

Kasenov Asylbek Zhumabekovich

Candidate of Technical Sciences, Professor,
Department of «Mechanical Engineering and Standardization»,
S. Toraighyrov Pavlodar state University,
Pavlodar, 140008, Republic of Kazakhstan
e-mail: asylbek_kasenov@mail.ru

Mukanov Ruslan Batyrbekovich

Master of technical Sciences, senior lecturer,
Department of Transport engineering and logistics»,
S. Toraighyrov Pavlodar State University,
Pavlodar, 140008, Republic of Kazakhstan
e-mail: ruslangr82@mail.ru

Amerkulov Akram Tleuzhanovich

graduate student, Department of «Engineering and Standardization»,
S. Toraighyrov Pavlodar State University,
Pavlodar, 140008, Republic of Kazakhstan
e-mail: akram0696@mail.ru

**PROSPECTS FOR THE ORGANIZATION OF TRAILER EQUIPMENT
PRODUCTION**

It is known that the development of agriculture is impossible without the development of agricultural machinery, taking into account the specifics of the region.

The purpose of this work is to assess the prospects for the development of domestic agricultural machinery on the example of the development of trailer equipment in the framework of the start-up project of master studies.

The analysis of the old train of machine and tractors is made and the import of attached implements in the Republic of Kazakhstan, as well as the volume of the market of agricultural machinery is given.

As a result, it was determined that there were all prerequisites for the development of agricultural engineering in the region and in the Republic of Kazakhstan, and a number of measures to solve the problem were proposed.

Keywords: production, organization, agriculture, agricultural machinery, tillage, harrow, film-laying machine.

INTRODUCTION

At the moment, the development of the agricultural sector is one of the most important goals in the Republic of Kazakhstan. It is difficult to implement without appropriate agricultural equipment that meets modern requirements and is suitable for the regions of the Republic [1–5]. For successful seeding, special attention is paid to pre-sowing soil treatment. At this time, all harrows are imported from abroad and many of them are difficult to adapt to a specific local consumer.

MAIN PART

According to the statistics Agency of the Republic of Kazakhstan, agricultural producers of the Republic had 125.1 thousand tractors, 69.6 thousand tractor trailers,

77.2 thousand seeders, 30.6 thousand harvesters, 47.1 thousand trucks, 44.5 thousand disc harrows, 17.8 thousand rippers and cultivators; 23.5 thousand plows, 7.8 thousand row reapers, 23.0 thousand mowers (including mowers mounted on a tractor) and 14.3 thousand side rakes [2, 3]. Analysis of the data presented in figure 1 shows a significant amount of equipment older than 15 years, which proves the need to develop our own agricultural machinery to timely compensate for losses associated with physical and moral wear and tear of equipment.

Currently, the existing demand for machine-building products in Kazakhstan is mainly met by imports and the leading place in supplies to the market of Kazakhstan is occupied by Italy, Great Britain and China, and agricultural machinery – Germany, Belarus, China, Ukraine, etc. Data on imports of certain types of agricultural machinery in the Republic of Kazakhstan are shown in table 1 [6].

