



THE DRY MASS AND THE SEED YIELD OF THE HYPERICUM PLANT (*HYPERICUM PERFORATUM* L.)

Nizomova Makhsuda Usmankulovna^{1*}, Pazilbekova Zamira Tanirbergenova² and Dusmuratova Feruza Madiyarovna³

^{1,2}Associate Professor of the Department of Medicinal Plants, Tashkent State Agrarian University, Tashkent Region, Uzbekistan.

³Associate Professor of the Department of Pharmacognosy, Tashkent Pharmaceutical Institute, Tashkent, Uzbekistan.

Corresponding Author: Nizomova Makhsuda Usmankulovna

Associate Professor of the Department of Medicinal Plants, Tashkent State Agrarian University, Tashkent Region, Uzbekistan.

Article Received on 28/09/2020

Article Revised on 18/10/2020

Article Accepted on 08/11/2020

ABSTRACT

This scientific article reveals the scientific data on the dry mass and the seed yield of *Hypericum perforatum* L. Agrotechnological measures for cultivation of *Hypericum perforatum* L. plants in order to get the seed, 1.58 kg/ha of yield harvested when planted from seed, while it showed 1.97 kg/ha when planted from seedling in the experimental field in the first variant, in the second variant the yield was 2.4 kg/ha when planted from seed, while planted from seedlings the yield was 2.59 kg/ha. The grass yield of *Hypericum perforatum* L. in the fourth variant was the highest 101 in c/ha (in terms of dry mass) in experimental condition in case of seedlings planted in spring, of which 84.35 c/ha in the first harvest and 16.65 c/ha in the second harvest. In the case of autumn seedlings, the yield was 95.9 c/ha, 80 c/ha in the variant sown from seed in the spring, and in the case of seeds sown in autumn the yield was 75 c/ha, more than 70% of the yield obtained in the first harvest and about 30% in the second harvest.

KEYWORDS: medicinal plant, dry mass, seedlings, yield, agrotechnics, experiment, *Hypericum perforatum*.

1. INTRODUCTION

The people of the world have been using medicinal plants since ancient times. Great attention is paid to development of science all over the world, including in our Republic. As a result of this, we see a growing number of different medicines in our pharmacies.

One can find of the dried organs of plants which are increasingly widespread.

In recent years natural medicinal plants have been replacing of synthetic drugs. One of them is the medicinal herbs (*Hypericum perforatum* L.), which is widely used as a medicinal plant in folk medicine in the world.

This plant is known among the people as the “ordinary hypericum”, (*Hypericum perforatum* L.), yellow tea herbaceous, herbaceous grass, “Far eastern yellow herb”.

H. perforatum L. contains high level of essential oil, anthocyanins, flavonoids (quercetin, hyperoside, rutin), carotene, Vitamin C, organic acids, hypericin and other substances (Kholmatov, Ahmedov, Ahmedov, 1995).

The fluid that derived from plant juice, flowers, leaves,

roots and other parts of the plant have been used as a diuretic in chronic renal, abdominal and bowel diseases, particularly constipation, liver diseases (jaundice, cholecystitis, etc.). Its juice is mixed with honey and used for the treatment of stomatitis, tongue whitening and cracking in children (Damirov et al., 1982).

Thus, it is necessary to carry out scientific research on these medicinal plant, develop ways to reproduce their seeds and seedlings, develop technologies for cultivation in a cultured environment and expand the cultivation area, and study some biological features, active component and develop agro technologies that suit for the Republican climatic – soil condition and including how to improve reproduction of the medicinal plant from the seedlings are the most prior issues of the day.

2. MATERIALS AND METHODS

The object of the research is the department of ‘Medicinal plants’ Tashkent State Agrarian university, increasing seed germination of the studied medicinal plant (*H. perforatum* L.) to expand from seedlings.

In conducting experiments, observations, calculations and analyzes were used by B.A.Dospekhov’s “Methodology of field experiments (1979) and “Methods

of field experiments” (2007) that developed by UzCSRI.

Biological peculiarities of the plant were conducted by methods of T.A.Robotnov, I.T.Serebryakov while determination of seed germination by M.Firsova.

3. RESULTS AND DISCUSSION

Seed production of medicinal plants in the Republic of Uzbekistan is a new field, which has a number of unique features, including (*H. perforatum* L.) grown in the country, mainly imported from abroad, not adapted to these conditions and their biological and ecological properties have not been sufficiently scientifically studied. Besides that, insufficient research has also been done on the ability of the medicinal plant to produce seeds or obtain quality seeds in our extreme continental climate.

In our research, for the first time in the history of Uzbekistan, research was conducted on the seeds of different variants of medicinal Hypericum plants, agrotechnological measures for seed production, i.e. agro measures required for growth phases of Hypericum plants planted for seed, the issues such as seed drying, cleaning, storage, and determination of seed quality indicators were studied. To determine the seed yield of the Hypericum plants studied in the experiment, an area

of 1m² was allocated from each variant and replications of the experiment, and the seeds were collected by hand and they weighed.

The seed yield of Hypericum plants has been given in Table 1.

The data in this table show that sowing methods and biological characteristics of the Hypericum plants have a significant impact on the seed yield of Hypericum plant. It was found that in both Hypericum plants studied in the experiment, it was possible to get a higher seed yield when sowing seedlings than sowing from the seed.

