# “Managing women’s participation in Kazakhstan’s agricultural research sector: Determinants in the context of the 5MS framework”


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# MANAGING WOMEN'S PARTICIPATION IN KAZAKHSTAN'S AGRICULTURAL RESEARCH SECTOR: DETERMINANTS IN THE CONTEXT OF THE 5Ms FRAMEWORK

## Abstract

A balanced gender distribution is observed in agricultural sciences in Kazakhstan. This study aims to define and analyze the factors influencing women's participation in the agricultural research sector in Kazakhstan using the 5Ms analytical framework (macro/meso environment, money, motherhood, management). The study applies quantitative statistical analysis of science development indicators from bulletins of the Bureau of National Statistics, extracts from the minutes of the National Scientific Council, and qualitative content analysis of regulatory legal acts from the "Adilet" system. The empirical analysis covers the period 2018–2025. In Kazakhstan, 1,185 women scientists are engaged in agricultural research, accounting for 9.2% of female scientists and 51.3% of researchers in agricultural science. Women's participation is shaped by factors across all dimensions of the 5M framework. Key drivers include the public policies promoting equal opportunities, access to postgraduate education in agriculture (master's programs: 11.1-66.7%; Ph.D. programs: 20-90.9% of students), and employment opportunities in the agricultural system (18,212 people, 30%). The barriers include stereotypes about the masculinity of the scientific profession and activities in the agricultural sector, as well as limited access to large research grants. One of the most significant barriers is the "glass ceiling", reflected in the underrepresentation of women in leadership positions (3.2% female executives, 8.8-21% female rectors, etc.) and the presence of a gender pay gap (21.2% in salaries, 60.8% in grants), as well as the "motherhood penalty". Strengthening women's participation in agricultural sciences requires not only increasing their representation but also promoting their presence in leadership and decision-making positions.

**Keywords** science policy, gender equality, research career development, gender pay gap, motherhood penalty, glass ceiling, Central Asia

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## INTRODUCTION

The pursuit of gender equality in science, technology, engineering, and mathematics (STEM) fields has become a global imperative, recognized for its crucial role in fostering innovation, driving sustainable development, and ensuring a more inclusive future (World Bank, 2021). When women are empowered to participate fully in scientific endeavors, their unique perspectives and talents enrich the scientific landscape, leading to more comprehensive and impactful research outcomes. Scientists are a source of economic development (Kangalakova et al., 2024), and the underrepresentation of women in science not only signifies a loss of potential contributions but also perpetuates societal inequalities and hinders overall progress (UNESCO, 2025). Today, women scientists make up about one-third of the total number of scientists, while at the top levels of the scientific hierarchy, women's par-

ticipation is even lower; for example, women make up only 12% of the members of national academies of sciences. It should be noted that the percentage of women's participation in science varies depending on the region and branches of science. So, it is 23% in South Asia, 32% in Africa, 34% in the European Union, 41% in the Arab countries, 47% in Central Asia, 52% in South-Eastern Europe (UNESCO, 2024). This indicator was 55.7% in the Republic of Kazakhstan (RK) in 2024. Women are most actively represented in the humanities (66.3%), social sciences (64.6%), and medical sciences (63.5%). The lowest share is observed in engineering developments (45.4%), indicating a gender imbalance in technical fields. In the natural (54.3%) and agricultural (51.3%) sciences, there is a balanced gender distribution (BNS, 2024). It should be noted that strengthening the capacity of agricultural researchers in Kazakhstan involves not only increasing the representation of women among researchers but also promoting their presence in leadership and decision-making positions.

Women's participation in science, including agricultural science, depends on various factors. Countries with low gender equality experience overt, systemic exclusion from education and work. Highly equal societies still grapple with hidden forms of discrimination. In low-quality countries, barriers often stem from cultural or religious prohibitions and physical insecurity. In high-equality countries, they appear to be unconscious bias and structural barriers to leadership or funding. Although countries vary in gender equality, Kazakhstan, despite a balanced gender distribution in science, still lacks a comprehensive understanding of the factors that determine women's participation in agricultural research. Existing studies focus on general STEM trends and do not address sector-specific issues. Interactions between managerial, institutional, financial, and sociocultural conditions in this sector are insufficiently explored. Furthermore, the lack of an integrated analysis of factors shaping women's participation in agricultural science in Kazakhstan limits theoretical understanding and policy development.

## 1. LITERATURE REVIEW

Economic parity does not automatically lead to full social and institutional equity. Notably, countries with less developed gender equality often have a relatively higher proportion of women graduating in STEM fields compared to countries with high gender equality (Stoet & Geary, 2018). Thus, countries consistently ranked high in gender equality still face gender inequality in women's participation in science (WEF, 2023; EIGE, 2023; World Population Review, 2025). In Iceland, women are underrepresented in senior academic positions, and implicit biases in research funding persist (Rannís, 2020). Norway faces similar issues, including gender stereotypes and the underrepresentation of women in leadership positions within scientific institutions, despite strong national commitments to gender equality (Research Council of Norway, 2024). Sweden also encounters biases in senior academic appointments and unequal access to permanent contracts and professional networks (EC, 2024). In all these countries, national policies and mentoring programs serve as key drivers, although subtle and persistent biases persist. In contrast, countries with low gender equality scores highlight more fundamental barriers (WEF, 2023; UN Women, 2024; IMF, 2024). In Afghanistan, severe restrictions on women's education and public life have intensified following the Taliban's return (UN Women, 2024). In Pakistan, women face cultural restrictions, hiring discrimination, and societal pressure to prioritize family roles (Hollows et al., 2015). Chad suffers from very low female enrollment in higher education, particularly in STEM fields (UNESCO Institute for Statistics, 2021). Congo also shows underrepresentation of women in science, shaped by economic instability and cultural traditions (World Bank, 2023). Despite these challenges, individual resilience, family encouragement, and support from international organizations serve as partial enablers in low-equality settings.

In agricultural sciences (agriculture, forestry, and fisheries; animal and dairy science; agricultural biotechnology; and others) (OECD, 2015), gender inequality remains a significant barrier. In many cases, farming and agricultural science are traditionally perceived as male-dominated fields, with women often regarded as assistants (Roche et al., 2022), thereby facing "unfriendly structures


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and dynamics" (World Fish Center, 2015). In developing countries, women constitute only about one-third of agricultural researchers. In regions like sub-Saharan Africa, this share was even lower (around 22%), whereas in Europe (48%). It should be noted that this rate was very low in Chad, Ethiopia, Guinea, and Togo (about 8%), and higher in Lesotho, Mauritius, Namibia, and South Africa (over 40%). Only 20% of management positions in agricultural sciences were held by women. In high-level research management and decision-making positions, women were underrepresented (Beintema, 2020). As a result, women have less influence in policy- and decision-making processes on sustainable agriculture development in general and development of agricultural science in particular, including three stages of the agricultural research process – design, testing, and diffusion (Mulema et al., 2019).

