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FEATURES OF *LAVANDULA ANGUSTIFOLIA* SOME VARIETIES REPRODUCTION IN THE CONDITIONS OF THE UKRAINE SOUTHERN STEPPE

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Problem statement. According to natural and climatic conditions, the Kherson region belongs to the Dry Steppe zone of Ukraine, where the limiting factor for the stable development of agro-industrial production is the level of natural moisture [1]. In addition, climate changes observed in recent decades have significantly affected the structure of cultivated areas of Ukraine in general and the Southern Steppe in particular. In conditions of shortage of natural moisture, farmers prefer crops that are more drought-resistant, able to form stable crops in changing conditions [2]. The vast majority of essential oil crops are resistant to soil and air drought compared to other agricultural crops traditional for the region, and the raw materials and natural essential oils obtained from them are in demand on the domestic and international markets, as they have high antimicrobial activity [3].

According to information sources, narrow-leaved lavender is one of the promising crops for the South of Ukraine in general and for the Kherson Region in particular [2,3]. Due to its unpretentiousness, fairly simple agricultural techniques and relatively small material costs during the exploitation of plantations, the cultivation of this crop is gaining more and more popularity [3]. One of the limiting factors in the spread of lavender as an essential oil crop is the limited amount of high-quality planting material of regional varieties.

Today, the introduction of lavender varieties and the development of technologies for growing planting material in the conditions of the Southern Steppe is a priority task.

Analysis of recent research and publications. According to literature data, the genus *Lavandula* L. of the *Lamiaceae* family includes about 39 species. A significant number of hybrids and almost 400 registered varieties of various vector use are known. Lavender is endemic to the Mediterranean, the Arabian Peninsula, the Canary Islands, and India, and it has long been cultivated throughout the world, particularly popular in France, Bulgaria, Italy, Spain, England, the USA, and Australia. Lavender species are widely used as decorative and honey-bearing plants, but mainly they are grown to obtain essential oils, which are highly valued in perfumery, cosmetics, the food industry, and alternative medicine [4, 5]. Domestic and foreign scientists have proven the value of lavender essential oil [4, 5, 6].

Studies of the biological characteristics of lavender different types in the conditions of the South African Republic prove that well-drained light, sandy or gravelly soils with a soil pH of 5.8 to 8.3 are necessary for the full growth and development of representatives of the genus *Lavandula*. The necessary conditions for the growth and development of the culture provide good lighting of the plot, as representatives of the genus belong to heliophytes. Among the methods of propagation of lavender, seed and vegetative methods are considered: by cuttings, layering, tissue culture and division of roots, etc. To reproduce valuable specimens, researchers prefer the vegetative method, since the seed method does not ensure genetic homogeneity of individuals [7].

In foreign scientific publications, there is an ongoing discussion about the advantages and disadvantages of sexual and non-sexual methods of lavender reproduction. It is often emphasized that the seed route of reproduction is longer and ensures a heterogeneous generation. On the other hand, although the vegetative method of reproduction makes it possible to produce genetically homogeneous planting material, reproduction by feeding is time-consuming and energy-consuming [8].

For the study of seed reproduction of three varieties of *Lavandula angustiolia* 'Hidcote Blue', 'Hidcote Superior' and 'Rosea' using five options: control (without treatment), seed stratification for 4, 6, 8 and 10 weeks, foreign researchers found that that germination was higher in stratified seeds than in non-stratified ones. The seeds of the 'Hidcote Blue Strain' variety had the highest germination rates after a 6-week stratification period, while the growth of this indicator was noted in the 'Hidcote Superior' and 'Rosea' varieties after an 8-week stratification period. Regardless of the variety, the 4-week stratification period

was too short to overcome the dormancy phase and improve seed germination [9].

Some domestic scientists are convinced that the expansion of areas occupied by lavender in Ukraine is connected with the difficulties of obtaining high-quality planting material. Some works of domestic scientists are devoted to the search for optimal methods of reproduction and the features of the production of lavender planting material in the conditions of the Forest-Steppe of Ukraine [10, 11, 12]. It has been proven that vegetative lavender reproduction is more effective in the forest-steppe zone, as the seeds require long-term cold stratification. In addition, scientists received somewhat contradictory data regarding the splitting of some traits in the offspring during seed reproduction [10, 11, 12].

