**European Journal of Agricultural and Rural Education (EJARE)**
Available Online at: https://www.scholarzest.com
Vol. 3 No. 2, February 2022,
ISSN: 2660-5643

# FERTILITY DYNAMICS OF SEEDS OF FOOD PLANTS GROWING IN THE DESERTS

**G.U. Khamroeva., N.Kh. Khalilov**
Research institute of karakul sheep breeding and deserts ecology

**Article history:**

**Received:** December 6th 2021
**Accepted:** January 8th 2022
**Published:** February 16th 2022

**Abstract:**

The article provides information on the study of the dynamics of germination of seeds of desert forage plant varieties. It was found that the seeds of olabuta species have the property of hardness, and their germination can be sharply increased by cold stratification.

**Keywords:** pastures of desert, yield, forage plant varieties, seeds, fertility, crop qualities, stratification

## INTRODUCTION.

The main source of fodder for desert livestock is pastures, which can be used throughout the year in pasture livestock. However, the current state of karakul pastures does not meet the requirements of sustainable development of the industry. Because the productivity of pastures is low - no more than 1.5-3.0 quintals per hectare due to dry matter. In addition, desert pasture productivity is directly related to weather conditions and fluctuates sharply throughout the seasons. In many years, the amount of rainfall per hectare of desert pastures provides twice as much fodder as the average year, while in dry years this figure decreases to 3-5 times. Therefore, a number of varieties of forage plants have been created, which allow to dramatically increase the productivity of pastures, and the study of their ecological and biological properties, the crop qualities of their seeds is of great practical importance.

Existing varieties of desert forage plants are derived from wild species, and many of their biological properties, including seed viability, germination biology, and seed-forming processes, are relatively little studied. In particular, the scientific basis for assessing the crop quality of seeds has not yet been developed.

**The aim of the research** was to determine the optimal timing for assessing the germination of seeds of desert forage plant varieties.

**The object of research** was the seeds of promising varieties of desert forage plants: izen "Otavnyy", teresken "Tolqin", olabuta "Yagona" and black saxaul "Nortuya".

## RESEARCH METHODS.

In the study of seed germination in the laboratory, generally accepted methods in seed production were used (Kuleshov, 1963; Firsova, 1953; Gritsenko, 1959; Kaloshina, 1976), as well as methods of biostatistical analysis of the obtained data (B.A. Dospekhov, 1979).

Research results. Studies have shown that the seeds of desert edible plant species have a dormancy period at certain times. Good knowledge of this property of seeds allows you to accurately assess their quality. This is because the germination of seeds during the dormancy period is very low. The study of seed germination dynamics of desert forage plant varieties was conducted in January-July. Experimental data showed that the highest fertility was observed in February and March, and this figure was 86.0–87.2% in different varieties (Table 1). By April, seed germination decreased significantly, reaching 4.0-24.0% in different varieties, 1.0-20.0% in May, and 3-7% in June.

Table 1

**Dynamics of fertility of seeds of desert forage plants in laboratory conditions**

| Type, variety | Fertility, % | | | | | | |
|---|---|---|---|---|---|---|---|
| | January | February | March | April | May | June | July |
| "Otavnyy" variety of Izen | 72,0 | 87,2 | 86,0 | 24,0 | 20,0 | 7,0 | - |
| "Tolqin" variety of Teresken | 31,0 | 36,0 | 4,0 | 14,0 | 12,0 | 4,0 | - |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **"Yagona" variety of Olabuta** | 12,0 | 8,6 | 4,0 | 4,0 | 1,0 | 3,0 | - |
| **"Nortuya" variety of black saxaul** | 92,6 | 68,0 | 62,0 | 34,0 | 36,0 | 7,0 | 5,3 |

In the experimental black saxophone variety "Nortuya", the highest fertility rates were in January, ie 92.6%, in February - 68.0%, and in March - 62.0%. As of June, the figure was 7.0%. In July, forgetfulness was only -5.0%. Teresken's Tolqin variety yielded 31.0% in January, 36.0% in February and 14.0% in April. As of June, the figure was 4.0%. In Olabuta's "Single" variety, these figures were much lower. Fertility rates were 12.0% in January, 8.6% in February, and 4.0% in March-April. The seeds of the Atriplex canescens and Atriplex undulata species of olabuta are wrapped in a hard, woody shell, making it more difficult for water to penetrate the seed core. Usually such seeds are called hard seeds and various methods are used to increase their germination (cold stratification, mechanical scarification, chemical scarification, etc.). In our experiments, we used 2 methods of cold stratification: soaking the seeds in cold water and storing them in the dark at 7–12$^0$C for 30 days and in the outdoor environment for 30 days in moist sand in January-February.