In this case, the first variant harvest was yielded an average of 1.58kg/ha, and the second variant the yield was 1.97 kg/ha. When these varieties were planted from seedlings in early spring, the average seed yield was 2.45 and 2.59 kg/ha. When comparing the seed yield of the studied Hypericum plants, it was noted that the seed yield of the second variant was 0.20-0.30 kg/ha higher than the first variant in both sowing methods.

The phenomena depend on the agronomic measures and biological properties of the second variant of this variety are relatively large, hairy and have lots of seed.



a)



b)

Figure 1: *Hypericum perforatum* field (a) and collected grass Saint John's wort.

The seeds of the second option are also very small, so its total seed yield is also low. Determining the seed yield of Hypericum plants, it can be concluded that the agrotechnological measures for the cultivation of Hypericum plants sown in the experimental field was 1.58 kg/ha

when sown from seeds and the yield was 1.97 kg/ha when sown from seedling in the first variant, while in the second variant the yield was 2.4 kg/ha when sown from seeds and 2.59 kg/ha when sown with seedlings.

Table 1: Seed yield of *Hypericum perforatum* L., c/ha.

№	Variant	Replications				Average
		I	II	III	IV	
Sowing from seed						
1	Autumn	1,52	1,67	1,53	1,60	1,58
2	Spring	2,1	1,96	1,96	1,97	1,975
Sowing from seedling						

3	Autumn	2,41	2,44	2,32	2,43	2,4
4	Spring	2,59	2,56	2,595	2,61	2,59

Table 2: Grass yield of *Hypericum perforatum* L., c/ha (in terms of dry mass).

Variants №	Planting time	Replications								According to general yield variants		Total yield
		I		II		III		IV				
		Harvests								1 st	2 nd	
		1 st	2 nd	1 st	2 nd	1 st	2 nd	1 st	2 nd			
Sowing from seed												
1	Autumn	14,3	3,7	13,9	4,1	14,09	3,91	13,82	4,18	59,11	15,89	75
2	Spring	16,2	3,8	16,74	3,26	15,1	4,9	14,8	5,2	62,84	17,16	80
Sowing from seedling												
3	Autumn	18,2	5,8	19,54	4,46	20,1	3,81	19	5	76,84	19,07	95,91
4	Spring	21,2	4,8	20,1	5,9	21,35	4,65	21,7	4,3	84,35	16,65	101

The leaves and stems of the *Hypericum* medicinal plant are used as medicinal properties, so the leaves and stems of the plant are harvested, leaving 15-20 cm.

In the experiment, 10 plants in each variant and a total of 40 plants in four replications were weighed to determine the green mass of the medicinal field plant by weighing during May, June and August (harvested in the form of 1-2 harvests). The yield determination has been performed when the number of integers in each plant stem is 7-10.

The grass yield of *Hypericum* plants, c/ha (in terms of dry mass) is given in table 2.

The table shows that in the experimental conditions of the *Hypericum* medicinal plant was the highest 101 c/ha in the fourth variant, in the case of sowing seedlings in spring, which was 84.35 c/ha in the 1st harvest, 16.65 c/ha in the 2nd harvest.

In the case of seedlings sown in autumn, the yield was 95.9c/ha, in the case of seeds which sown in the spring it was 80 c/ha, and in the case of seeds sown in the autumn it was 75 c/ha, more than 70% of the yield was obtained in the first harvest and about 30% in the second harvest.

4. CONCLUSIONS

Determining the seed yield of *Hypericum* plants, it can be concluded that the agro-technological measures for the cultivation of *Hypericum perforatum* L in the experimental field when sown from seed the yield was 1.58 kg/ha in the first variant, while from seedling the yield was 1.97 kg/ha, in the second variant, when planted from seed the yield was 4 kg/ha, and 2.59 kg/ha from seedling.

The grass yield of *Hypericum* plants, c/ha (in terms of dry mass in experimental conditions was the highest in the fourth variant in the case of spring seedlings 101 c/ha, of which in the 1 harvest 84.35 c/ha, in the second harvest it was 16.65 c/ha).

In the case of sown from autumn seedlings the yield was 95.9 c/ha, in the case of spring sown variant it showed 80 c/ha, and in the case of autumn seeds type it was 75 c/ha, more than 70% of the yield was obtained in the first harvest and about 30% in the second harvest.

REFERENCES

1. Abu Ali Ibn Sina. Canon of Medicine. Tashkent: Fan, 1982; T.1.
2. Abu Raykhan Beruni. Selected works. Kitab as-Kitob as-Saydana. Pharmacognosy, book 4. Tashkent: Fan, 1974; 692-693.
3. Ahmedova O., Ergashev A., Abzalov A., Yulchieva M. The technology and ecology of cultivation of medicinal plants. Tashkent, 2009.
4. Akopov M.E. The most important domestic medicinal plants and their use. Medicine, 1986.
5. Karimov B.A., Shomahmudov A. Medicinal plants used in folk medicine and modern scientific medicine. Tashkent: NMB named after Ibn Sina, 1993.
6. Kholmatov Kh.Kh., Ahmedov U.A., Ахмедов U.A. Pharmacognosy. Tashkent, 2007.
7. Pazilbekova Z.T., Nizomova M.U., Umarova F.A., Aqseytov J.J., Makulbaev K.H.. Creation of technology and pharmacological research of new anti-hypoxic dosage forms based on *Heranium kholmovaya* growing in Uzbekistan. International journal of mechanical and production engineering research and development (IJMPERD), 2020; 10(3): 13945–13950.