Recently, the use of clonal micropropagation of lavender (in vitro) has gained wide popularity. This method is relatively inexpensive and has a number of significant advantages, especially with a small number of maternal individuals. Mass asexual reproduction of plants in sterile conditions allows to obtain quite quickly a large number of seedlings identical to the mother individual in terms of economic and valuable characteristics, free from viral infection [13].

Propagation of lavender by layering is also used. This is a simple and cheap method that involves the propagation of plants, the shoots of which take root in places of contact with the soil even before separation from the mother plant. But for its use, you can get a limited amount of planting material [14].

In 1997, in the Kherson region, scientific research plots and lavender production fields were established on the farm land of the State Enterprise "Experimental Farming "Novokakhovske" [15]. The experience of propagation of this culture shows that the peculiarities of propagation are one of the varietal characteristics of lavender. Some varieties are able to propagate well by vegetative means, others by seed.

The purpose of the article. The purpose of the research is to select effective methods of propagation of narrow-leaved lavender in accordance with the biological characteristics of one or another lavender variety of the collection of SE "Experimental Farming "Novokakhov" in the conditions of the Southern Steppe.

Materials and research methods. The generalization of the work results was carried out at the Institute of Climate-Smart Agriculture of the National Academy of Agrarian Sciences (ICSA NAAS). The experimental part was carried out on the basis of the State Enterprise "Experimental Farming of Novokakhovske" ICSA NAAS. The soils of the experimental plots are light loamy chernozems with a thickness of the humus layer of 76 cm and a content of humus in the arable layer of 1.33%. During the years of research, hydrothermal conditions varied quite a lot. They can be characterized very generally as: 2019 is wet; 2020 is dry; 2021 is excessively wet.

Lavender varieties 'Viktoria', 'Sineva Nadii', 'Lydia', 'Pink Flamingo', 'Zmiyuchka' and 'Bereginia' served as material for research.

During the vegetative reproduction of 6 varieties of lavender by lignified cuttings, the stimulator of rhizogenesis "Kornevin"recommended for decorative crops (substance of the IIIrd class of danger) was used for better rooting. According to the manufacturer's instructions, the lavender cuttings were powdered with the drug. Then they were planted in cold open greenhouses.

For conducting research 100 cuttings of each variety were taken. The irrigation of breeding areas was used in the spring months (three times a week, and in the summer, water daily). In hot periods the cuttings were shaded. The number of rooted cuttings was determined for 40-45 days. When establishing the effectiveness of seed reproduction 100 pieces of seeds of each variety were taken and sown in 3 repetitions and in 3 variants: in the conditions of seasonal film greenhouses; in cold open greenhouses; and under agrofibre. For all options and repetitions, the soil was carefully leveled and seeds were sown to a depth of 1 cm. As the soil dried, it was moistened.

Research results. For the propagation of narrow-leaved lavender at the "Novokakhovske" Research Farm, both a vegetative method (grafting of lignified shoots), and a generative method (sowing seeds into the soil) were used. For propagating lavender varieties vegetatively cuttings were harvested in early spring (March-April) and immediately planted in open greenhouses. The highest survival rate was recorded in 2019. But not all varieties of narrow-leaved lavender showed good results using this method of propagation (Table 1).

Thus, the best result was obtained by the 'Sineva Nadii' variety, a characteristic feature of which is the high leafiness of the shoots. Cuttings of this variety had the highest rooting rates after 3 months.

The rates of rooting of cuttings were quite high in 'Lydiya' and 'Bereginya' varieties. Plants of these varieties have thickened shoots, which contributed to their survival.

Varieties 'Victoria', 'Pink Flamingo', and 'Zmiyuchka' showed insignificant indicators regarding the survival of

Table 1

Effectiveness of using cuttings for propagation of different varieties of narrow-leaved lavender (2019-2021)

Lavender variety	Number of rooted cuttings, %		
	2019	2020	2021
Lydia	79	71	68
Sineva Nadii	83	76	80
Viktoria	24	19	15
Pink Flamingo	24	21	13
Zmiyuchka	23	17	20
Bereginia	75	70	67

cuttings using vegetative propagation during 2019-2021. An important feature for the success of grafting is the thickness of the shoots, 'Victoria' and 'Zmiyuchka' varieties had the thin and very thin shoots, which made the rooting process difficult due to a small supply of moisture.

