

Bio Ecology and Germination Technology of Medicinal Chamomile (*Chamomilla Recutita* L)

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ABSTRACT: In the result of the necessity increase of medicinal plants, the amount of preparing their raw materials is raising too. This is resulting in the decrease of a number of medicinal plants in places where they grow; it may result in sharp limitation or complete decrease of the preparation of raw materials. Taking into consideration all these, germination of medicinal plants in conditions of irrigated typical brown soils and studying the influence of fertilizers on their raw materials and quality are considered as important problems of present time. For example, medicinal chamomile plant is one of the same plants. Over the past few years a number of scientists have been working on scientific investigations. As a result, leaves, stem, root and other parts of the plant were studied thoroughly and have been used in folk and modern medicine. A. Turova, E. Sapojnikova made major investigations in 1982. Kh.Kh.Kholmatov, Due to the references given by A.I.Kosimov (1992-1999), A.Yo. Ibragimov (2005), A.Shomakhmudov (1993) Kh.Kh.Kholmatov, U. Yu. M. Murdakhayev(1990-2001) and others, types of chamomile belong to Asteraceae family and is considered to be a plant. Matricaria L flower of chamomile is used as a medical raw material. Its flower contains essential oil, carotene, vitamin C and other substances. In scientific medicine it is used as a means against inflammation, antiseptic,

sedative, sweat and gas releasing. Hamazulene in the content of chamomile essential oil is widely used in medicine. Chamomile flower is used in chamomile tea and preparation of different herbs collection.

KEYWORDS: medicinal plant, medicinal chamomile, green chamomile, seed, fruit, flower, agro techniques, fertilizer, disease and others.

INTRODUCTION

Medicinal chamomile — (*Chamomilla recutita* L.) is considered to be a plant belonging to *Asteraceae* (*Astericeae Compositae*).

Medicinal chamomile is an annual plant the height of which is 15-40 cm and its stem grows straight having multiple branches but is hollow inside. The leaves are separated twice in shape of a feather, segments of it are thin lined with a sharp apex, its branches are long (the stem of green chamomile is short) and ends with flowers gathered into a basket. Flowers on the edges of a basket are white, tongue shaped, the flowers in the center are of two genders, yellow and tube shaped. Its fruit is a dark green seed. It blossoms from May up to autumn months [1].

Medicinal chamomile is spread widely, it mainly grows in meadows, fields (as a weed), along the roads. It is mainly spread in the south of European part of Russia, the Caucasus, the Crime, the Ukraine, southern regions of Siberia and Central

Asia. Green chamomile is spread in the European part of former Soviet Union, Western Siberia and Far East.

The product is basically prepared in the south of Ukraine (the Crime, Herson, Nikolayev, Odessa regions), it is less prepared in Krasnodar, Rostov region, Moldavian Republic and other places.

Chamomile multiplies rapidly. As the demand for both chamomile types is great, it is grown in the Ukraine, Belorussia and other places.

A ready made product of medicinal chamomile consists of gathered flowers in a basket. The diameter of a basket of medicinal chamomile is 4–8 mm, hemispheric; its surrounding leaves are placed as tiles. White tongue flowers on the edge of the basket are 12–18. The flowers in the middle are yellow, of two genders, tube shaped and do not have sepal, the carpel has five petals, pistil is ovary and placed down.

The basket of the green chamomile is tinier and consists of green tube shaped flowers. The sepal is in thin coat shape, the carpel has four petals. The place of the basket flower is cone shaped, without any hairs and the inner side is empty. With these features the medicinal (common) and (green) chamomile differs from other plant complexes (*Matricaria inodora*, *Leucanthemum vulgare* Lam., *Anthemis* types which are met in places where chamomile plant grows). Both two chamomile types have fragrance and bitter taste [3].

Due to XI DF, common chamomile composes 0.3% essential oil and green chamomile composes 0.2% essential oil.

Chamomile plant is used against intestinal spasm, microbes, allergies and inflammation and in treating wounds in folk medicine. Therefore its medicinal preparations are used in gastrointestinal and gynecological diseases and as a means of sweat and intestinal gas releaser. Moreover, chamomile flower is applied as a sedative, antiseptic and a means against inflammation (in gargling the mouth, throat and making medicinal bath, enema).

Special tea is prepared from chamomile flowers (baskets). Flower baskets can be met in the set of herbal plant teas used for treating gastronomic diseases, throat gargling and herbal plant sets of sedatives. In germination of chamomile plant the following agro technical measures should be taken.

Biological features of young plants are: budding of chamomile seeds begin under 6–7°C temperature but an optimal temperature for its growing is 20–25°C. If the moisture is not enough when seeds are sown, they may not bud for a long period of time. At this time the fields with chamomile seeds are irrigated.