Table 2

**Fertility of seeds of desert forage plants in laboratory conditions, %**

| **Plant species** | **Number of seeds sown, pcs** | **Number of germinated seeds, M±m** | **Fertility, %** | **Duration of the experiment, days** |
|---|---|---|---|---|
| **2020** | | | | |
| Izen | 100 | 64,0 ± 2,8 | 64,0 | 15 |
| Chugon | 100 | 22,6 ± 2,2 | 22,6 | 15 |
| Atriplex canescens | 100 | 18,5 ± 3,2 | 18,5 | 30 |
| Atriplex undulata | 100 | 14,0 ±2,4 | 14,0 | 30 |
| **2021** | | | | |
| Izen | 100 | 37,5 ± 1,2 | 37,6 | 15 |
| Chugon | 100 | 26,3 ± 1,4 | 26,3 | 15 |
| Atriplex canescens | 100 | 12,4 ± 1,3 | 12,4 | 30 |
| Atriplex undulata | 100 | | | 30 |

When we studied the germination of seeds in the laboratory using such stratification methods, it was found that using both methods can dramatically increase the fertility of seeds. In particular, 82.6% of Atriplex canescens seeds and 60.8% of Atriplex undulata seeds were germinated in 17 days when the seeds were first soaked in water for 2 days and stored in dark conditions at 7–12$^0$C for 30 days (Table 3). Cold stratification of seeds in sand for 30 days also yielded good results, with 64.6% germination of Atriplex canescens seeds and 52.4% germination of Atriplex undulata seeds in 17 days.

Table 3

**Fertility of seeds Atriplex canescens and Atriplex undulata in laboratory conditions in cold stratification, %.**

***(Samarkand, 2020)***

| **Plant species** | **Control** | **Store outdoors (January-February) in moist sand for 30 days** | **Soak in water for 2 days and store in dark conditions at 7–12°C for 30 days** |
|---|---|---|---|
| Atriplex canescens | 12,4 ± 1,3 | 64,6 ± 2,1 | 82,6 ± 1,9 |
| Atriplex undulata | 13,6 ± 0,9 | 52,4 ± 2,3 | 60,8 ± 2,6 |

$t = 30,5 > t_{0,05}$ (1,96) and $> t_{0,01}$ (2,58)

The data from the experiment are reliable at the 5% and 1% levels. The data from these experiments show that the assessment of sowing qualities of all types of plant seeds based on generally accepted methods is not methodologically accurate and requires an individual approach to the issue.

The use of generally accepted methods in seed production in assessing the sowing qualities of seeds of Atriplex canescens and Atriplex undulata plants does not always achieve the desired results. Atriplex canescens and Atriplex undulata seeds are wrapped in a hard and mature shell, and experiments to determine their fertility under laboratory conditions require long periods of time.

Determination of laboratory germination of Atriplex canescens and Atriplex undulata seeds requires cold stratification in January-February in sufficiently moist sand for 30 days or soaking in water for 2 days and soaking for 30 days in the dark at 7–12°C.

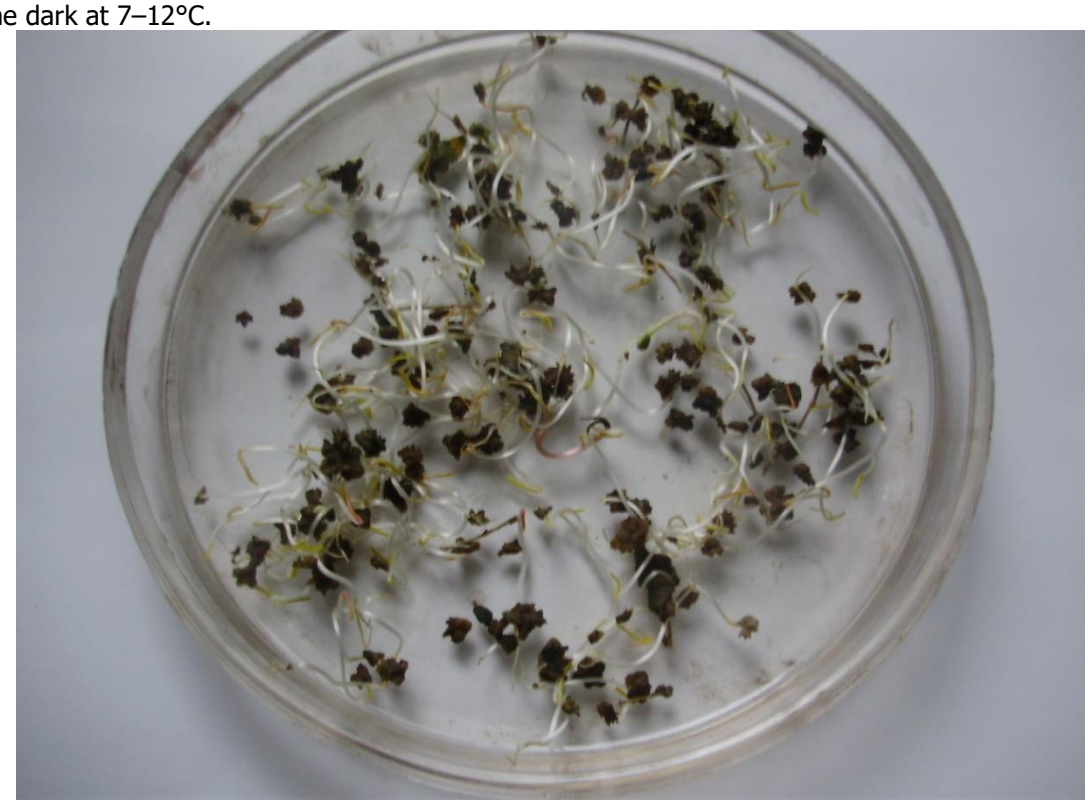

**Figure 1. Germination of stratified Atriplex undulata seeds**

## CONCLUSION.

Seeds of the studied plant species have a dormancy period at certain times, and this feature should be taken into account when evaluating their quality indicators;