In the conditions of the Southern Steppe, the spring is very short, which immediately turns into a dry period, so many cuttings die, even under the condition of irrigation. The 'Pink Flamingo' variety is characterized by low leafiness of shoots and elongated internodes. These features also affect the survival of cuttings.

In order to select an effective method of reproduction of these varieties of lavender, research was conducted with their reproduction by the seed method.

Lavender seeds are nuts 0.20-0.25 cm long and 0.10-0.12 cm wide (Fig. 1, a).

Ripe seeds have a glossy black surface. Since lavender seeds have a fairly dense shell, sowing was carried out in late autumn (in the second-third decade of November) to obtain friendly seedlings. Seeds were sown under different conditions: in a seasonal film greenhouse, in open cold greenhouses, and under agrofibre (Table 2).

Under the specified conditions, lavender seedlings appeared at different times: in a seasonal greenhouse in the third decade of March, under agricultural fiber – in the first decade of April, in an open greenhouse – in the second decade of April. Soil germination of seeds ranged from 43 to 70%. The best results were obtained in all varieties when sowing seeds in a seasonal greenhouse and under agrofibre. In these conditions, the seedlings are friendlier than in cold greenhouses. The highest indicators of soil germination of seeds were noted by 'Lydiya', 'Victoria' and

a b c d

Fig. 1. Initial stages of ontogenesis: a) seeds; b) root germination; c) appearance of cotyledon leaves; d) seedlings (phase of the second pair of true leaves)

Table 2

Efficiency of seed propagation of different varieties of lavender (2020-2021)

Lavender variety	Sowing date		Seedlings emergence date		Soil germination of seeds, %, %	
	2019	2020	2020	2021	2020	2021
Seasonal film greenhouse						
Viktoria	20.11	29.11	23.03	28.03	70	66
Pink Flamingo	20.11	29.11	25.03	28.03	50	45
Lydia	20.11	29.11	24.03	28.03	67	60
Sineva Nadii	20.11	29.11	24.03	28.03	66	65
Zmiyuchka	20.11	29.11	23.03	28.03	65	60
Bereginia	20.11	29.11	24.03	28.03	70	68
Open cold greenhouse						
Viktoria	20.11	29.11	10.04	12.04	64	60
Pink Flamingo	20.11	29.11	10.04	14.04	47	44
Lydia	20.11	29.11	10.04	12.04	64	60
Sineva Nadii	20.11	29.11	10.04	12.04	62	60
Zmiyuchka	20.11	29.11	10.04	12.04	64	61
Bereginia	20.11	29.11	10.04	12.04	66	63
Under agricultural fiber						
Viktoria	20.11	29.11	03.04	08.04	65	64
Pink Flamingo	20.11	29.11	06.04	08.04	49	43
Lydia	20.11	29.11	03.04	08.04	68	62
Sineva Nadii	20.11	29.11	03.04	08.04	69	66
Zmiyuchka	20.11	29.11	03.04	08.04	70	61
Bereginia	20.11	29.11	03.04	08.04	67	61

a b

Fig. 2. Vegetative and generative phases of seedling development: a) groping; b) flowering

'Bereginya' varieties. The lowest soil germination of seeds was found by 'Pink Flamingo' variety.

In the initial stages of development plants grow slowly. If the seedlings are provided with proper care during the spring and summer (loosening the soil and watering as necessary) they have a developed root system and well-branched bushes in the fall. The plants bloomed in the first year of development (Fig. 2).

According to the results of phenological observations of the seedlings of 4 varieties of lavender, it was established that atypical plants in the crops of the 'Victoria', 'Lydia', 'Sineva Nadii' and 'Bereginia' varieties were not detected over the years of research, or they were within the norm (1-2 plants). And by 'Pink Flamingo' variety 20% of plants with atypical morphological features were noted.

Conclusions. Thus, according to our research, regarding the selection of effective methods of propagation of 6 varieties of lavender in the conditions of the Kherson region, it was established that the 'Lydia', 'Sineva Nadii', and 'Bereginia' varieties can be propagated both vegetatively and by seeds, sowing before winter. The use of a vegetative propagation method for 'Victoria' and 'Zmiyuchka' varieties is not advisable, since the grafting rate of cuttings is low, 15-24 and 17-23%, respectively. The best method of reproduction for these varieties is seed method by sowing seeds in the soil. The 'Pink Flamingo' variety should be propagated vegetatively, regardless of the low rate of grafting of cuttings, as a significant share of non-typical plants (20%) was observed with the seed method of propagation.

