



CULTIVATION OF MEDICINAL CHAMOMILE (*MATRICARIA RECUTITA L.*) BETWEEN THE ROWS OF ROSEHIP PLANTATION (*ROSA CANINA L.*)

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ABSTRACT

The article provides information on the creation of rosehip fields according to the new scheme (10x2m), as well as on the ways of the rational use of irrigated lands. This scheme notes the advantages of rational land use, cultivation with row spacing mechanisms, taking measures against diseases and pests, harvesting, agricultural activities, including sowing medicinal and other seasonal crops in the area, as well as the effective use of irrigated land for growing rosehip seedlings or achieving economic efficiency from the first year.

KEYWORDS: *Uzpharmsanoat SJSC, soil erosion, mountain reclamation, bioecology, Rosa canina L., Matricaria recutita L., Asteraceae, Tsirkumboreal, Eastern Europe, "Shifobakhsh" Center for Cultivation and Processing of Medicinal Plants, planting scheme.*

INTRODUCTION

The process of development of the pharmaceutical industry and the natural expansion of the production of new drugs is a process that depends on the study and extraction of their substances from the raw materials of medicinal plants. Rosehip and medicinal chamomile are valuable natural raw materials included in the Pharmacopoeia of the CIS countries for medicinal properties and practical application. In particular, the annual demand for rose hips in the CIS countries is 6-8 thousand tons, but this demand is satisfied by 50-60%.

The strategy of action of the Republic of Uzbekistan for 2017-2021 defines one of the important tasks as "optimization of sown areas and crops in agriculture, the introduction of advanced agricultural technologies and increasing yields,

increasing fruit and vegetable production and grapes" [1]. In this regard, it is important to expand scientific research on the cultivation and development and implementation of new technologies, taking into account the biological properties of medicinal and food plants.

The activity of forestries in different regions of the country is determined for different purposes depending on their climatic and soil conditions. That is, the main tasks of forestry located in mountainous areas are focused on mountain reclamation (preventing soil erosion, moisture retention, etc.), and in forestry located in desert areas, on desert reclamation (preventing sand erosion, stopping moving sands, construction of pastures, etc.).

In this regard, various schemes were developed, as well as scientific research by E.T.



Berdiev focused on bioecology and methods of reproduction of namatak plants and planting [6,7]. The research by F. Chorshanbiev (2018) is devoted to bioecology and technology of reproduction of barberry [10]. The authors, taking into account the life form of the plants, preferred to use schemes 3x1,5M.; 3x1M.; 4x2,5M.; 3x1,5M. 3x4M.; 4x2M.;4x3M when creating their plantations [6.7.10].

Long-term experience has shown that when placing seedlings of rose hips or other shrub plants according to the above schemes, in addition to ensuring an average yield of 1-1.5 t / ha, the field of rose hips grows and develops in width and height over the years. As a result, it becomes more difficult to process rows of the rosehip plantation and completely harvest the rose hips. This, in turn, requires the development of new planting schemes when creating industrial plantations of plants in specialized state forestry enterprises, based on the set goals.

M.Allayarov, M.Kholmatov [3] noted that it is possible to create rosehip plantations in a 10x2m scheme and grow medicinal herbs in the aisles for many years. Continuing this study, M.U. Allayarov, A. Mamatkarimov, E. Akhmedovs have developed guidelines and recommendations for the organization of industrial plantations of rose hips according to the new scheme 2x10 m in specialized state forestry and the cultivation of medicinal plants in the aisles.