Historically, the low participation of women in science was often explained by alleged biological differences or deficiencies in ability. Now, research confirms that women's underrepresentation in science is due to a variety of barriers they face at different stages of their scientific careers, with sociocultural factors playing a predominant role. These barriers include gender expectations regarding work-life balance, career preferences, and societal norms that often limit women's choices and opportunities in science (Avolio et al., 2020). Such societal biases persist throughout women's professional lives, influencing hiring practices, workplace environments, and societal perceptions of who can be a scientist (Moss-Racusin et al., 2012; CohenMiller et al., 2021; UNESCO, 2025). Entrenched stereotypes – such as associating the image of a scientist with a man – may undermine girls' and women's belief in their ability to succeed in STEM fields (UNESCO, 2017). A lack of female representation in science may hinder self-identification and career motivation. These stereotypes can subtly shape girls' aspirations from a young age, discouraging them from pursuing STEM education and careers (UNESCO, 2017; UNESCO, 2025). Although policy measures, such as state scholarships that target women in STEM, aim to address gender inequality, weak enforcement and enduring gender biases may limit their effectiveness (CohenMiller et al., 2021). Family support plays an important role in strengthening girls' confidence in STEM, whereas traditional expectations may still channel them into "feminine" fields (Almukhambetova, 2023; Balta et al., 2023a). Consequently, many women leave the STEM pipeline between secondary and tertiary education (UNESCO, 2025).

Women also face barriers at later stages of their scientific careers. These include access to mentoring and career counseling, gender disparities in grant allocation, the lack of a family-friendly work environment with flexible hours and adequate childcare, and men's low involvement and participation in childcare (Blaszczak et al., 2022). The lack of positive practice environments for women in science and inequality in work environments have a significant impact on women's participation and success in science (Uzman et al., 2022). These challenges are particularly visible in the field of agricultural sciences. Agricultural research has several specific features and risks (Rudzki et al., 2022), such as long-term field and laboratory research, physical strain, long scientific trips, seasonality, and dependence on climatic conditions, work in remote and sometimes unsafe locations, etc. For example, women may face social stigma for "unfeminine" activities or restrictions from family and partners, difficulties in combining field research with family responsibilities (especially during school holidays or other important family events), stress in expedition conditions (hygiene, safety, sleep, etc.), limited access to technical resources due to their mistrust of working with agricultural machinery or chemicals, as well as psychological difficulties of working in predominantly male research teams (especially in applied agricultural organizations and field stations).

The main gender barriers to agricultural innovation include gender norms, the double burden of reproductive and productive work, limited access to land, finance, agricultural information, and extension services (Dabkienė et al., 2025). Despite the transformation of gender roles in agriculture due to the influence of such factors as commercialization processes, climate change, introduction of new technologies and innovations, military conflicts and migration flows that transform agricultural practices, the structure of rural labor and the distribution of labor roles (Pyburn & van Eerdewijk, 2021), the characteristics of agricul-

tural research in combination with established gender stereotypes and institutional limitations in science in general form an "invisible barrier" for women in this field.

Another important factor affecting women's careers in agricultural science relates to family responsibilities and the distribution of domestic labor. Women's lower salaries may partly reflect that women, especially married women and those with children, choose jobs with a lower level of responsibility, more flexible schedules, and the ability to reduce working hours in order to manage to combine family and work. While men, with relatively more time, achieve more, especially in higher-paying areas, since they can work almost without time restrictions, even when married (Kabzhalalova, 2023). The higher the burden of domestic and family responsibilities, the less time and opportunities women have to fully participate in agricultural sciences, especially at advanced career levels (PhD, director, project investigator). Moreover, the need to combine professional activities with daily family responsibilities reduces the time available for improving qualifications, professional development, participation in scientific projects, and increasing publication and grant activity. At the same time, labor potential is shaped by a combination of factors, including the quality of human capital, the level of professional training, technological literacy, workers' initial qualifications, and opportunities for their further professional growth (Kaliyeva et al., 2025).

Women in STEM are particularly vulnerable to imposter syndrome – the internalized feeling of intellectual fraudulence despite evident achievements (Clance & Imes, 1978). Support mechanisms such as leadership programs, structured mentorship programs, and informal professional networks play a critical role in addressing these challenges. Such initiatives may provide emotional support, professional collaboration, and career development pathways where formal institutional systems are insufficient (Kakabadse et al., 2018; Huang et al., 2020). Early visibility of female mentors in educational content helps sustain interest in STEM (Powell & Grubbström, 2021; Balta et al., 2023b).

The reviewed literature demonstrates that a scientific career depends not only on talent but also on the broader ecosystem around a person. Therefore, women's participation in the agricultural research sector is influenced by a complex combination of institutional, sociocultural, economic, and family-related factors. In this context, the 5Ms framework (Brush et al., 2009; Satpayeva et. al., 2020) offers a valuable lens for examining the multifaceted influences on women's engagement in various professional domains (Ramadani et al., 2015). According to this approach, five key dimensions interact to shape the experiences and outcomes of women in professional settings: macro environment (societal norms, cultural values, national policy and strategy); meso environment (institutional environment, development institutions, universities, research organizations, and professional networks); money (funding, salaries, grants and other economic opportunities); management (leadership, mentorship, workplace culture, career); motherhood (household and family context including work-life balance, family responsibilities, childcare support).

Thus, this research aims to define and analyze the factors influencing women's participation in the agricultural research sector in Kazakhstan using the 5Ms analytical framework.

## 2. METHOD

The study employs a mixed-methods research design combining quantitative statistical analysis of science development indicators and qualitative content analysis of regulatory legal acts related to public policy in the sphere of science development and the agro-industrial complex. To provide a structured and comprehensive analysis of the factors influencing women's participation in agricultural science, the 5Ms framework was used as a conceptual analytical model. All identified factors were categorized according to the five dimensions of the 5Ms framework: macro environment, meso environment, money, management, and motherhood. The classification enabled systematic structuring of the institutional, economic, and sociocultural determinants influencing women's involvement in research in agricultural sciences.

The source base was the statistical bulletins of the Bureau of National Statistics of the Republic of Kazakhstan (BNS RK), extracts from the min-


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utes of the National Scientific Council (NSC) "Sustainable development of the agro-industrial complex" of the National Center of Science and Technology Evaluation, and regulatory legal acts from the "Adilet" legal information system (Appendix A). The empirical analysis covers the period 2018–2025, allowing for the identification of recent trends in the development of agricultural science and in women's participation in this field.

The study is limited by the availability of publicly accessible data, especially the lack of gender-segregated statistical data in the context of agricultural sciences. In the tables, the conventional designation "–" indicates that the phenomenon is absent (i.e., the value is zero), and "x" indicates that the data are confidential. The data were analyzed using MS Excel.

## 3. RESULT

In 2024, there were 2,312 researchers in agricultural sciences (9.9% of all scientists). In agricultural research, 1,185 women scientists were engaged, which amounted to 9.2% of the total number of female scientists, which is more than in 2019 (8.3%). At the same time, in the structure of agricultural sciences, the share of female scientists increased by 6.4 percentage points from 2019 to 2024. The peak occurred in 2023, when women made up 54.0% of agricultural scientists. During this period, the number of women scientists in this branch of science increased by 1,5 times. A significant increase occurred in 2023–2024, reaching 373 people (Figure 1).