СПИСОК ВИКОРИСТАНОЇ ЛІТЕРАТУРИ:

1. Морозов О. В., Морозов В. В., Безніцька Н. В., Воротинцева Л. І., Біднина І. О. Особливості регіональних змін клімату в сухостеповій зоні України. Матеріали Міжнародної науково-практичної конференції : Управління водними ресурсами в умовах змін клімату, присвяченої Всесвітньому дню води, (21 березня 2017 р.). Київ, 2017. С. 191-193.
2. Вожегова Р. А., Лиховид П. В., Біляєва І. М., Бойценюк Х. І. Сортовий склад ефіроолійних культур, придатних для вирощування на півдні України. *Аграрні інновації.* Херсон, 2021. Вип. 9. С. 57-60. https://doi.org/10.32848/agrar.innov.2021.9.9.
3. Дудченко В. В., Стеценко І. І. Продуктивність лавандину та економічна ефективність його вирощування за різних елементів технології. *Наукові доповіді НУБіП України.* 2023. № 4/104. http://dx.doi.org/10.31548/dopovidi4(104).2023.004
4. Călin Jianu, Georgeta Pop, Alexandra T. Gruia, Florin George Horhat. Chemical composition and antimicrobial activity of essential oils of lavender (*Lavandula angustifolia*) and lavandin (*lavandula x intermedia*) grown in Western Romania. *International Journal of Agriculture & Biology.* 2013. № 15. Pp. 772-776.
5. Katarzyna Pokajewicz et al. Chemical Composition of the Essential Oil of the New Cultivars of Lavandula angustifolia Mill. Bred in Ukraine. *Molecules*. 2021. № 26(18). P. 5681. https:// doi.org/10.3390/molecules26185681
6. Pokajewicz K., Białoń M., Svydenko L., Hudz N., Balwierz R., Marciniak D., Wieczorek P. P. Comparative evaluation of the essential oil of the new ukrainian lavandula angustifolia and lavandula x intermedia cultivars grown on the same plots. *Molecules.* 2022. № 27(7). https://doi:10.3390/molecules27072152
7. Directorate Agricultural Information Services, Department of Agriculture, Forestry and Fisheries, Pretoria, Republic of South Africa. A report on Essential oil crops: Production guidelines for lavender. 2009. Accessed 13.08.2018. http://www.nda.agric.za/docs/brochures/essoilslavender.pdf
8. Ileana Miclea, Raluca Chifor. Germination, in vitro Propagation and Acclimatization in Lavandula Angustifolia. *Bulletin UASVM Animal Science and Biotechnologies.* 2018. № 75(2). DOI:10.15835/buasvmcn-asb:2018.0017
9. Agnieszka Dobrowolska, Agnieszka Zawadzińska. The Influence of Stratification on Seedling Emergence and Growth of Narrow-Leaved Lavender and its Cultivars. *International Journal of Plant & Soil Science* 2014. № 3(8):948-958. Article no. IJPSS.2014.8.002
10. Рудник-Іващенко О. І., Кременчук Р. І. Біологічні особливості рослин лаванди за насіннєвого способу розмноження у Лісостеповій зоні України. *Наукові доповіді НУБіП України.* 2018. № 4 (74). С. 1-14.
11. Pryvedeniuk N. et al. Influence of mineral fertilizers and planting density on the growth, development and yield of narrow-leaved lavender (*Lavandula angustifolia* Mill).

