", "Siberian Health", "Biolit", "Horst", etc.). Of the Kazakhstani producers, only "Zerde" can be mentioned, but even it works mainly on imported raw materials. The COVID19 pandemic has significantly increased the demand for medicinal plant raw materials.  As our research has shown, 194 species of medicinal plants grow wild on the territory of Pavlodar region. From all regions of north-east Kazakhstan Zhelezinsky district is the most promising for the introduction of wild medicinal plants into culture and the development of medicinal plant breeding for the following reasons:  - high biodiversity and the ability to grow most of the medicinal plant species characteristic of the region;  - favorable environmental conditions;  - availability of agricultural infrastructure.  The main difficulty is the lack of practical experience of agricultural producers in medicinal plant production. |
| Objective: | To study the introduction potential of wild medicinal plants of the north-east of Kazakhstan for the organization of sustainable medicinal plant breeding. |
| Expected and achieved results: | 1) Conduct an inventory of wild populations of medicinal plants with an assessment of the ecological features of their biomes;  2) explore the world experience of agrotechnics of cultivation and practical use of the identified species of medicinal plants;  3) explore the biological and ecological features of the identified medicinal plant species;  4) develop a list of promising species for introduction into plantation culture;  5) collect planting material of target species in their natural growing conditions (seeds, rhizomes);  6) to lay experimental sites for cultivation of target species to establish optimal methods of agro-technique in conditions of Zhelezinka district of Pavlodar region;  7) to develop practical recommendations on cultivation, storage and processing of raw materials from target species of medicinal plants;  8) to conduct a field experiment on the use of species of the genus glycyrrhiza for phytomelioration of saline soils with simultaneous production of medicinal plant raw materials;  9) to replicate the obtained technology among the subjects of agro-industrial complex by conducting training seminars and master classes.  **Results:**  An annotated list of medicinal plants with the indication of morphological-biological, ecological and economic characteristics of plants, as well as mapping of the areal of their populations in the study area was compiled. Field experience on plantation cultivation of medicinal plants was carried out. Practical recommendations for agricultural producers on agrotechnics of plant cultivation were developed. Practical recommendations for agricultural producers on the use of licorice for soil desalinization with simultaneous production of medicinal plant raw materials were developed. Master classes and training seminars for agricultural producers on agrotechnics of cultivation, harvesting and storage of medicinal plant raw materials were held. The results of research are implemented in practice in the conditions of farm "Asylov" and in the educational process at the Department of Agrotechnology Toraighyrov University with the registration of the relevant acts of implementation.  **List of publications on the topic of the project:**  1) Journal Saudi of Biological Sciences - Prospects for the use of Chamaenerion angustifolium for the treatment of COVID-19. (in press).  2) Journal "Bulletin of L.N. Gumilev Eurasian National University. Series of Biological Sciences" - "Features of agrotechnics of Ural licorice in the conditions of the North-East of Kazakhstan" (in press).  3) Journal "Bulletin of L.N. Gumilyov Eurasian National University. Series Biological Sciences" - "Prospects for cultivation of narrow-leaved cypress and production of willow-tea in the north-east of Kazakhstan" (in press). |
| Composition of the research team | |
|  | Kamkin Victor Aleksandrovich |
| Position in the project: Scientific Project Manager |
| Date of birth: 10.05.1981. |
| Candidate of Biological Sciences, Associate Professor |
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| Researcher ID \* AAR-1928-2020 |
| Scopus Author ID\* 57188856335 |
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| List of publications\*\* and patents \*  T. Vakhlamova, H-P. Rusterholz, V. A. Kamkin, B. Baur Recreational Use of Urban and Suburban Forests Affects plant diversity in a Western Siberian City // Urban Forestry & Urban Greening 17 (2016) 92-103. - P. 92-103. (Scopus Q1; CiteScore 3.81; highest percentile 93% Forestry 9/138; ).  V. A. Kamkin, M. Beysembaeva, O. Mazbaev, K. Bazarbekov Effect of Environmental Water Release on the State of Flora and Vegetation of the Steppe Plain Segment of the Irtysh River Floodplain // Oxidation Communications. - Bulgaria, 39, No. 1-1, 1-7 (2016). - P. 357-367. (Scopus Q4; CiteScore 0.22; highest percentile 11% General Chemistry 327/370; )  Sergey Titov, Anton Volynkin, Matjaž Černila, Viktor Kamkin Lithophane Furcifera (Hufnagel, 1766) in Northeastern Kazakhstan (Lepidoptera, Noctuidae) // Biological Bulletin of Bogdan Chmelnitskiy Melitopol State Pedagogical University. ISSN 2225-5486 (Print), ISSN 2226-9010 (Online). Biological Bulletin of MSPU. 2016. №1 - P. 409-415. (the journal is included in the Web Of Science database).  M. A. Beysembaeva, V. A. Kamkin, V. A. Zemtsov, K. U. Bazarbekov Riparian zones. Characteristic, Management Practices and Ecological Impact // Nova Science Publisher, Inc., 2016. - New York. - P. 211-231.  