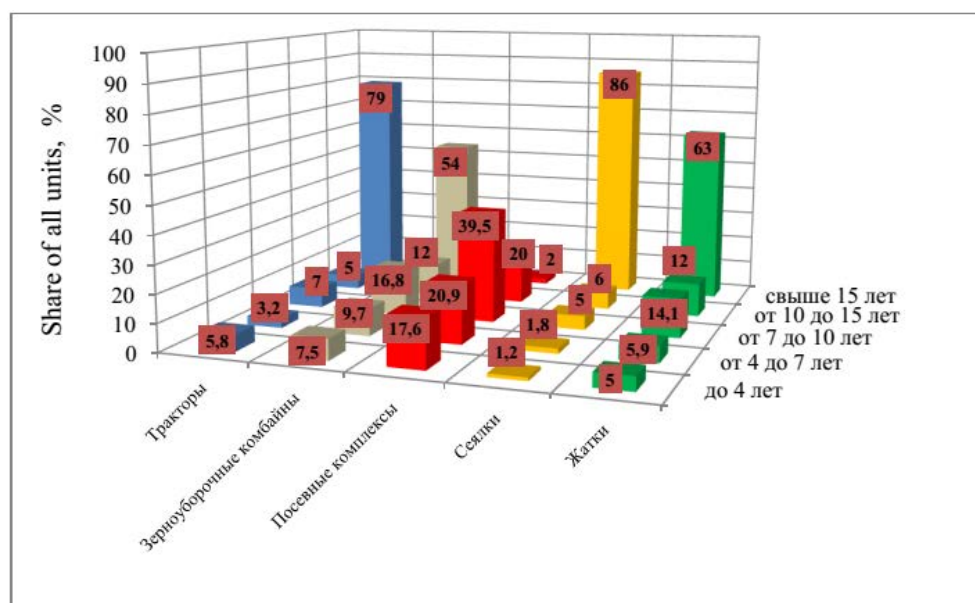


Figure 1 – Age structure of the machine and tractor fleet of the Republic of Kazakhstan

Table 1 – Import of attached implements in Kazakhstan

HS code	Name	Quantity, units	Cost in thousandsof conditional units
8432100000	Ploughs	4546	2654
8432210000	Disc harrows	245	2540
8432291000	Rippers and cultivators	65858	7552
other harrows, rippers, cultivators, pololniki and hoes	Other harrows, rippers, cultivators, and hoes	10703	1412

8433205000	Mounted or trailer mowers, other types	2514	3892
8433209000	Other mowers, including those mounted on tractors	7785	284

At the same time, the need for agricultural machinery and technological equipment is partially met by imports, while domestic producers provide no more than 1 per cent of the total demand. Uncontrolled technically and technologically, as well as unregulated by the state, import of agricultural machinery and technological equipment without taking into account soil and climate factors, adaptation to local conditions and proper service support exacerbates problems in this area [7]. Therefore, it is necessary to establish the production of agricultural equipment, especially tillage and forage harvesting equipment [8] to meet their own needs.

The market of agricultural machinery [9] from 2013 to 2019 amounted to a total of 60 200 million KZT and is presented in table 2.

Table 2 – Agricultural machinery market

Indicator	Volume by year, millions of KZT					
	2010	2011	2012	2013	2014	2015
Domestic production	8 320	8 317	12 243	21 536	19 509	20 468
Imported	57 610	37 750	25 218	44 126	36 909	39 372 including 16 800 of attached implements
Total	65930	46067	37 461	65 369	56 418	60 200

Currently, there are a number of companies that produce agricultural machinery in Kazakhstan:

- «Plant of agricultural machinery» LLP – production of agricultural machinery (reapers KZHVP-9.1 and spare parts for agricultural machinery), Petropavlovsk;
- «Plant named after S. M. Kirov» JSC – production of spare parts for agricultural machines, Petropavlovsk;
- «EXPRO» JSC – production of agricultural machinery, Kostanay;
- «AgroTechMach» LLP – Production of agricultural machinery, spare parts (roller trailer harvester ZHVPR-9.1, Sheller LDG-15, picker PPT-3A, straw grinders for «John Deer» and «Yenisei» harvesters), Kostanay;
- «Don Mar» LLP – production of trailer reapers, Lisakovsk;
- «Tobolsky RMZ» LLP – Production of spare and component parts for combines «Yenisei», Kostanay region;
- «Agromachholding» JSC – production of harvesters and tractors, Kostanay;

– «Agroservice-1» LLP – special equipment: spare parts for agricultural Equipment, Almaty;

– «DAFA LLP» – production of single-bar mounted mowers, two-bar and three-bar trailed mowers with various cutting devices, mechanical dumps and dumps with hydraulic rotation of the shovel; dumps for the rear hitch, wedge-shaped dumps, etc.), Pavlodar.