The indicators show positive dynamics of gender balance in Kazakhstan. There has been a steady increase in women's involvement in agricultural sciences, and since 2021, women have made up the majority of researchers in the field. The involvement of women at the initial stages of an academic career is high. Thus, women dominate at the master's level and make up the majority among Doctor of Philosophy (PhD) and Candidates of Science (Table 1).

The instability and small number of people in the "doctor by profile" category make it the least indicative, largely because there are so few specialists. However, the higher the academic degree, the lower the proportion of women, especially at the level of doctors of science, which may indicate the presence of a "glass ceiling" in an academic career or vertical segregation: women start out in science actively, but face difficulties in promotion, and

**Table 1.** Women scientists in agricultural sciences in Kazakhstan by academic degree, people (ppl.), %, 2019–2024

| Academic Degree | 2019 | | 2020 | | 2021 | | 2022 | | 2023 | | 2024 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Ppl. | % | Ppl. | % | Ppl. | % | Ppl. | % | Ppl. | % | Ppl. | % |
| Doctor of Specialization | 3 | 20 | – | – | 5 | 71.4 | x | N/A | 1 | 33.3 | 2 | 25 |
| Ph.D. | 42 | 52,5 | 68 | 44.7 | 91 | 59.1 | 81 | 55.1 | 125 | 57.6 | 203 | 56.9 |
| Doctor of Science | 34 | 17.1 | 33 | 17.1 | 32 | 22.2 | 30 | 22.9 | 51 | 32.3 | 51 | 27.9 |
| Candidate of Science | 207 | 42.9 | 222 | 46.2 | 214 | 48.1 | 207 | 49.3 | 254 | 54.6 | 240 | 48.9 |
| Master | 234 | 54.4 | 259 | 57.7 | 295 | 57.6 | 301 | 58.5 | 362 | 61.5 | 458 | 57.4 |

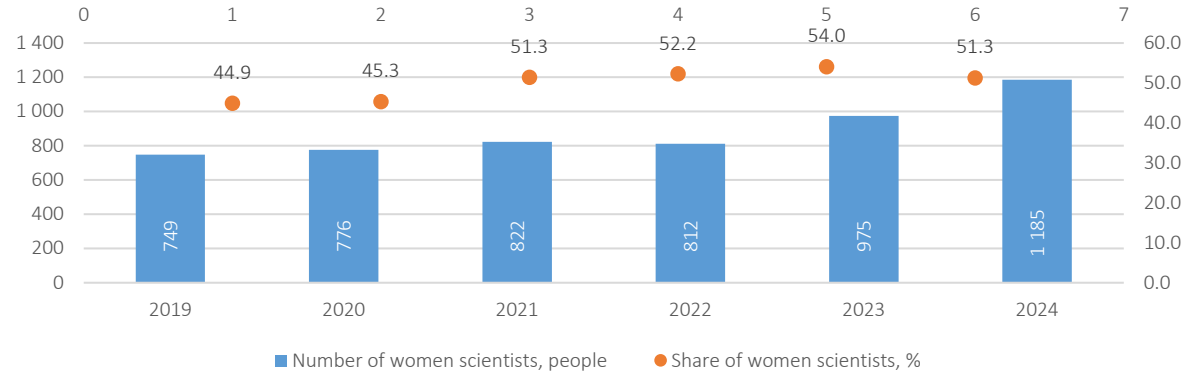


**Figure 1.** Women scientists in agricultural sciences in Kazakhstan, people, %, 2019–2024

rarely reach the highest scientific degree. It should be noted that since 2010, it has been impossible to obtain the degrees "doctor of science" and "candidate of science" in Kazakhstan due to the transition to the Bologna system. In this regard, it is important to identify barriers and drivers of women's participation in agricultural sciences.

Macro environment. According to 2024 data, more than 55.7% of Kazakhstani researchers were women; in agricultural sciences, this figure was 51.3%. This suggests that societal values and cultural norms in Kazakhstan may be conducive to women's education and professional careers in science. These outcomes may be attributed to historical factors, certain cultural traditions that value women's contributions to society, or the early implementation of gender equality policies in education and the labor market.

Kazakhstan has long ratified international agreements on gender equality, including the United Nations' Convention on the Elimination of All Forms of Discrimination against Women. The National Commission for Women's Affairs and Family and Demographic Policy operates in Kazakhstan. Until 2016, the Strategy for gender equality in the RK for 2006–2016 was in effect. This Strategy identified 8 priority development areas, in particular ensuring real equality of rights and opportunities for men and women (1), achieving gender equality in social and political life (2), achieving gender equality in the economy (3), legal and gender education (4), strengthening the reproductive health of men and women (5), preventing gender-based violence in society (6), achieving gender equality in the family, strengthening the family and enhancing the role of education in the family (7), developing gender-sensitive public consciousness (8). Within the framework of the 3rd priority area, the strategic actions included monitoring the gender balance of employment in all sectors of the economy, equalizing the level of wages between sectors of the economy and reducing differences in the nature and pay of labor between women and men with unconditional compliance with the requirements of equal pay for equal work, ensuring equal opportunities in the labor market and promoting women's employment, adopting programs to ensure equal access for rural women to economic resources. The key indicators for the 4th objective were the ratio of women to men in the education system at the management level, the presence of a special quota in the system of secondary vocational and higher education for rural girls (agriculture, culture, law, medicine, services, technical specialties), the proportion of women with higher education, the proportion of women with an academic degree, the ratio of women to men in science. Strengthening the institution of gender equality and expanding economic and political opportunities for women are also a priority of the current Concept of family and gender policy in the RK until 2030.

The participation of women scientists in agricultural sciences as not considered in strategic documents. But scientific and personnel support for the agro-industrial complex is an important task of the Concept for the development of the agro-industrial complex of the RK for 2021-2030. It should be noted that, to create conditions for the harmonious combination of family responsibilities with professional activities, the labor legislation of the Republic of Kazakhstan provides special guarantees for parents. Legislative norms enshrine the right to flexible forms of employment and parental leave, and also define the specifics of labor regulation for women, including pregnant women and those raising children. In 2020, amendments to the Labor Code provided for the possibility of establishing part-time work for pregnant women, for one of the parents (including adoptive parents) with a child under three years of age, and for employees caring for sick family members.

Meso environment. Kazakhstan's agricultural science system comprises the National Academy of Sciences of the RK under the President of the RK, the National Academy of Agrarian Sciences, and the National Agricultural Scientific and Educational Center (NASEC). NASEC's main objective is to promote innovative development of the agro-industrial complex through scientific research and training of agricultural personnel (NAS RK, 2024). Its system includes 3 universities, 11 research institutes and research and production centers, 15 agricultural experimental stations and farms, 3 service companies (NAS RK, 2024; NASEC, n.d.; NAAS, n.d.).

In Kazakhstan, 10 research institutes of the Ministry of Science and Higher Education and the Ministry of Ecology and Natural Resources


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of Kazakhstan are engaged in scientific research for the agro-industrial complex. A Research institute for social and gender studies was established at the Kazakh National Women's Pedagogical Institute in 2000, a Center for gender education at the Al-Farabi Kazakh National University in 2005, a Gender Economy Research Center at the Narxoz University in 2018, and other research centers, where issues of agricultural development are also studied. Also, there are many agricultural associations: the Northern agrarian union, the Kazakh cotton association, the Union of field farmers, the Union of organic producers, the Association of organic farming, etc. (Eldala, n.d.).