After the budding of young chamomile plants (when the degree of moisture and air temperature is normal), 6–10 rosette leaves appear in every young chamomile plant in 20–40 days. The young plants sown in autumn will winter in this way.

7–9 rosette leaves grow from young plants sown in early spring in the first decade of April month. In March–April months as a result of profuse precipitation and fast growth and enlargement of rosette leaves, the growth of a stem in the middle of the plant and branch formation are observed.

If the plant is supplied well with water, in the result of temperature rise, in the first decade of May primary flowers begin to bloom. Generally, we can observe first flower blooming in 30–50 days after sowing the seeds. Observations show that, newly appeared buds may bloom in 10–12 days when the buds appear in the plant stem. Of course, air temperature, soil moisture and nutrient substances in the soil play important role in this. [2]

Depending on the heat of the temperature in daytime and soil moisture, one flower basket may preserve for 5–6 days. When the air temperature is 19–21°C average, flowers boom well. The increase in air temperature to more than 30°C not only effect on the flower blooming unfavorably but also results in their shrinking. Light plays an important role in flower blooming too. Clear

weather without clouds helps to open the flowers more quickly.

Chamomile flower likes the light, moisture and it is recommended to grow it in fertile lands. That is why, first of all, each hectare of land is processed with 20-25 tons of local fertilizer (mature) and superphosphate and the soil is ploughed in 25-30 cm depth before sowing the seeds. The presence of mineral substances should be sufficient for the growth and development of the plant. It is advised to sow the chamomile plant for 2-3 years and then to sow other medicinal or agricultural plants. Otherwise, the fertility of the chamomile plant may decrease year by year. Since, chamomile is a spring-summer plant; it is possible to sow late plants in the fields freed from it in July and August months and to gain additional harvest [4].

The fields where chamomile is sown should have as much sunlight as possible and the soil should be fertile without trees. While the young plants grow the lands should be cultivated in 4-6 cm depth so that to eliminate weeds. The immediate cultivation of the lands after gathering the crop helps with cleaning the fields from weeds and rotting the plant remnants under the soil.

The system of plant fertilization. Since chamomile plant is grown in European countries and Russian Federation, the biology and system of fertilization of this plant was studied partly. In Uzbekistan planting medicinal plants is the youngest farming direction and the biology, fertilization system of chamomile plant is not studied completely as any other plants. The mechanical content of the lands where chamomile is sown should be in average state without the lowest degrees of saltiness. Each hectare of the fields should be worked out with 25-30 tons of mature and 70 % of phosphorous fertilizer of annual norm.

During the growth period chamomile plant is worked out twice with 30-40 kg of nitrogen fertilizer per hectare: for the first time when leaves appear (in the first decade of March), for the second time when it starts to bud (in the second decade of April). Nitrogen fertilizers are applied

before irrigating the plant. When the plant is nitrified with nitrogen, phosphorus and organic fertilizers, it was determined that chamomile flowers increase to 1.5—3.0 centner per hectare.

Measures against diseases. Chamomile plant may be diseases with mildew disease during the vegetation period as any other cultural plants. Especially, the plants sown in shadow places get diseased soon. In order to fight against mildew disease it is recommended to apply fungicides as Topas preparation. In order to prevent the disease 25 liters of Topas is mixed with 100 liters of water and then sprayed. When first signs of the disease appear 30 liters of the preparation is mixed to 100 liters of water. As prophylactics one may spray the preparation with water in May and June and then repeat it in 7-14 days interval so that to treat from the disease.

In order to eliminate the larva of most insects on the land such as beta vulgaris, Colorado bug, mite and other bugs, it is recommended to spray Karate preparation or use 3 kg/ha chlorophos preparation. This kind of preparations is advised to use at the end of March and in April. Grozan preparation is mainly applied against fungicides and sometimes sulfur is applied against mildew disease of plants. Another way of taking measures against diseases and insects is using rotation way of sowing or the measures against weeds.

Product preparation. The product from chamomile plant is prepared when it blooms completely. Tongue shaped flowers look up when the flowers in baskets start to bloom and when the plant blooms completely these flowers will be in a horizontal state. After the blooming period, tongue shaped flowers grow in downward direction. At this very time, fruits will appear in tube shaped flowers. In the period when flowers in baskets bloom wholly, i.e. when tongue shaped flowers are in horizontal position the essential oil in the baskets are gathered in the most amount. That is why it is advised to prepare the product at this time. The baskets are gathered by hand, cut with special scissors or with special brush. Gathered flower baskets are then dried in a

shadow place or under the temperature not higher than 40°C after having been cleaned from the mixture.

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