Agriculture and Forestry. 2023. Vol. 69. No. 2. P. 165-180. https://doi.org/10.17707/AgricultForest.69.2.13
12. Юрченко С. О., Баган А. В. Вплив стимуляторів росту на укорінення лаванди вузьколистої для садово-паркового вирощування. *Аграрні інновації.* Одеса, 2022. № 15. С. 73-77. https://doi.org/10.32848/agrar.innov.2022.15.11
13. Манушкіна Т. М. Фізіологічні особливості розвитку ізольованих меристем лаванди в культурі in vitro. Таврійський науковий вісник. 2012. Вип. 81. С. 108-115.
14. Colţun M. Step-by-step creation of a lavender plantation. *Journal of botany.* 2016. Vol. VIII, no. 2. P. 76-80.
15. Свиденко Л. В., Глущенко Л. А., Вергун О. М., Гудзь Н. І., Марковська О. Є. Оцінка впливу погодних умов на господарсько-цінні ознаки *Lavandula angustifolia* L. в умовах Херсонської області. *Агроекологічний журнал*. 2022. № 3. С. 84-93. DOI: https://doi.org/10.33730/2077-4893.3.2022.266413

REFERENCES:

1. Morozov, O.V., Morozov, V.V., Beznitska, N.V., Vorotyntseva, L.I., & Bidnyna, I.O. (2017). Osoblyvosti rehionalnykh zmin klimatu v sukhostepoviy zoni Ukrayiny [Peculiarities of regional climate changes in the forest-steppe zone of Ukraine]. *Upravlinnya vodnymy resursamy v umovakh zmin klimatu: materialy Mizhnarodnoyi naukovo-praktychnoyi konferentsiyi prysvyachenoyi Vsesvitn'omu dnyu vody – Management of water resources in the conditions of climate change: materials of the International scientific and practical conference dedicated to the World Water Day*. Kyiv: Vydavets TOV «TSP «KOMPRYNT», 191-193 [in Ukrainian].
2. Vozhehova, R.A., Lykhovid, P.V., Biliayieva, I.M., & Boytseniuk, Kh.I. (2021). Sortovyy sklad efirooliynykh kultur, prydatnykh dlya vyroshchuvannya na pivdni Ukrayiny [Varietal composition of essential oil crops suitable for cultivation in the south of Ukraine]. *Ahrarni innovatsiyi – Agricultural innovations*, 9, 57-60. https:// doi.org/10.32848/agrar.innov.2021.9.9 [in Ukrainian].
3. Dudchenko, V.V., & Stetsenko, I.I. (2023). Produktyvnist lavandynu ta ekonomichna efektyvnist yoho vyroshchuvannya za riznykh elementiv tekhnolohiyi [Productivity of lavandin and economic efficiency of its cultivation using different elements of technology]. *Naukovi dopovidi NUBiP Ukrayiny – Scientific reports of NUBiP of Ukraine*, 4, 104. http://dx.doi.org/10.31548/dopovidi4(104).2023.004 [in Ukrainian].
4. Jianu, C., Pop, G., Gruia, A.T., & Horhat, F.G. (2013). Chemical composition and antimicrobial activity of essential oils of lavender (*Lavandula angustifolia*) and lavandin (*Lavandula x intermedia*) grown in Western Romania. *Int. J. Agric. Biol., 15: 772–776.*
5. Katarzyna, Pokajewicz et al. (2021). Chemical Composition of the Essential Oil of the New Cultivars of Lavandula angustifolia Mill. Bred in Ukraine. *Molecules*, 26(18), 5681. https:// doi.org/10.3390/molecules26185681
6. Pokajewicz, K. et al. (2022). Comparative evaluation of the essential oil of the new ukrainian *lavandula angustifolia* and *lavandula x intermedia* cultivars grown on the same plots. *Molecules,* 27(7), 2152. https://doi:10.3390/molecules27072152
7. Directorate Agricultural Information Services, Department of Agriculture, Forestry and Fisheries, Pretoria, Republic of South Africa. A report on Essential oil crops: Production guidelines for lavender. (2009). http:// www.nda.agric.za/docs/brochures/essoilslavender.pdf Accessed 13.08.2018
8. Ileana, Miclea, & Raluca, Chifor. (2018). Germination, in vitro Propagation and Acclimatization in Lavandula Angustifolia. *Bulletin UASVM Animal Science and Biotechnologies*, 75(2). DOI:10.15835/buasvmcn-asb: 2018.0017
9. Agnieszka, Dobrowolska, & Agnieszka, Zawadzińska. (2014). The Influence of Stratification on Seedling Emergence and Growth of Narrow-Leaved Lavender and its Cultivars. *International Journal of Plant & Soil Science,* 3(8): 948-958.
10. Rudnyk-Ivashchenko, O.I., & Kremenchuk, R.I. (2018). Biolohichni osoblyvosti roslyn lavandy za nasinnyevoho sposobu rozmnozhennya u Lisostepoviy zoni Ukrayiny [Biological features of lavender plants by the seed method of reproduction in the forest-steppe zone of Ukraine]. *Naukovi dopovidi NUBiP Ukrayiny – Scientific reports of NUBiP of Ukraine*, 4, (74), 1-14. [in Ukrainian].
11. Pryvedeniuk, N. et al. (2023). Influence of mineral fertilizers and planting density on the growth, development and yield of narrow-leaved lavender (*Lavandula angustifolia* Mill). *Agriculture and Forestry*, 69 (2), 165-180. https://doi.org/10.17707/AgricultForest.69.2.13
12. Yurchenko, S.O., & Bahan, A.V. (2022). Vplyv stymulyatoriv rostu na ukorinennya lavandy vuz'kolystoyi dlya sadovo-parkovoho vyroshchuvannya [The influence of growth stimulants on the rooting of narrow-leaved lavender for horticultural cultivation]. *Ahrarni innovatsiyi – Agricultural innovations*, 15, 73-77 https://doi.org/10.32848/agrar.innov.2022.15.11 [in Ukrainian].
13. Manushkina, T.M. (2012). Fiziolohichni osoblyvosti rozvytku izolovanykh merystem lavandy v kulturi in vitro [Physiological features of the development of isolated lavender meristems in vitro culture]. *Tavriyskyy naukovyy visnyk – Taurian Scientific Herald*, 81, 108–115 [in Ukrainian].
14. Colţun, M. (2016). Step-by-step creation of a lavender plantation. *Journal of botany*, VIII, 2, 76–80
15. Svydenko, L.V. et al. (2022). Otsinka vplyvu pohodnykh umov na hospodarsko-tsinni oznaky *Lavandula angustifolia* L. v umovakh Khersonskoyi oblasti [Assessment of the influence of weather conditions on economic and valuable characteristics of *Lavandula angustifolia* L. in the conditions of the Kherson region]. *Ahroekolohichnyy zhurnal –Agroecological journal*, 3, 84-93 https://doi.org/10.33730/2077-4893.3.2022.266413 [in Ukrainian].