OBJECT OF RESEARCH

Plants of rosehip (*Rosa canina L.*) and medicinal chamomile (*Matricaria recutita L.*). Rosehip (*Rosa canina L.*) is a perennial shrub up to 2 m tall, belonging to the Rosaceae family. Rosehips are mostly found in northern Europe, and their range extends eastward to the Urals, Siberia, the Caucasus and East Asia. [5]

Chamomile (*Matricaria recutita L.*) is an annual plant belonging to the Asteraceae family. The plant is found naturally in the oasis of Tsirkumboreal flora (Eastern Europe, Western Siberia) [2]

RESEARCH METHODS

Scientific research on the cultivation of rosehip on industrial plantations and the study of agronomic methods of planting medicinal plants in the aisles were carried out in the "Chodak"

department of the Specialized State Forestry named after Abu Ali ibn Sino at the Center for the cultivation and processing of medicinal plants "Shifobakhsh" (1100-1200m above sea level). In field experiments, open fields and lands with medium fertility were chosen for planting rose hips and medicinal chamomile.

Field experiments were carried out on the basis of the guidelines developed in 2014 by the Center for the cultivation and processing of medicinal plants "Shifobakhsh", and methodological recommendations developed in 2015 by specialists and researchers of the Uzbek Scientific Research Institute of Forestry, the Botanical Garden of the Academy of Sciences of Uzbekistan, the Agency for the Development of the Pharmaceutical Industry Uzbekistan. Sample and diagonal methods were used to determine plant yield. The yield of medicinal plants was collected on the basis of 3 returns at 1p / m and measured wet. Once the wet yield of the raw material was determined, it was dried, re-measured, and the yield per hectare was determined.

RESEARCH RESULTS

In 2012-2014, in the "Chodak" branch of the specialized forestry of Abu Ali ibn Sino, industrial plantations (April 5) with a height of 30-35 cm of the first grade and 50-60 cm of high-grade rose hips were laid according to a 10x2 m scheme, and medicinal chamomile was planted in the aisles (scheme).

It should be noted that such a scheme has such advantages as efficient land use, good soil cultivation mechanisms, taking measures against diseases and pests, as well as a full harvest, as well as sowing medicinal and other seasonal agricultural crops in arable land, carrying out agrotechnical measures on them, as well as the effective use of lands planted with rosehip.

Medicinal chamomile was sown from seed in autumn (mid-October, November) and spring (March and April) in the experimental field as an annual medicinal plant. In order to distribute the seeds evenly over the sown areas, they were sown by mixing them with ash, soil or fine sand. The sowing rate of seeds was 3-4 kg per hectare (Table 1).



Table 1.
Establishment of rosehip plantations and efficient use of row spacing

Name	Between the rows, m	Between the seedlings in a row, m	Number of seedlings per hectare, pcs
Rosehip	10	2	500
Medicinal chamomile	0.7	3-4 кг (3-4sm)	47 283 000

The germination rate of chamomile seeds sown in autumn (October and November) was 80-82%. At the same time, it was found that the germination rate of seeds sown in spring (March and April) was 74.5-76.7%, and decreased from mid-April to May (60%). This indicates that the amount of rainfall that occurs in the fall has a positive effect on seed germination.

Seeds sown in the fall germinated until the first days of winter (before the cold snap). After 20-30 days in the seedlings formed from each germinated seed, 6-10 balls of leaves grow, which overwinter in the form of grass. During the growing season, up to 3-4 branches were observed on plants germinated from seeds sown in autumn, and up to 2-3 branches in plants germinated on seeds sown in spring. In autumn, the main stem height is 37.0 ± 2.24 cm and the number of leaves is 34.4 ± 1.4 cm, in spring plants the main stem is 31.0 ± 1.2 cm and the number of leaves is 27.2 ± 1.3 cm. The number of first-order twigs planted in autumn was 23.4 ± 1.9 , the length was 20.4 ± 1.87 cm and the number of leaves was $18.8 - 1.08$, the number of second-order twigs was 12.8 ± 1.3 , length- 14.7 ± 1.6 cm and the number of leaves reaches 12.2 ± 1.4 . The number of buds on the plants was 25.7 ± 2.2 , the number of flowers - 24.2 ± 1.7 , the number of fruits formed - 19.1 ± 1.5 , the number of ripe fruits - 13.2 ± 1.3 (Table 2).