V.A. Kamkin, S.K. Abeuov Glycyrrhiza uralensis as an innovative crop for agriculture in North-East Kazakhstan // International symposium "Innopreneurship: A need of sustainable agriculture" CCS Haryana Agricultural University, Hisar, Haryana, India, February 2-3, 2019 - p. p. 135. 135.  S.K. Abeuov, K.E. Konopyanov, V.A. Kamkin Problems of salinization and transformation of solonets in the condition of non-irrigated agriculture in North-East Kazakhstan // International symposium "Innopreneurship: A need of sustainable agriculture" CCS Haryana Agricultural University, Hisar, Haryana, India, February 2-3, 2019 - p.137.  Abeuov S.K. Kamkin V.A. Shalabaev B.A. Shoikin O.D. Diagnosis of the need of potato crop in nutrition elements depending on the output on chestnut soils // Achievements of young scientists in the development of agricultural science and agroindustrial complex : Proceedings of the VIII-th international scientific-practical conference of young scientists / compiled by N.A. Shcherbakova // with the participation of young scientists. N.A. Scherbakova // village. Solenoye Zaimishche. FSBSI "CAFSC RAS" ". - Solenoye Zaimishche, - 2019. C. 168-177.  Agapov O. A., Bekeshev E. A., Kamkin V. V. A. Monitoring of the soil-vegetation cover recovery at the site of the Proton-M LV accident in 2007 within 10 years after the accident // Vestnik of PSU. Chemical and biological series. - №4., 2017. - С. 199-210.  Kamkin VA, Dzhaksybaeva GG, Sogumbaeva AD, Gusak NS, Asanov IR, Mustafin AS, Nurkina ME. Ways to restore soil fertility when contaminated with kerosene fractions of oil products // Vestnik of PSU. Chemical and biological series. - №2., 2018. - С. 64-71.  Suleimenov I.E., Mun G.A., Kopishev E.E., Panchenko S.V., Vituleva E.S., Kamkin V.. A. Toward the concept of information technology: interpretation from the point of view of knowledge economy // Vestnik PSU. Pedagogical series. - №2, 2016. - 221-231.  Berdenov J. G., Mendybaev E. H., Kamkin V. A., Ataeva G. M., Inkarova J. G. A., Ataeva G. M., Inkarova Zh. I. Use of remote sensing methods in the study of spatial and temporal characteristics of the vegetation cover of Akkulinsky district of Pavlodar region // Bulletin of KazNITU. - №4 (134), 2019. - С. 40-46.  Berdenov J. G., Mendybaev E. H., Makhanova N., Beketova A. T., Kamkin V.. A. Modern methods of processing and analysis of remote sensing data (on the example of Akkuly district of Pavlodar region) // Science News of Kazakhstan. - №1 (143). 2020. - С. 12-24. |
|  | Shalabaev Baurzhan Alpysbaevich |
| Position in the project: Junior Researcher |
| Date of birth: 05.10.1987 |
| Master of Agricultural Sciences |
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| Researcher ID is. |
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| * Ecological variety testing of sugar beet in the conditions of Pavlodar region. Proceedings of the Republican Scientific Conference of Young Scientists, Kainar, December 11-12, 2012. - KazNIICO, Almaty-Kainar, 2012, P.240-244. * Selection of buckwheat varieties for cultivation in the north-east of Kazakhstan. Scientific and production journal "Grain legumes and cereals. №4(12)2014 г. P. 122-124 * Ecological variety testing of buckwheat for cultivation in the north-east of Kazakhstan. Agrarian science to agriculture: collection of articles: in 3 books / X International Scientific and Practical Conference (February 4-5, 2015). Barnaul: RIO ASAU, 2015. Book 2. p. 289-290. * Evaluation of adaptive varieties and lines of spring barley on yield and sowing qualities of grain in steppe conditions of northeastern Kazakhstan. Science, innovation and international cooperation of young agricultural scientists: materials of the international scientific-practical conference of young scientists and specialists (Eagle, December 23-24, 2016). FSBSI “FSCLGC” 2016. P. 235-238. * Growth and development of mono-polycomponent mixtures of grain-forage crops in the conditions of the steppe zone of Northeast Kazakhstan. International Scientific Conference "System of creation of fodder base of animal husbandry on the basis of intensification of crop production and use of natural fodder lands", (May 27-28, 2016). Almalybak., 2016.- P. 565. * Yield and productivity of green mass of single-species and mixed crops in the conditions of the steppe zone of Northeast Kazakhstan. j. "Bulletin of Agricultural Science of Kazakhstan" № 11-12, 2016. * Yield and grain nutrition in single-species and mixed crops of cereals and leguminous crops// j. "Agrarnaya nauka".№ 3.2017, P.4-7. * Productivity and grain quality of mono- and polycomponent mixtures of grain-forage crops. Siberian bulletin of agricultural science. 2017;47(3):36-41. * Fieldwork in the Pavlodar region. (Recommendation) P-62. * Evaluation of adaptive varieties and lines of spring barley on yield and sowing qualities of grain in steppe conditions of northeastern Kazakhstan. Science, innovation and international cooperation of young agricultural scientists: materials of the international scientific-practical conference of young scientists and specialists (Eagle, December 23-24, 2016). FSBSI “FSCLGC”, 2016. - 254 p.   Diagnosis of potato crop requirement in nutrient elements depending on their removal on chestnut soils // Achievements of young scientists in the development of agricultural science and agroindustrial complex : materials of the VIII-th international scientific-practical conference of young scientists / compiled by N.A. Shcherbakova. N.A. Scherbakova // village. Solenoye Zaimishche. FSBSI "CAFSC RAS". - Solenoye Zaimishche, - 2019. P. 168-177. |
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| * Date of birth: 13. 06. 1995. |
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