In Kazakhstan, personnel training for the agro-industrial complex is carried out by 3 specialized agricultural universities, 8 regional universities with agricultural faculties, and 12 multidisciplinary universities. It should be noted that there are no admission quotas for admission to educational organizations implementing higher education programs for women, including from those villages. However, there are quotes for citizens from among rural youth: 35% – for training in educational programs that determine the socio-economic development of the village; 3% – for those moving to regions designed by the Government of RK.

But women have access to postgraduate agricultural education, which contributes to women's participation in agricultural science. Thus, women make up more than 50% of master's degree graduates in most agricultural fields. For example, in the specialty "Agronomy", the share of women ranged from 67.7 to 75.5% during 2022–2024. In such fields as animal husbandry, forestry, and fisheries, there is also a significant female presence. At the same time, technical fields (agricultural engineering, water resources) have a lower share of women (28-50%). However, it should be noted that the share of graduates who defended their master's thesis has sharply decreased since the 2023/2024 academic year, to almost 60%. A similar situation is observed in doctoral studies, where the percentage of Ph.D. theses defended by female Ph.D. students is very low, especially in recent years. This leads to their dropping out of the scientific community, reducing their formal scientific status and participation in competitions for large research grants. In general, women make up from 33% to 75% of PhD graduates in certain areas, but this is significantly less than in master's programs (Table 2). The gap between graduation

**Table 2.** Female graduates of master's and PhD programs in Kazakhstan, people, share (%), 2020–2025 academic years

| Specialty | 2020/2021 | | 2021/2022 | | 2022/2023 | | 2023/2024 | | 2024/2025 | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Ppl. | % | Ppl. | % | Ppl. | % | Ppl. | % | Ppl. | % |
| **Master program** | | | | | | | | | | |
| Agriculture and bioresources | 9 | 42.9 | 100 | 58.1 | 129 | 57.8 | 94 | 64.4 | 97 | 52.7 |
| Interdisciplinary programs | 1 | 33.3 | 31 | 68.9 | 39 | 62.9 | 14 | 56 | 2 | 11.1 |
| Agronomy | – | – | 28 | 57.1 | 42 | 67.7 | 37 | 75.5 | 43 | 57.3 |
| Animal husbandry | 1 | 50 | 19 | 67.9 | 24 | 57.1 | 11 | 57.9 | 18 | 66.7 |
| Forestry | – | – | 1 | 50 | 2 | 28.6 | 6 | 60 | 15 | 62.5 |
| Fisheries | – | – | 2 | 100 | 1 | 50 | 4 | 66.7 | 1 | 33.3 |
| Land management | 3 | 42.9 | | | | | | | | |
| Water resources and water use | 4 | 44.4 | 16 | 41 | 16 | 48.5 | 20 | 62.5 | 16 | 53.3 |
| Agricultural engineering | – | – | 3 | 42.9 | 5 | 33.3 | 2 | 40 | 2 | 28.6 |
| **PhD program** | | | | | | | | | | |
| Agriculture and bioresources | 2 | 10.0 | 58 | 61,1 | 11 | 57.9 | 29 | 50 | 20 | 66.7 |
| Interdisciplinary programs | – | – | – | – | 2 | 40 | – | – | – | – |
| Agronomy | – | – | 30 | 58.8 | 5 | 71.4 | 15 | 51.7 | 10 | 90.9 |
| Animal husbandry | – | – | 9 | 75 | 1 | 50 | 3 | 75 | 1 | 20 |
| Forestry | – | – | 2 | 50 | – | – | – | – | 1 | 50 |
| Fisheries | – | – | – | – | 2 | 100 | 1 | 33.3 | 2 | 100 |
| Water resources and water use | 2 | 100 | 13 | 81.3 | 1 | 50 | 10 | 66.7 | 4 | 57.1 |
| Agricultural engineering | – | – | 4 | 33.3 | – | – | – | – | 2 | 66.7 |

and defense is significant for women. This may indicate difficulties in combining academic and family workload, insufficient institutional support, or limited access to scientific supervision and networks, which requires systemic support for women at the thesis preparation stage: access to scientific advisers and networking, flexible academic schedules, targeted grants, leadership, and mentorship programs.

Since 2017, the public association "Kazakhstan Society of Women Scientists" has been operating. In 2025, the National Academy of Sciences of the RK under the President of the RK established a special award for women scientists. It was named after the first female academician of Kazakhstan and Central Asia, N. Bazanova.

There are not enough industry-specific women's associations in agricultural sciences. But several meso-level initiatives have been implemented to support women in science in Kazakhstan. A notable example is the UNESCO Regional Office in Almaty, which organized a seminar for the International Day of Women and Girls in Science (UNESCO, 2025). It should be noted that UNDP Kazakhstan has contributed by organizing leadership programs and cross-regional dialogues that support women in STEM (UNDP Kazakhstan, 2024). The extent to which women scientists in Kazakhstan have access to and are included in influential professional networks – both domestically and internationally – represents a critical factor shaping their participation (European Commission, 2024).

Money. The average salary in Kazakhstan is 405,416 tenge, with women earning 26.5% less than men. In the scientific field, the gender gap is minimal – women earn almost as much as men. However, in the agricultural sector and in agricultural science, a gender pay gap exists (Table 3).

In the agricultural sector, women earn on average 20% less than men. The gap is especially pronounced in crop and livestock production, hunting, and the provision of services in these areas (78.9%), except for fisheries and fish farming. Although gender neutrality in wages is observed in R&D overall, inequality persists in the agricultural sciences. The strongest gender gap is observed at the management level. Almost all highly paid positions (director, technical director, head of project/group) are occupied by men. In mid-level positions (head of the laboratory), women's salaries are half those of men. The pronounced gender pay gap undermines women's motivation to pursue scientific careers.

**Table 3.** Average monthly nominal wages of workers in the agricultural sector in Kazakhstan, tenge, 2024

| Field of activity, profession (position) | Average monthly nominal wages of workers, tenge | | | |
|---|---|---|---|---|
| | Total | Men | Women | as a % of the average salary of men |
| Kazakhstan | 405,416 | 468,914 | 344,496 | 73.5 |
| Agriculture, forestry, and fisheries | 263,517 | 280,542 | 223,829 | 79.8 |
| Crop and livestock production, hunting, and the provision of services in these areas | 265,051 | 283,203 | 223,585 | 78.9 |
| Forestry and logging | 262,374 | 264,052 | 256,256 | 97.0 |
| Fisheries and fish farming | 109,066 | 108663 | 111,696 | 102.8 |
| Research and development (R&D) | 500,912 | 502,228 | 499,463 | 99.4 |
| **Agriculture, forestry, and fisheries** | | | | |
| Director general | 575,622 | 575,622 | – | – |
| Chief researcher | 300,000 | 300,000 | – | – |
| Chief scientific secretary | 340,000 | – | 340,000 | – |
| Director of the laboratory | 260,000 | – | 260,000 | – |
| Head of the scientific and technical development group | 495,500 | 495,500 | – | – |
| Head of the new product development project | 3,099,000 | 3,099,000 | – | – |
| Technical director for scientific research and development | 1,248,000 | 1,248,000 | – | – |
| Head of the laboratory (in agriculture) | 235,008 | 340,000 | 186,551 | 54.9 |
| Head of the laboratory (in forestry) | 287,000 | – | 287,000 | – |
| Research engineer (general profile) | 313,000 | 300,000 | 339,000 | 113.0 |
| Researcher of agricultural production | 285,000 | – | 285,000 | – |


