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Biotechnology Cultivation of Medicinal Plants

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Annotation: This article describes the medicinal properties of plants growing in the territory of Bukhara, and the experience of growing some medicinal plants in the region

Keywords: Calendula (marigold), Chamomile, Valerian, Rose hip, growing medicinal plants, Cultivation methods, irrigation.

Medicinal plants are a huge family consisting of plants and organ parts containing beneficial substances used in folk and traditional medicine.

Currently, 112 species of medicinal plants are allowed to be grown in Uzbekistan. About 80% of these plants grow in natural conditions, but in recent years large-scale artificial plantations have become widespread, for example,

Calendula (marigold) *Calendula*. Calendula is effective for gastrointestinal diseases. Calendula is planted in early spring (late February-early March) or late autumn (late October). Interestingly, seeds planted in the ground do not freeze. Calendula seedlings bloom 35-40 days after planting, in late April - early May. During the season, the crop is watered 13 times.

In summer and autumn, inflorescences are collected every 2-3 days. Fields sown with calendula are stored for 2-3 years. From seeds scattered on the ground in winter and spring, many seedlings sprout; from one hectare you can collect up to 600-800 kg of calendula. (1 kg of dried flowers costs 50,000 soums). This plant can be grown in all regions of the country.

Chamomile is used medicinally to treat colds and inflammation, improve the digestive system, prevent cancer, and lower cholesterol. The plant prefers light and is grown from seeds. Chamomile

can be planted in late winter or autumn. Matricaria germinates from seeds sown in the ground and bears fruit within 2-3 years. The yield is 7-8 kg per hectare, but the plant can be grown in any region

Uzbekistan and get high yields. The yield is 700-800 kg per hectare. (1 kg of dried flowers costs 50,000 soums).

Valerian officinalis is used in folk medicine as a sedative and is effective in the treatment of heart diseases. Mainly cultivated in Europe and East Asia, but also grown as a medicinal plant in Uzbekistan. Seeds are planted in the soil in early spring and harvested in October. The roots are thoroughly cleaned in a special machine, then laid out 15-20 cm thick on racks in a well-ventilated area and regularly repositioned with a pitchfork. The raw materials are collected in heaps, and the chopped roots are packed into bags. Packaged raw materials are stored for three years, and unwrapped ones for two years. The yield of dried valerian roots is 18-25 centners per hectare. (1 kg of dried root costs 100,000 soums). However, it can be grown in fertile irrigated areas of Uzbekistan (Fergana Valley, Tashkent and Samarkand regions).

Rosehip. Rosehip is rich in vitamin C and strengthens the human immune system. It also thins the blood in the arteries, lowers blood pressure and helps treat colds and flu.

Medicinal varieties of this plant are propagated only by asexual cuttings 5-15 cm long. When propagated by seeds, the superiority of the variety is lost. The cuttings grow for up to five years, after which they are replaced with new stems.

After a year, rejuvenated seed fields bloom and enter the fruiting period. The yield is 20-25 kg when fruiting and 10-12 kg when drying. When harvesting, the hollow flowering branches are cut off.

The harvest of dried rose hips is 15-20 centners per hectare on an area of 3*4. (1 kg of dried fruit costs 20,000 soums). When growing medicinal plants, the problem of protection from pests and diseases is very well worked out in industrial cultivation.

However, during field cultivation one has to face the problem of a lack of recommendations on the use of medicinal and aromatic plants available on the market. Firstly, this is due to the fact that the range of crops grown by amateurs is many times richer than the list of species on industrial plantations.

It is not always advisable to use recommendations for vegetable crops. Each crop has its own specially developed scheme for the use and processing of drugs, which may be suitable for one or closely related crop, but unacceptable for another.

In addition, when growing medicinal crops, increased demands are placed on the environmental safety of the raw materials used. Is it possible to grow without pesticides? Probably, possible, but the results are not always pleasing and favorable.

In many cases, medicinal plants are grown using the following technologies:

1. high-tech greenhouses;
2. in greenhouses;
3. in glass greenhouses
4. in glass greenhouses;
5. in film greenhouses
6. in greenhouses
7. in field conditions with irrigation
8. in field conditions with irrigation

9. in field conditions without irrigation.
10. sowing on pasture.

Cultivation methods for any medicinal plant must be developed taking into account local conditions.

Today, two main cultivation methods are used for medicinal plant biotechnology.

The most famous is the mold method. In most regions of the country, it helps create important conditions for intensive growth and crop formation.

In addition, formwork processing has a number of possibilities, such as consuming large amounts of energy, intensifying soil degradation processes and developing erosion processes on slope soils and in wind erosion zones.

The second method is non-moldboard tillage. This method sharply reduces runoff, but at the same time, tillage reduces the supply of energy substances to the lower part of the arable horizon, compacts the soil and promotes the mineralization of humus

However, this method also has disadvantages. The use of this method is associated with risk and is only possible on well-cultivated soils.

Irrigation is necessary to increase the yield of medicinal plants. Investments in irrigation are always justified in areas with insufficient moisture, mainly in steppe and forest-steppe areas.

Over the past few years, consistent reforms have been carried out in the republic in the field of protection of medicinal plants, rational use of natural resources, organization of plantations of medicinal plants and their processing, as well as biotechnological cultivation.

Currently, growing medicinal plants on local agricultural lands can become one of the promising areas in the development of agriculture.

In this regard, the government of our country pays great attention and allocates huge funds to the development of biotechnology, especially to the cultivation of medicinal plants.

Nowadays, biotechnologists can take advantage of these benefits and assistance to grow medicinal plants, make a profit and bring economic benefits to the country.

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