Свиденко Л.В., Глущенко Л.А., Мартієнко Н.С., Валентюк Н.О. Особливості розмноження деяких сортів *Lavandula angustifolia* на Півдні України

Мета роботи. Метою досліджень є підбір ефективних способів розмноження лаванди вузьколистої відповідно до біологічних особливостей того чи іншого сорту в умовах Степу Південного. **Методи.** Експериментальна частина роботи проводилася на базі Державного підприємства «Дослідне господарство Новокаховське»» ІКОСГ НААН. Ґрунти чорноземи легкосуглинкуваті з потужністю гумусового шару 76 см та вмістом гумусу в орному шарі 1,33%. Роки проведення досліджень 2019-2021. Матеріалом для досліджень слугували 6 сортів Lavandula angustifolia

колекції ДП «Дослідне господарство «Новокаховське». Сорти розмножували вегетативним та насіннєвим способом. При вегетативному розмноженні здерев'янілими живцями для кращого укорінення використовували стимулятор ризогенезу «Корневін». Відбирали по 100 вирівняних живців кожного сорту. Живці обпудрювали препаратом і висаджували в холодні відкриті парники. При насіннєвому розмноженні – по 100 штук насінин кожного сорту і висівали в 3-кратній повторності в 3-х варіантах в сезонні плівкові теплиці, холодні відкриті парники та під агроволокно. В міру підсихання ґрунту проводили зрошування. **Результати досліджень**. При розмноженні 6-ти сортів лаванди вегетативним шляхом (живцюванням здерев'янілих пагонів) впродовж трьох років частка укорінених живців коливалося в межах 13-83%. Максимальні показники приживлюваності живців відмічені у сорту Синева Надії. Низькі показники укорінення від 13 до 24% мали сорти Вікторія, Рожевий Фламінго, Зміючка. З метою підбору ефективного способу розмноження 6 сортів лаванди проведено дослідження з розмноження насіннєвим способом. Ґрунтова схожість насіння коливалась в межах 43-70%. Кращі результати отримані у всіх сортів при висіванні насіння у сезонну теплицю та під агроволокно. В цих варіантах сходи дружніші, ніж за висівання насіння у холодні парники. Найвищі показники ґрунтової схожості отримано у сортів Лідія, Вікторія і Берегиня. Найнижчі – у сорту Рожевий Фламінго. Згідно фенологічних спостережень за сіянцями встановлено, що нетипових рослин у посівах сортів Вікторія, Лідія, Синева Надії та Берегиня за роками досліджень не було виявлено, або їх було в межах норми – 1–2 рослини. А у сорту Рожевий Фламінго відмічені 20% рослин з не типовими морфологічними ознаками. **Висновки.** Встановлено, що в умовах Херсонської області сорти лаванди Лідія, Синева Надії і Берегиня можна розмножувати як вегетативно, так і насіннєвим способом, висіваючи під зиму. Сорти Вікторія та Зміючка краще розмножувати насіннєвим способом. Сорт Рожевий Фламінго варто розмножувати вегетативно, не зважаючи на низькі показники приживлюваності живців, так, як за насіннєвого способу розмноження спостерігали значну частку не типових рослин (20%).