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Funding for scientific research is another source of researchers' income. MSHERK provides stable financing for agricultural science through basic financing and, on a competitive basis, program-targeted financing. Within the framework of grant- and program-targeted financing on a competitive basis, agricultural research projects are supported under the national priority "Sustainable development of the agro-industrial complex". There are the following types of grant and program-targeted financing: Zhas Galym (postdoctoral studies), where the maximum of project budget is from 9 to 30 million tenge in different years with the number of research groups from 1 to 2 people; competition for young scientists (up to 40 years old), where the budget is 30-90 million tenge, general competition (12 months), where the budget is 5-8 million tenge, general competition (27/36 months), where the budget is up to 120 million, program-targeted financing, where the budget is 200 million tenge and above. It should be noted that when evaluating competitive applications for scientific grants, the gender of the scientific supervisor is not considered (NCSTE, n.d.).

For the period 2020–2025, projects supervised by men received more approved funding (56,784,446,186.46 tenge) than those supervised by women (35,304,161,224.73 tenge), namely by 60.8% (Table 4).

It should be noted that within the framework of general grant (27/36 months) and program-targeted financing (the largest and most strategic) competitions, women are significantly inferior in the number of approved projects and the amount of funds, while in competitions with a small budget (Zhas Galym, Competition of young scientists, General competition (12 months)) the number of approved research

**Table 4.** Volumes of funding for agricultural research projects in Kazakhstan, tenge, 2020–2025

| Competition for grant/program-targeted financing | Period of implementation of the research project | Number of approved research projects, units | | Amount of approved research projects, tenge | |
|---|---|---|---|---|---|
| | | Men | Women | Men | Women |
| Zhas Galym | 2022–2024 | 5 | 6 | 88,930,632 | 113,532,794.6 |
| | 2023–2025 | 1 | 3 | 23,919,198.5 | 70,842,573 |
| | 2024–2026 | 9 | 10 | 253,708,848.12 | 290,656,784.26 |
| | 2025–2027 | 5 | 21 | 148,021,586 | 623,384,605 |
| Total | | 20 | 40 | 514,580,264.62 | 1,098,416,756.86 |
| Young scientists | 2020–2022 | 10 | 12 | 547,905,566.64 | 695,272,811.01 |
| | 2021–2023 | 8 | 9 | 420,908,036.34 | 449,500,556 |
| | 2022–2024 | 5 | 14 | 232,113,836 | 535,396,058.1 |
| | 2023–2025 | 3 | 5 | 186,156,717 | 361,375,105.12 |
| | 2024–2026 | 4 | 6 | 356,332,021 | 525,921,809.2 |
| | 2025–2027 | 5 | 6 | 446,974,235.6 | 533,964,416.24 |
| Total | | 35 | 52 | 2,190,390,412.58 | 3,101,430,755.67 |
| General (12 months) | 2020–2022 | 4 | 16 | 19,867,333 | 78,976,435.88 |
| | 2021–2023 | 4 | 4 | 26,454,858.72 | 31,176,329.77 |
| Total | | 8 | 20 | 46,322,191.72 | 110,152,765.65 |
| General (27/36 months) | 2020–2022 | 7 | 5 | 441,448,699.36 | 297,890,518.23 |
| | 2021–2023 | 7 | 7 | 423,080,054.12 | 404,436,361.02 |
| | 2022–2024 | 6 | 7 | 460,345,914.25 | 494,471,769.61 |
| | 2023–2025 | 20 | 20 | 1,867,281,274.64 | 1,840,950,296.94 |
| | 2024–2026 | 56 | 35 | 6,385,189,004.51 | 4,026,429,868.56 |
| Total | | 96 | 74 | 9,577,344,946.88 | 7,064,178,814.36 |
| Program-targeted financing (MSHERK) | 2022–2024 | 1 | 0 | 250,000,000 | 0 |
| | 2023–2025 | 5 | 1 | 5,639,232,414.53 | 340,132,588.27 |
| | 2024–2026 | 9 | 6 | 4,978,702,795.2 | 7,126,482,786.23 |
| Total | | 15 | 7 | 10,867,935,210 | 7,466,615,375 |
| Program-targeted financing (MARK) | 2021–2023 | 19 | 12 | 16,469,005,687.58 | 7,777,119,775.19 |
| | 2024–2026 | 20 | 12 | 17,118,867,473 | 8,686,246,983 |
| Total | | 39 | 24 | 33,587,873,161 | 16,463,366,758 |

**Table 5.** Actual employment by profession (positions) in Kazakhstan, people, 2024

| Field of activity | Gender | Actual number | Including | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | Executives and civil servants | Professional specialists | Technicians and other support professional personnel | Administrative employees | Service and sales workers | Farmers and agricultural, forestry, fish farming and fishing workers | Others |
| Kazakhstan | Men | 1,848,005 | 212,880 | 444,742 | 146,978 | 46,865 | 132,532 | 20,068 | 843,940 |
| | Women | 1,926,213 | 155,167 | 890,082 | 226,026 | 99,727 | 149,900 | 6,609 | 398,702 |
| Agriculture, forestry, and fisheries | Men | 42,456 | 1,814 | 3,463 | 2,520 | 848 | 495 | 12,129 | 21,187 |
| | Women | 18,212 | 581 | 1,987 | 1,154 | 1,580 | 1,310 | 5,077 | 6,523 |
| Crop and livestock production, hunting, and provision of services in these areas | Men | 40,533 | 1,707 | 3,278 | 2,313 | 812 | 493 | 11,299 | 20,631 |
| | Women | 17,744 | 561 | 1,867 | 1,091 | 1,532 | 1,305 | 4,928 | 6,460 |
| Forestry and logging | Men | 1,433 | 96 | 166 | 190 | 29 | 2 | 480 | 470 |
| | Women | 393 | 18 | 107 | 60 | 30 | 3 | 121 | 54 |
| Fisheries and fish farming | Men | 490 | 11 | 19 | 17 | 7 | 0 | 350 | 86 |
| | Women | 75 | 2 | 13 | 3 | 18 | 2 | 28 | 9 |
| R&D | Men | 5,788 | 770 | 2,807 | 415 | 356 | 86 | 23 | 1,331 |
| | Women | 5,253 | 625 | 3275 | 415 | 480 | 16 | 11 | 431 |

projects headed by women prevails, as well as the amount of their funding. Perhaps this is because male scientists prefer and participate more in competitions with large amounts of funding, thereby increasing the chances of women scientists winning in competitions with small amounts of funding. At the same time, women are included in the maximum possible amount in the planned budget of the scientific project, in accordance with the requirements of the competition documents. Kazakhstan should expand funding schemes specifically targeting women scientists at all career stages.