According to Yu.M.Murdakhaev [5], in the plantations of medicinal chamomile planted as an additional crop between rows, in the Tashkent Botanical Garden, the yield was 0.65-0.70 t/ha, while according to B.Yo.Tukhtaev [6], in saline soils the flowering raw material of medicinal chamomile was about 0.55 ± 0.09 t ha and the seed yield was about 0.05 ± 0.01 t/ha.

In our experiments, when the medicinal chamomile plants were treated on the basis of the necessary agro-technical measures, the yield was 0.55-0.65 t/ha. This confirms the data of Yu.M.Murdakhaev [5] and B.Yo.Tukhtaev [6]. However, in plantations established on an industrial scale, the flower yield did not exceed 0.40-0.45 t/ha, the seed yield did not exceed 0.07 t/ha, and the aboveground parts (hay) did not exceed 0.60 t/ha (600 kg).

In scientific experiments, at the same time, in the main crop rosehip plantations, by the first days of June, the height of first-grade seedlings is 50-57 cm, and the height of high-grade seedlings is 77-80 cm, and at the end of the growing season the figure reaches 83-107 cm.

Industrial plantations of medicinal chamomile can be used in the first and second years (1-2 years). From 3 years onwards, a decrease in yield rate of 120-150 kg/ha was observed during the observations. The vegetation period of the medicinal chamomile plant coincides with the spring-summer seasons. For this reason, it is advisable to plant other seasonal crops in the summer months (to vacant areas in July and August). This is because the land is cultivated, soil fertility is restored and legumes are enriched with nitrogen.



Table 2
Growth and development of medicinal chamomile plant

Name of the plant	Life form	Sowing time	The main stem				Branches						number of buds	number of flowers	Seeds, number of fruits	
			height, cm	number of leaves	leaf fall	timber, cm	1st order			2nd order					formed	ripe
							quantity	length, cm	number of leaves	quantity	length, cm	number of leaves				
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Matricariar ecutita L.	1	autum n	37,0± 2,4	34,4± 2,4	4,4± 1,2	21,8± 2,1	23,4± 2,3	20,4± 1,9	18,8± 1,7	12,8± 1,3	14,7 ± 1,6	12,2± 1,4	26,7±2,2	24,2±1, 7	19,1±1,5	13,2±1, 3
Matricariar ecutita L.	1	spring	31,± 1,4	27,2 ±1,3	2,04± 2,0	18,1±1 ,7	18,4± 1,8	17,4± 1,9	12,6 ± 1,5	9,8± 1,25	10,0± 1,1	8,2± 1,3	15,7± 1,2	15,2± 1,5	14,2± 0,92	8,2± 1,02



In order to ensure the growth and development of plants, agro-technical measures (during the summer months it was watered 3-4 times, 2 times weeded and 2 times lightly mowed in small areas and cultivated in large areas at a depth of 4-6 cm) were taken on them.

CONCLUSION

Thus, the establishment of industrial plantations on a 10x2m scheme from rosehip seedlings, planting medicinal and other seasonal agricultural crops in the row spacing will allow efficient use of land. This scheme has important advantages, such as efficient use of irrigated lands, intercropping mechanisms, disease and pest control and harvesting, rational use of irrigated lands with intercropping of medicinal and other seasonal crops. In the plantations established on an industrial scale, from the first year, the flower yield of the medicinal chamomile plant is 0.40-0.45 t/ha, the seed yield is 0.07 t/ha and the aboveground parts (hay) are around 0.60 t/ha (600 kg). Industrial plantations can be used in the first and second years (1-2 years). From the 3rd year the yield level decreases to 120-150 kg / ha. So, if we consider the use of row spacing by building industrial plantations on a 10x2 m scheme of rosehip seedlings, economic efficiency can be achieved from the first year.

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