During the course of training in the start-up master's program of S. Toraigyrov PSU, the creative team developed the design of a modular disc harrow [10, 11]. The design feature of the harrow is a universal frame with the ability to change the working bodies and working length to ensure the versatility and efficiency of the use figure 3.

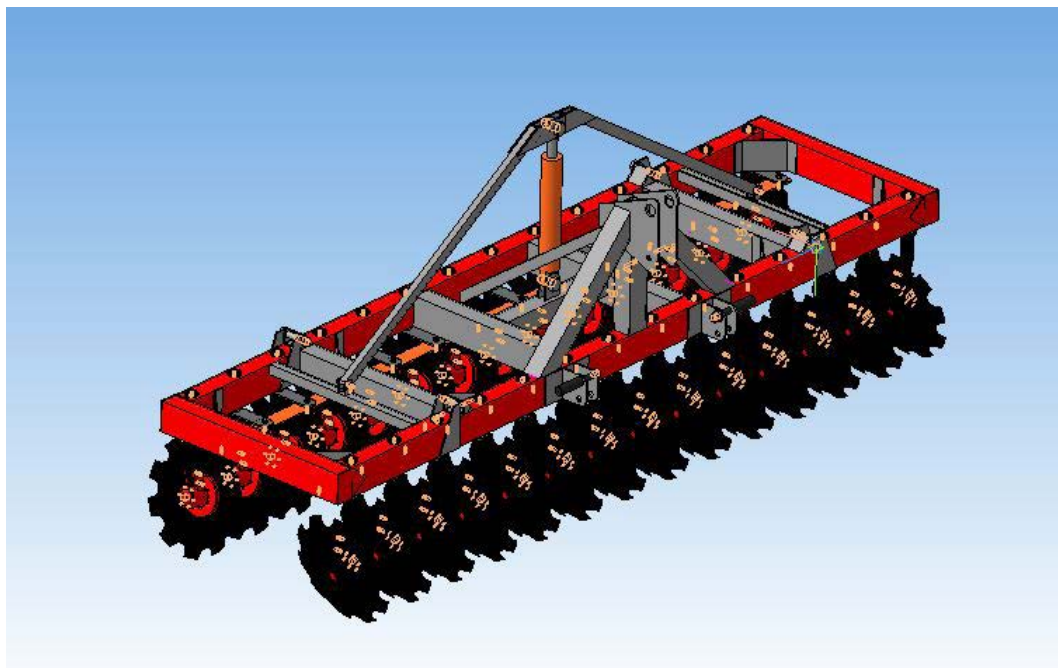


Figure 3 – Design of a modular disc harrow

In addition, the design of the film stacker with the possibility of laying mulching film and punching holes for planting, as well as elements of drip irrigation (figure 4).

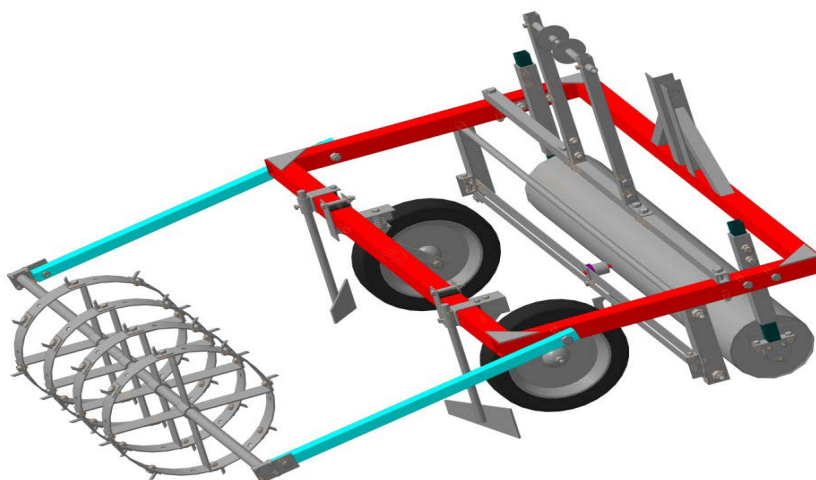


Figure 4 – Construction of the film stacker

Currently, the developed design of a two-bar trailer mower (figure 5) is produced by DAFA LLP and is successfully implemented in Kazakhstan