Management. Based on the data in Table 4, there is structural gender-based vertical segregation in Kazakhstan: women are more often found in middle- or entry-level positions as researchers and engineers. In the agricultural sector, women are predominantly represented in low-paid and low-influence roles. Only 3.2% of women employed in agriculture are in leadership positions. There are three times fewer women executives and civil servants (581) than men (1814). There are almost twice as many women professional specialists (1987) as men (3463). Women in agriculture are predominantly employed in unskilled and physical labor, while in R&D, they are mainly concentrated in professional specialist positions. Women executives and civil servants in R&D make up 11.9% of all women employed in it. This is higher than in agriculture, but still insufficient, given the high proportion of women in this sector (Table 5).

The number of women in the academic management structure (rectors, vice-rectors, deans, department heads) increased by 900 between 2000 and 2022. And women are gradually closing the gap with men, especially after 2010 (Figure 2).

However, in the senior management system (rectors), women make up only 21%, even though the number of female rectors has increased 5-fold over the past (Figure 3).

The presidents of national academies, the rectors of three agricultural universities of the country, and the directors of service companies are men. It should be noted that the chairperson of the board of the National Agricultural Scientific and Educational Center is a woman. At the same time, only 2 women are directors of research institutes (Kazakh research institute of soil science and agrochemistry named after U.U. Uspanov, Kazakh research institute of agriculture and plant growing), which is 18.2%, and only 1 woman is the head of an experimental station (Arkalyk agricultural experimental station), which is 6.7%. Agricultural universities


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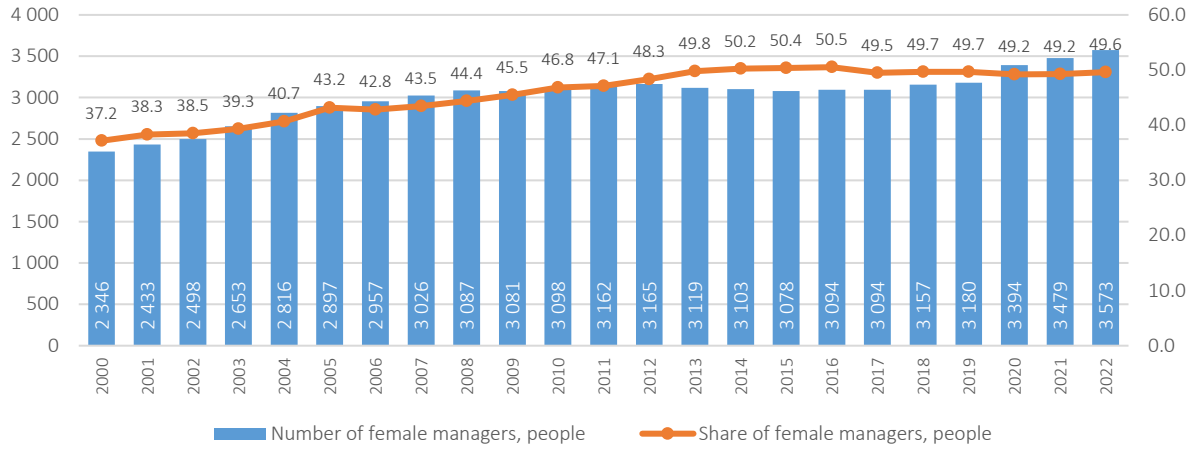


**Figure 2.** Female managers in higher education organizations of Kazakhstan, people, %, 2000–2022

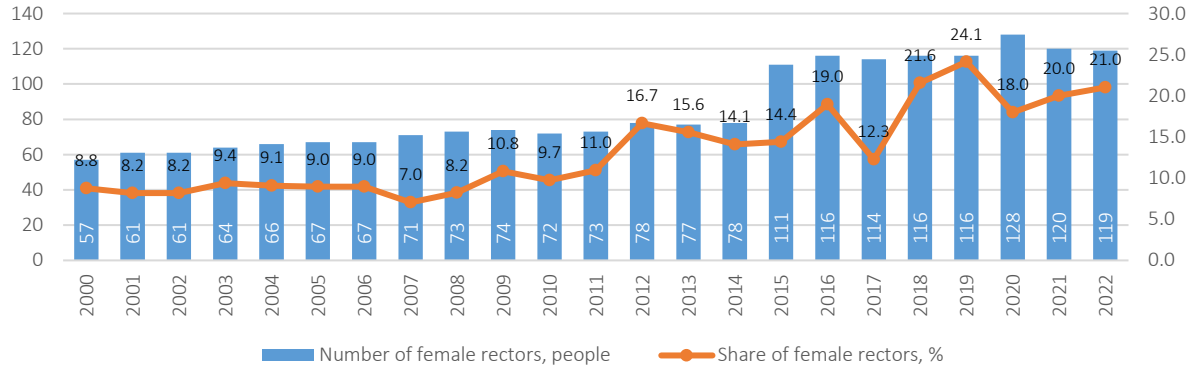


**Figure 3.** Female rectors in higher education organizations of Kazakhstan, people, %, 2000–2022

and research institutes are part of the science and higher education system, so female rectors and directors can influence the priorities of the scientific agenda in agricultural sciences. However, the limited representation of women at the decision-making level may indicate the presence of a "glass ceiling" in the agricultural science system.

Motherhood. Unpaid care work remains a major barrier to women's economic and social empowerment. A third of women scientists in Kazakhstan are of reproductive age (NAS RK, 2023). Childcare responsibilities lead to a "motherhood penalty". And without adequate support systems or flexible schedules, managing both family and academic duties can be overwhelming. This often leads to career interruptions, decreased productivity, slower progression, or even exit from the profession (Almukhambetova, 2023; European Commission, 2024). So, balancing a scientific career with family responsibilities – particularly childcare – remains a substantial challenge for women in Kazakhstan (UNESCO, 2025; CohenMiller et al., 2021). The conflict between a scientific career and motherhood is especially pronounced in fields with seasonality, business trips, field research that requires mobility, and full-time employment.

In Kazakhstan, employed women spend, on average, more than 4 hours a day on unpaid household work and care, and employed men spend less than 1.5 hours. At the same time, women in rural areas spend more time on unpaid household services than in urban areas. This is especially important for agricultural sciences, since it is often tied to regions and rural areas and requires mobility, fieldwork, participation in seminars, and business trips (Table 6).

**Table 6.** Average number of hours spent on unpaid household work in Kazakhstan, hours-minutes, 2018

| Activity | Men | Women |
|---|---|---|
| Daily time fund | 24-00 | 24-00 |
| Employment and other employment-related activities | 05-29 | 04-34 |
| Production of goods for own use | 00-29 | 00-11 |
| Unpaid domestic services for the household and its members | 01-09 | 03-36 |
| Unpaid care services for household members | 00-19 | 00-38 |
| Unpaid volunteer and other unpaid work | 00-01 | 00-01 |
| Education | 00-02 | 00-04 |
| Socialization and communication, participation in associations, and religious practice | 00-49 | 00-41 |
| Culture, leisure, media, and sporting events | 03-16 | 02-03 |
| Personal hygiene and grooming | 12-27 | 12-12 |

*Note:* At the age of 15 and above.