The maximum germination of seeds of most species is observed in February, and it is advisable to study their quality indicators during these periods;

Before assessing the quality of Olabuta's "Single" seeds, it is necessary to stratify them at certain intervals.

## REFERENCES


1. Гриценко В.В., Калошина З.М. Семеноведение полевых культур. М., Колос,1976.-254 с.
2. Доспехов Б.А. Методика полевого опыта. М.: Колос, 1979.- 416 с.
3. Кулешов Н. Н. Агрономическое семеноведение. Издательство сельскохозяйственной литературы, журналов и плакатов. М.-., 1963.- 303 с.
4. Фирсова М.К. Метод определения всхожести семян проращиванием их в рулонах. «Достижения науки и передового опыта в сельском хозяйстве». 1953, № 12
5. Фирсова М. К. Методы исследования и оценка качества семян. М., Сельхозгиз. 1959.
6. Ochilov, A. (2012). Education and economic growth in Uzbekistan. *Perspectives of Innovations, Economics and Business, PIEB*, *12*(3), 21-33.
7. Ochilov, A. (2014). Is higher education a driving force of economic growth in Uzbekistan?. *Perspectives of Innovations, Economics and Business, PIEB*, *14*(4), 160-174.
8. Ochilov, A. O. (2017). The Higher Education Dynamics and Economic Growth: The Case of Uzbekistan. *Journal of Management Value & Ethics*, *7*(2), 46-53.
9. Ochilov, A. O. HIGHER EDUCATION IS AN IMPORTANT FACTOR IN STIMULATING ECONOMIC GROWTH. *GWALIOR MANAGEMENT ACADEMY*, *23*, 133.
10. Khashimova, N. A. (2017). Methodical issues of formation and estimation of investment climate. International Journal of Economics, Commerce and Management. Rochester. United Kingdom, 5(4), 560-566.
11. Khashimova, N. A., & Tursunkhodjaev, M. L. (2020). DEVELOPMENT OF CHANNELS OF INTELLECTUAL CAPITAL MOVEMENT IN THE SYSTEM OF INNOVATIVE COOPERATION IN EDUCATION, SCIENCE AND PRODUCTION. PalArch's Journal of Archaeology of Egypt/Egyptology, 17(9), 3348-3355.
12. Abitovna, H. N., Tillaeva, B., & Razzakova, B. The Essence of the Investment Potential and Patterns of the Investment Fields in the Economy.
13. Odilovich, O. A., Fayzullaevich, K. G., Djuraevna, R. M., Bakhtiyorovich, K. S., & Narkulovich, D. O. (2020). Suggestions For Improving The Efficiency Of Management Of Training Highly Qualified Personnel In The

Higher Education System Of Uzbekistan. *European Journal of Molecular & Clinical Medicine*, *7*(3), 3687-3695.

14. Очилов, А. О., & Шадиев, Т. (2015). Проблемы современной системы высшего образования в Узбекистане и пути их решения. *Северный регион: наука, образование, культура*, (1), 19-24.
15. Odilovich, O. A., Sharifa, G., Lola, B., Komila, A., & Zarifa, M. (2021). Higher education as a factor in increasing economic growth in Uzbekistan. *Psychology and Education Journal*, *58*(2), 5006-5013.
16. Очилов, А. О. (2012). Инновационное развитие высшего образования в Узбекистане. *Экономическое возрождение России*, (2 (32)), 193-196.
17. Ochilov, A. O. (2019). PROPOSALS ON MODERNIZATION OF THE HIGHER EDUCATION SYSTEM OF THE REPUBLIC OF UZBEKISTAN. *Economics and Innovative Technologies*, *2019*(4), 14.
18. Очилов, А. О. (2020). МЕТОДИЧЕСКОЙ СИСТЕМЫ ОБУЧЕНИЯ БЕЗОПАСНОСТИ ЖИЗНЕДЕЯТЕЛЬНОСТИ. In *ИННОВАЦИОННЫЕ ПОДХОДЫ В СОВРЕМЕННОЙ НАУКЕ* (pp. 48-51).
19. Odilovich, O. A., & Najibullah, E. (2021). How to Reduce Poverty in Afghanistan. *Academic Journal of Digital Economics and Stability*, 577-581.
20. Ochilov, A. O., & Najibullah, E. (2021, April). HOW TO REDUCE POVERTY IN AFGHANISTAN. In *E-Conference Globe* (pp. 114-117).