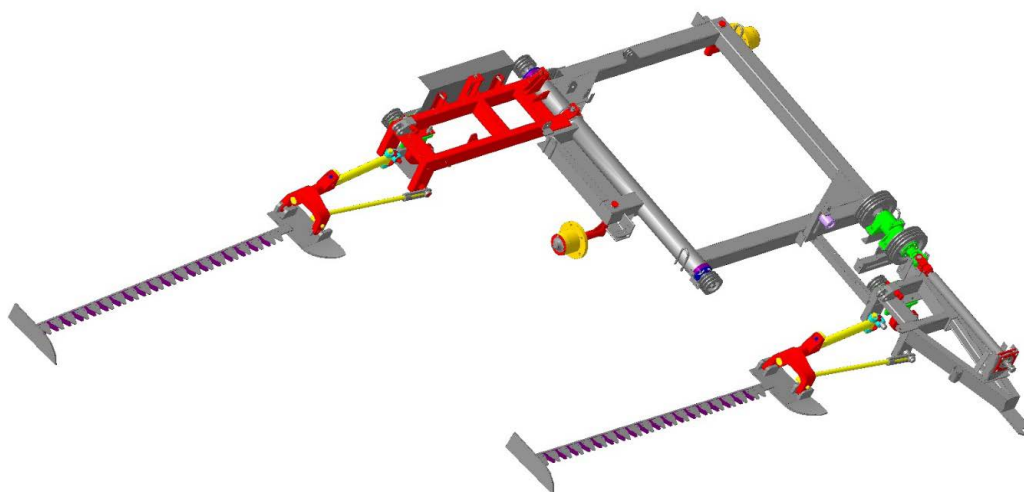


Figure 5 – Two-bar trailer mower KDP-4m

CONCLUSIONS

Thus it is necessary to solve the problems facing the machine-building industry in the region for the production and development of soil-processing and forage-harvesting

equipment that meets the needs of farmers in the region [9]. In particular, a number of solutions are proposed:

- 1 Development of highly effective import-substituting structures of agricultural machinery using modern computer modeling and engineering calculations systems;
- 2 Testing the manufacturability of manufactured equipment, taking into account the specifics of the region;
- 3 Setting up production on the existing base of the customer's enterprise.

REFERENCES

- 1 Государственная программа развития агропромышленного комплекса Республики Казахстан на 2017–2021 годы. – Астана, 2017.
- 2 Материалы VII Форума машиностроителей Казахстана, 2018.
- 3 **Шумейко, И. А., Касенов, А. Ж., Абишев, К. К.** Роль машиностроения и особенности развития отрасли в Казахстане // Наука и техника Казахстана. – 2019. – № 4. – С. 81–89.
- 4 **Дошанова, А. И.** Актуальные проблемы развития АПК Казахстана в условиях глобального кризиса // Сборник научных трудов по итогам международной научно-практической конференции «Современный взгляд на проблемы экономики и менеджмента». – 2015. – С. 6–8.
- 5 **Омарханова, Ж. М.** Вопросы развития АПК в Казахстане // Материалы международной заочной научно-практической конференции «Экономика и управление инновационными процессами, проектами, программами». – 2015. – С. 64–67.
- 6 Данные Комитета по статистике МНЭ РК.
- 7 Маркетинговое исследование на тему: Основной рынок и сборка сельскохозяйственной техники в Республике Казахстан. Нур-Султан 2018.
- 8 <https://www.apk-inform.com/ru/exclusive/opinion/72987> [Электронный ресурс].
- 9 Маркетинговое исследование рынка сельскохозяйственной техники в Казахстане omega system 2019 г.
- 10 <https://business.gov.kz/kz/news/science-and-technology/universalnyy-agregat-dlya-fermerov-razrabotali-pavlodarskie-studenty.html> [Электронный ресурс].
- 11 **Ходжибергенов, Д. Т., Шеров, К. Т., Касенов, А. Ж., Хожибергенова, У. Д.** Проблемы выбора технологии обработки нововнедренных материалов в производство // Наука и техника Казахстана. – 2018. – № 2. – С. 111–117.