It should be noted that other dimensions of identity – such as ethnicity, socioeconomic background, and geographical location – intersect with gender and can amplify the barriers women face in agricultural science.

Thus, in Kazakhstan, both drivers and barriers to women's participation in the agriculture research sector are evident across all areas of the 5M framework. On the one hand, the government has confirmed its commitment to the equal opportunities policy by implementing gender initiatives and programs, and including gender issues in state documents, strategies, and development concepts. On the other hand, deeply rooted stereotypes limit women in scientific careers, especially in agricultural ones. Women have access to Kazakhstan's agricultural science system and the public association "Kazakhstan Society of Women Scientists", as well as to higher and postgraduate education in agriculture and leadership training for girls in STEM. However, there are not enough industry-specific women's associations in agricultural sciences. The financial aspect is also ambiguous. The growth of state funding for science and targeted scholarships (state educational order, "Zhas Galym", etc.) expands opportunities for female researchers, but the gender gap in wages and access to large research grants remains. There are signs of a "glass ceiling" in Kazakhstan's agricultural sciences. Women are underrepresented in senior positions in agricultural sciences and higher education. And unpaid care work remains a major barrier to women's empowerment. So, a third of women scientists in Kazakhstan are of reproductive age, and a "motherhood penalty" exists for Kazakhstani female scientists.

# 4. DISCUSSION

In Kazakhstan, the female workforce in the agricultural sciences is small, accounting for 9.2% of the total number of female scientists. The results confirm that the overall scientific potential in the agricultural sciences is relatively minimal (Kangalakova et al., 2025). To maximize the potential of Kazakhstani women in agricultural sciences, it is necessary to overcome existing barriers and create conditions for their active participation.

According to the results, women account for 51.3% of researchers in agricultural sciences, indicating a gender-balanced structure of the scientific workforce in this field. Kazakhstan has long ratified international agreements and legislative norms on gender equality. However, it should be noted that Kazakhstan lacks gender equality in practice, not in law. So, 96% of Kazakhstanis are characterized by gender stereotypes (Kabzhalalova, 2023). Deeply entrenched gender stereotypes and societal biases represent significant macro-level barriers to women's participation in science in Kazakhstan. Notably, 54% of Kazakhstan's population believes that STEM fields are not suitable for girls, underlining the systemic nature of this barrier. At the same time, the stereotype that scientific and technical specialties are better suited to men than to women does not find widespread support among Kazakhstanis (UNDP Kazakhstan, 2024). Overcoming these barriers requires continuous public efforts to challenge traditional gender roles and promote inclusive perceptions of science careers. Public awareness campaigns are essential to challenge gender stereotypes and societal biases in Kazakhstan (UNESCO, 2017; European


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Commission, 2024). These efforts should redefine who can be a scientist and promote diverse, positive representations of women in STEM in general and agricultural sciences in particular (UNESCO, 2025). Incorporating stories of successful Kazakhstani women scientists into school curricula and media can help shift perceptions from an early age (Hollows et al., 2015; UNESCO, 2025). Kazakhstan can implement curriculum reforms, extracurricular programs, and community engagement to foster early interest in STEM among girls.

There is a wide network of agricultural institutions in Kazakhstan, but women's access to professional networks is limited. Although not extensively studied in the Kazakh context, global evidence suggests that limited access to professional networks may hinder collaboration, visibility, and recognition. So, limited opportunities for international travel restricted their ability to establish global partnerships, which may similarly apply to Kazakhstan (Lewison, 2001). Promoting networking opportunities through professional organizations and events will also help build supportive peer communities. Training on diversity and inclusion for academic staff and administrators will further raise awareness of unconscious bias and support a more inclusive institutional culture (European Commission, 2024). Creating platforms, including digital ones, to showcase successful women can inspire young girls to pursue agricultural sciences. Strengthening formal and informal networks, as well as peer mentorship initiatives, can offer crucial emotional and professional support. Empowerment training and workshops can build confidence and resilience among women scientists.

The findings support previous research that there is a gender pay gap and a glass ceiling in Kazakhstani science (Iskindirova et al., 2026), women in STEM earn significantly less than men and are more likely to work in lower-paid sectors (Anessova et al., 2024), and women worldwide receive less funding for scientific research (UNESCO, 2021). Gender-neutral funding procedures may disadvantage women researchers, hindering their long-term scientific engagement (Balta et al., 2023a). These trends may also affect Kazakhstani female scientists, potentially limiting their ability to lead independent research, secure grants, and progress professionally. Kazakhstan should expand funding schemes specifically targeting women scientists at all career stages (UNESCO, 2021; European Commission, 2024; Research Council of Norway, 2024). This includes additional grants for women-led research (Kireyeva & Olzhebayeva, 2023), scholarships for female students of agricultural faculties, and re-entry funding for women returning from career breaks. Conducting pay audits and ensuring equal pay for equal work will enhance fairness and incentivize women to pursue scientific careers in agricultural sciences.

Data from NASEC (n.d.), Eldala (n.d.), and GosZakup. (n.d.) confirm the findings that in agricultural sciences, the percentage of women managers is very low. Academic institutions often exhibit gender bias in hiring and promotion, resulting in underrepresentation of women in leadership and mentorship roles (Kuzhabekova & Almukhambetova, 2017). Based on global STEM trends, it is likely that unconscious bias in recruitment, promotions, and resource allocation exists within Kazakhstani academia (Moss-Racusin et al., 2012; EC, 2024). Opaque promotion criteria and a lack of gender-focused leadership development programs reinforce the "glass ceiling". Women report biased performance evaluations and limited career advancement opportunities (Kurmankulov et al., 2023). While structured mentoring and transparent evaluation systems have shown positive results, their success depends on long-term institutional commitment (Kuzhabekova & Almukhambetova, 2017). Promoting women's access to leadership roles in science requires dedicated leadership development pathways and supportive institutional frameworks (EC, 2024; Research Council of Norway, 2024). Targeted recruitment and promotion efforts, along with training programs tailored to aspiring female leaders, are necessary. Agricultural research institutes should introduce mentoring and leadership programs for women to increase their representation in R&D management, where senior leaders advocate for high-potential women, and monitor career trajectories of women in agricultural science to identify and eliminate bottlenecks.

There is a "motherhood penalty" in Kazakhstan. Kazakhstan's pre-Soviet traditions and Soviet-era gender policies coexist, shaping persis-

tent patriarchal norms that assign women primary caregiving roles (Kuzhabekova & Almukhambetova, 2017). Educational materials and media often reinforce these norms (Cohen Miller et al., 2021). To reduce maternal barriers, scientific institutions in Kazakhstan should adopt family-friendly policies (European Commission, 2024; Research Council of Norway, 2024; UNESCO, 2025). These include flexible working arrangements (telecommuting, adjusted hours), and parental leave to both mothers and fathers (European Commission, 2024). Monitoring the application of legal norms at the local level is necessary, especially in regional institutions. encouraging shared caregiving responsibilities. An important step would be the integration of family infrastructure into agricultural research institutes: children's rooms, flexible planning of experiments, and field work.

