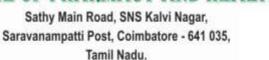


SNS COLLEGE OF PHARMACY AND HEALTH SCIENCES





Topic: periwinkle

Botanical name: catharanthus roseus

Family: apocynaceae

Economic part : root and leaf



Pink flower (catharanthus roseus)

White flower (Vinca minor f. alba)





flowers in multi colour

Chemical constitution:

- Morden investigation have shown that periwinkle contains more than 100 alkaloids distributed through out the plant.
- ➤ Medicinal importance due to presence of alkloids like ajmalicine (raubasin), serpentine & reserpine in roots, which is well known for their hypotensive & antispasmodic properties.
- ➤ Vincristin and vinblastine alkaloids from leaves, which have importance in cancer therapy.

Origin and distribution:

 The plant is native of madagascar and from there, it has spread to india, indonesia, indochina, philiphines, south africa, israel, USA & other parts of the world.

 In india, it is being grown in tamilnadu, karnataka, andhrapradesh, MP, Gujrat ,Assam in an area of about 3000 ha. The USA is the world's largest user of this plant as raw material. A single firm which has the patent to manufacture vinblastine and vincristine sulphate has been consuming more than 1000 tn of leaves annually.

Description of plant:

- It is a perennial herb which grows up to 90-120 cm tall.
- It is a diploid with the ch no. 2n = 16

Types and varieties:

- 1. Rose purple flower: cultivation deu to higher alkaloid content.
- 2. White flower: variety "nirmal and dhawal" by CIMAP lucknow.

Soil:

 The crop is hardy and grows well on a wide variety of soils, except those which are alkaline or water-logged.

 Deep sandy loam to loam soils of medium fertility are preferred of its large scale cultivation because of better development of roots and also easy to collect at harvest time.

Climate:

- The distribution of the plant shows that there is no specificity in its climatic requirements.
- It comes up well in tropical ad subtropical areas.
- It can be successfully grown up to an elevation of 1300 M above sea level.

- A well distributed rainfall of 100 cm or more is.
- However the growth in tropical areas is better than the growth in subtropical areas, where its growth is slow, due to low temp in winter.

Propagation:

- Plant can either be propagated by seeds or vegetatively through cuttings.
- Since plants propagated by cuttings flower earlier than the plants by seeds, it is recommanded that for drug production the plants should be grown from seeds and for seed production from cuttings.

Propagation by seeds:

- Fresh seeds collected a few months in advance are preferred for sowing as they lose viability on long storage.
- The seeds can either be directly sown in the field or a nursery can be raised and the seedlings are transplanted.

Direct sowing:

 The seed rate of 2.5 kg/ ha are broadcasted at the onset of monsoon in june – july, in lines spaced 30-45 cm apart and lightly covered.

 Since the seeds are very small, for ease in handling & distribution, they are mixed with sand about 10 times their weight.

- Germination takes place after about 7-8 days
 .After germination is complete the seedlings are thinned at a spacing of 30-40 cm with in the row.
- The flowering starts 40-45 days after sowing.

Nursery preparation and transplanting –

- The other advantage to this method in comparision to direct sowing is that healthy and vigorously growing seedlings can be selected and the inferior ones can be discarded.
- Raised nursery beds in march april in rows spaced at 8-10 cm apart and about 1.5 cm deep.

 About 500 gm of seeds will be enough to raise seedling to cover 1 ha area. After 2 months of germination, the seedings are ready for transplanting in to the field.

- The seedligs are transplated at a spacing of 45 and 30 cm in the field.
- A population of 74,000 plants per ha may be accommodated.

Vegetative propagation:

 Soft wood cuttings obtained from the lateral shoots have proved better than either hard or semi hard wood cuttings.

 Cuttings of about 10-15cm length with a minimum of 5 -6 nodes are ideal and result in about 90 % rooting.

Manuring and fertilizers:

Apply FYM at 20 tn /ha and N,P & K at 20
:50: 75 kg/ha as basal dose.

 On 60 days after transplanting apply 50 kg nitrogen as top dressing.

Irrigation:

- In place where rainfall is evenly distributed throughout the year, the plant do not require any irrigation.
- In rainfed, 4-5 irrigation will help the plants to give optimum yield.

Weed control:

- 2 weeding are required, first weeding may be done after about 60 days of sowing and the second at 120 days of sowing.
- Mulching the field with cut grass or rice straw will also minimize the weed growth.

Pests and diseases:

 Little leaf due to infection by mycoplasma resulting in stunted growth. This can be effectively checked by uprooting and destroying the affected plants.

 Die back / Twig blight /Top rot is reported during monsoon. Control measure is spraying mancozeb at an interval of 10-15 days.

Harvest, processing and yield:

- Leaves, stem and seeds: for leaves, leaf stripping twice, first after 6 months and the second after 9 months of sowing can be taken.
- Roots: the crop is harvested 12 months of sowing. The plants are cut about 7.5 cm above the ground level and dried for the stem, leaves & seeds.
- Seeds: it has to be collected from matured pods 2 to 3 months before the harvest of the whole plant.

Yield:

- Under irrigated conditions: about 4 tn/ha of leaves, 1.5 tn/ha of stem, 1.5 tn/ha of roots on air dried may be obtained.
- Where as under rainfed conditions: the yield will be about 2 tn /ha of leaves & 0.75 tn/ha each of stem and roots on air dried basis.
- The total alkaloid content in the leaf varies from 0.15 to 1.34 % of which the average content of vinblastine is 0.002 % while that of vincristine is 0.005 %.