Material received on 08.06.20.

Касенов Асылбек Жумабекович

т.ғ.к., профессор, «Машинажасау және стандарттау» кафедрасы,
С. Торайғыров атындағы Павлодар мемлекеттік университеті,
Павлодар қ., 140008, Қазақстан Республикасы
e-mail: asylbek_kasenov@mail.ru

Муқанов Руслан Батырбекович

аға оқытушы, «Көліктік техника және логистика» кафедрасы,
С. Торайғыров атындағы Павлодар мемлекеттік университеті,
Павлодар қ., 140008, Қазақстан Республикасы
e-mail: ruslangr82@mail.ru

Амеркулов Акрам Тлеужанович

магистрант, «Машина жасау және стандарттау» кафедрасы,
С. Торайғыров атындағы Павлодар мемлекеттік университеті,
Павлодар қ., 140008, Қазақстан Республикасы
e-mail: akram0696@mail.ru

Материал 08.06.20 баспаға түсті.

Тіркеме жабдықтар өндірісін ұйымдастыру перспективалары

Ауыл шаруашылығын дамыту өңірдің ерекшелігін ескере отырып, ауыл шаруашылығы машиналарын жасауды дамытпай мүмкін емес екені белгілі.

Бұл жұмыстың мақсаты-Startup магистратура жобасын орындау шеңберінде тіркеме жабдықтарды әзірлеу мысалында отандық ауыл шаруашылығы машиналарын жасау перспективаларын бағалау.

Жас шамасына қарай машина-таркторлық паркке талдау жасалды және ҚР аспалы жабдықтар импорты, сондай-ақ ауыл шаруашылығы техникасы нарығының көлемі келтірілген.

Нәтижесінде өңірде және ҚР-да ауыл шаруашылығы машиналарын жасауды дамыту үшін барлық алғышарттар бар және проблеманы шешу үшін бірқатар шаралар ұсынылды.

Кілтті сөздер: Өндіріс, ұйымдастыру, ауыл шаруашылығы, Ауыл шаруашылығы машиналары, топырақ өңдеу, тырмалар, пленка төсеуші.

Касенов Асылбек Жумабекович

к.т.н., профессор, кафедра «Машиностроение и стандартизация»,
Павлодарский государственный университет имени С. Торайгырова,
г. Павлодар, 140008, Республика Казахстан
e-mail: asylbek_kasenov@mail.ru

Муканов Руслан Батырбекович

м.т.н., старший преподаватель,
кафедра «Транспортная техника и логистика»,
Павлодарский государственный университет имени С. Торайгырова,
г. Павлодар, 140008, Республика Казахстан
e-mail: ruslangr82@mail.ru

Амеркулов Акрам Тлеужанович

магистрант, кафедра «Машиностроение и стандартизация»,
Павлодарский государственный университет имени С. Торайгырова,
г. Павлодар, 140008, Республика Казахстан
e-mail: akram0696@mail.ru

Материал поступил в редакцию 08.06.20.

Перспективы организации производства прицепного оборудования

Известно, что развитие сельского хозяйства невозможно без развития сельскохозяйственного машиностроения с учётом специфики региона.

Целью данной работы является оценка перспектив развития отечественного сельскохозяйственного машиностроения на примере разработки прицепного оборудования в рамках выполнения проекта Startup магистратуры.

Выполнен анализ возрастного машинно-тракторного парка и приведён импорт навесного оборудования в РК, а также объем рынка сельскохозяйственной техники.

В результате определено, что для развития сельскохозяйственного машиностроения в регионе и в РК есть все предпосылки и предложен ряд мер для решения проблемы.

Ключевые слова: производство, организация, сельское хозяйство, сельскохозяйственные машины, почвообработка, борона, пленкоукладчик.