Thus, implementing these measures will require close cooperation among government bodies, educational institutions, research organizations, the private sector, and civil society. A coordinated national strategy is essential to building an inclusive ecosystem for women in science in general and agricultural sciences in particular. All measures should be rooted in Kazakhstan's specific cultural and social context. Engaging local communities and stakeholders in the design and execution of initiatives will ensure their relevance and long-term sustainability.

## CONCLUSION

This study aims to define and analyze the factors influencing women's participation in the agricultural research sector in Kazakhstan using the 5Ms analytical framework. The results show that Kazakhstan demonstrates a high representation of women in agricultural sciences and a clear political commitment to advancing science and gender equality. However, several structural barriers continue to limit women's full participation and career advancement, including deeply ingrained social stereotypes, a "glass ceiling", a gender pay gap, limited access to mentorship, and difficulties in balancing professional and family responsibilities. A comparative analysis with countries with levels of gender equality indicates that many of these barriers are systemic and persist even in countries with strong gender equality indicators.

The findings suggest that strengthening women's participation in agricultural sciences requires a comprehensive approach addressing all five dimensions of the 5Ms framework. Key policy directions include public awareness campaigns, robust mentorship programs, equitable funding mechanisms, family-responsive policies, and inclusive leadership practices. Increasing women's participation in leadership and decision-making positions in the agricultural research system should be a strategic priority. Ultimately, realizing the full potential of women in science requires a collaborative, culturally grounded approach that engages all relevant stakeholders – from government and academia to civil society and the private sector. Only through such an integrated effort can meaningful and sustainable progress be achieved. Future research may focus on a deeper empirical examination of each group of 5M factors through quantitative surveys and in-depth interviews with women scientists in agricultural sciences in Kazakhstan, as well as other stakeholders.

## AUTHOR CONTRIBUTIONS

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Funding acquisition: Zaira Satpayeva.
Investigation: Zaira Satpayeva, Nurgul Akimova.
Methodology: Zaira Satpayeva.
Project administration: Zaira Satpayeva.


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Writing – original draft: Zaira Satpayeva, Nurgul Akimova.
Writing – review & editing: Zaira Satpayeva, Nurgul Akimova.

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# APPENDIX A

**Table A1.** Source base of the study

| No. | Document | Year | URL |
|---|---|---|---|
| 1 | Key indicators of research and development work in the RK | 2019 | https://stat.gov.kz/api/iblock/element/78329/file/ru/ |
| | | 2020 | https://stat.gov.kz/api/iblock/element/78328/file/ru/ |
| | | 2021 | https://stat.gov.kz/api/iblock/element/8133/file/ru/ |
| | | 2022 | https://stat.gov.kz/api/iblock/element/16779/file/ru/ |
| | | 2023 | https://stat.gov.kz/api/iblock/element/160419/file/ru/ |
| | | 2024 | https://stat.gov.kz/api/iblock/element/281592/file/ru/ |
| 2 | Salaries of workers in the RK by main professions and positions | 2024 | https://stat.gov.kz/api/iblock/element/184054/file/ru/ |
| 3 | Number and wages of employees in the RK | 2024 | https://stat.gov.kz/api/iblock/element/346821/file/ru/ |
| 4 | About postgraduate education | 2020 | https://stat.gov.kz/api/iblock/element/71629/file/ru/ |
| | | 2021 | https://stat.gov.kz/api/iblock/element/25590/file/ru/ |
| | | 2022 | https://stat.gov.kz/api/iblock/element/25623/file/ru/ |
| | | 2023 | https://stat.gov.kz/api/iblock/element/112640/file/ru/ |
| | | 2024 | https://stat.gov.kz/api/iblock/element/274884/file/ru/ |
| 5 | Management structure in the higher education system | 2020-2022 | https://gender.stat.gov.kz/page/frontend/download?hash=91806f9d949f94a484067b111b61e0ce&lang=ru |
| 6 | Distribution of the daily time fund of the population of the RK | 2018 | https://gender.stat.gov.kz/page/frontend/download?hash=615bfe79c8bef7d09f02925b5c251136&lang=ru |
| 7 | Extracts of NSC:<br>Zhas Galym grant financing;<br>Young scientists grant financing;<br>General grant financing (12 months);<br>General competition (27/36 months);<br>Program-targeted financing (Ministry of Agriculture of the RK (MARK));<br>Program-targeted financing (Ministry of Science and Higher Education of the RK (MSHERK)) | 2020 | https://www.ncste.kz/ru/ustojchivoe-razvitie-agropromyishlennogo-kompleksa-i-bezopasnost-selskoxozyajstvennoj-produkczii-2020 |
| | | 2021 | https://www.ncste.kz/ru/ustojchivoe-razvitie-agropromyishlennogo-kompleksa-i-bezopasnost-selskoxozyajstvennoj-produkczii-2021 |
| | | 2022 | https://www.ncste.kz/ru/ustojchivoe-razvitie-agropromyishlennogo-kompleksa-i-bezopasnost-selskoxozyajstvennoj-produkczii-2022 |
| | | 2023 | https://www.ncste.kz/ru/ustojchivoe-razvitie-agropromyishlennogo-kompleksa-i-bezopasnost-selskoxozyajstvennoj-produkczii-2023 |
| | | 2024 | https://www.ncste.kz/ru/kopiya-ustojchivoe-razvitie-agropromyishlennogo-kompleksa |
| | | 2025 | https://www.ncste.kz/ru/ustojchivoe-razvitie-agropromyishlennogo-kompleksa-5 |
| 8 | Code of the RK “Labor code of the RK” (№ 414-V ЗРК, 23.11.2015) | 2015 | https://adilet.zan.kz/eng/docs/K1500000414 |
| 9 | Decree of the President of the RK “On approval of the Strategy for gender equality in the RK for 2006-2016” (№ 1677, 29.11.2005) | 2005 | https://adilet.zan.kz/rus/docs/U050001677_ |
| 10 | Decree of the President of the RK “On approval of the Concept of family and gender policy in the RK until 2030” (№ 384, 6.12.2016) | 2016 | https://adilet.zan.kz/rus/docs/U1600000384 |
| 11 | Law of the RK “On science and technology policy” (№ 103-VIII ЗРК, 1.07.2024) | 2024 | https://adilet.zan.kz/eng/docs/Z2400000103 |
| 12 | Order of the Minister of Science and Higher Education of the RK “On approval of the size of the admission quota for admission to study in educational organizations implementing higher education programs” (№ 357, 26.07.2023) | 2023 | https://adilet.zan.kz/rus/docs/V2300033174 |
| 13 | Resolution of the Government of the RK “On approval of the Concept for the development of the agro-industrial complex of the RK for 2021-2030” (№ 960, 30.12.2021) | 2021 | https://adilet.zan.kz/rus/docs/P2100000960#z216 |
| 14 | Resolution of the Government of the RK “On approval of the Concept of development of higher education and science in the RK for 2023-2029” (No. 248, 28.03.2023) | 2023 | https://adilet.zan.kz/rus/docs/P2300000248#z172 |


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