Ключові слова: *Lavandula angustifolia*, сорт, вегетативне розмноження, насіннєве розмноження.

Svydenko L.V., Hlushchenko L.A., Martienko N.S., Valentiuk N.O. Features of *Lavandula angustifolia* some varieties reproduction in the conditions of the Ukraine Southern Steppe

Purpose. The purpose of the research is to select effective methods of reproduction of narrow-leaved lavender in accordance with the biological characteristics of one or another variety in the conditions of the Southern Steppe. **Methods.** The experimental part of the work was carried out on the basis of the State Enterprise "Experimental Farm "Novokakhovske" ICSA NAAS. The chernozem soils are slightly loamy with a humus layer thickness of 76 cm and a humus content in the arable layer of 1.33%. Years of research are 2019-2021. The research material was 6 varieties of Lavandula angustifolia from the collection of SE "Experimental Farm "Novokakhovske". Varieties were propagated vegetatively and by seeds. During vegetative propagation by lignified cuttings the stimulator of rhizogenesis "Kornevin" was used for better rooting. 100 aligned cuttings of each variety were selected. The cuttings were dusted with the drug and planted in cold open greenhouses. By seed propagation 100 pieces of seeds of each variety were sown in 3-fold repetition in 3 variants in seasonal film greenhouses, cold open greenhouses and under agrofibre. As the soil dried irrigation was carried out. **Results:** When propagating 6 varieties of lavender vegetatively (by cuttings of lignified shoots), the share of rooted cuttings ranged from 13 to 83% over three years. The maximum indicators of cuttings rooting were noted by 'Syneva Nadii' variety. Varieties 'Victoria', 'Pink Flamingo', 'Zmiyuchka' had low rooting rates from 13 to 24%. In order to select an effective method of reproduction of 6 varieties of lavender a study was carried out on reproduction by the seed method. Soil germination of seeds ranged from 43 to 70%. The best results were obtained in all varieties when sowing seeds in a seasonal greenhouse and under agrofibre. In these options, seedlings are friendlier than when sowing seeds in cold greenhouses. The highest indicators of soil germination were obtained by 'Lydiya', 'Victoria' and 'Bereginya' varieties. The lowest indicators of soil germination were obtained by 'Pink Flamingo' variety. According to the phenological observations of the seedlings, it was established that no atypical plants were found in the plantings of 'Victoria', 'Lydia', 'Syneva Nadii' and 'Bereginya' varieties over the years of research, or they were within the norm (1-2 plants). And for 'Pink Flamingo' variety it was established that 20% of plants had non-typical morphological features. **Conclusions:** It has been established that in the conditions of the Kherson region lavender varieties 'Lidia', 'Sineva Nadii' and 'Bereginya' can be propagated both vegetatively and by seed (sowing before winter). Varieties 'Victoria' and 'Zmiyuchka' are best propagated by seed. The 'Pink Flamingo' variety should be propagated vegetatively, regardless of the low rate of grafting of cuttings, as a significant share of non-typical plants (20%) was observed with the seed method of propagation.

Key words: *Lavandula angustifolia*, variety, vegetative reproduction, seed reproduction.