Periwinkle

*Catharanthus rosseus* Linn.

Syn. *Vinca rosea* Linn.

**Family: Apocynaceae**

An erect herb, much branched, annual or perennial herb, 30-90 cm. height, probably native to Malagasy, occasionally found wild but mostly naturalized up to an altitude of 1300m. and commonly grown in gardens throughout the country. Leaves oblong-elliptic, acute, rounded apex, glossy, slightly foetid; flowers fragment, white to pinkish purple in terminal or axillary cymose clusters; follicle hairy, many seeded, 2-3 cm long; seeds oblong, minute, black.

**Distribution:**

The plant is native of Malagasy and commonly grown in gardens throughout the world for bedding, borders and for mass effect. On commercial basis it is cultivated in Malagasy, Israel, India and United States.

**Vernacular Names:**

Sanskrit – Sadapushpi

Hindi – Sadabahar, sadasuhagan

Kannada – kempukasi, kanegale

Malayalam – Ushamalari

Tamil – Sudukadumallikai

Telugu – Billaganneru

Punjabi - Rattanjot

**Verities:**

Based on flower colour

1. Pink colour flowered – rosea (contains more of alkaloids)
2. White colour flowered – alba
3. White with pink or yellow ring in the orifice region – occellata
CIMAP, Lucknow developed two varieties of periwinkle - Nirmal and Dhaval, which yields more alkaloids.

**Agro-climatic requirements:**

Periwinkle is very hard, and can grow luxuriantly under a great variety of climatic and soil conditions except the highly alkaline or waterlogged soils. It prefers light, well-drained, sandy loam. A mild tropical climate and well-distributed rainfall of 100 cm per annum are sufficient to raise a commercial rain-fed crop.

**Cultivation:**

The land is repeatedly ploughed and brought to a fine tilth, and manured adequately with farmyard manure or compost prior to sowing. Groundnut cakes are also applied at some places. Herbicides like 2, 4-D and Gramoxone are mixed in the soil while manuring to prevent infestation by weeds.

The plant can be propagated from seeds or stem cuttings. Fresh seeds (1kg/ha) are sown with the onset of monsoon in late June, in rows 10-15 cm apart in small beds and then irrigated immediately. The seeds germinate in about ten days and in 30-45 days develop 2-3 pairs of leaves, and are ready for transplanting. The seeds (2.5kg/ha) mixed with sand can also be sown directly in the field. In the field, the seedlings are transplanted at a distance of 30×45 cm. About 74,000 plants are optimum for a hectare.

**Manure and fertilizers:**

The crop responds well to manuring with 80 kg nitrogen/ha in sandy soils; with detopping of plants at 2 cm height, up to 120 kg N/ha can be applied profitably. Split application of N gives better results. Phosphorous and potash at 40 kg/ha or green manuring and application of micronutrients are recommended.

**Intercultural and pruning:**

The crop is given 2-3 intercultures at 20 or 30 days interval. Mulching with rice straw or cut grass is beneficial. At early flowering stage top 2-3 cm portion of the plant are removed to promote vegetative growth and alkaloid content. The plants are drought resistant and do not require much water. 5-6 light irrigation given for the irrigated crops.

**Plant protection:**

Periwinkle crop is relatively free from damage due to pests and diseases. Termites and soil-borne insect sometimes infest the growing seedlings. Adding BHC (0.5%) to the soil before planting protects the seedlings.

A little-leaf disease due to Mycoplasm like organisms was observed. Spraying tetracycline hydrochloride (100ppm) is beneficial.

Periodical spraying of Diethane Z-78 controls Die-back, bud rot and other fungal infections.
Harvesting and yield:

About 150 days after sowing or translating, the periwinkle roots penetrate the soil up to 15-25 cm and then develop lateral rootlets. The crop is ready for harvest of root after one year. During this period two leaf stripping are obtained and third when the whole plant is harvested. For harvesting the roots plants are cut 7 cm above the ground level, the field irrigated and ploughed, and the roots collected, and washed. Roots are cut into 15-20 cm length and dried. On drying the root and stem loses 70-80% of their weight. The produce can be stored under normal storage conditions for one or two years.

The total yield of plant material consisting of foliage, basal, stem and roots from an irrigated crop in peninsular India is 2.2 tones/ha. and in North Indian plains 1.8 tones/ha. Rain fed crop yields 1.0-1.5 tones/ha.

Inputs:

<table>
<thead>
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<th>Sl.No</th>
<th>Materials</th>
<th>Per acre</th>
<th>Per hectare</th>
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<tbody>
<tr>
<td>1</td>
<td>Seeds (kg)</td>
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<td>2.5</td>
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<tr>
<td>2</td>
<td>Farm Yard Manure (t)</td>
<td>2</td>
<td>5</td>
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<td>3</td>
<td>Fertilizer (kg)</td>
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<td></td>
<td>N</td>
<td>16</td>
<td>40</td>
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<td></td>
<td>P₂O₅</td>
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<td>30</td>
</tr>
<tr>
<td></td>
<td>K₂O</td>
<td>12</td>
<td>30</td>
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</tbody>
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Parts used: Leaves, stem and roots

Medicinal uses:

Vinblastin, vincristin, leurosidine and leurosine are oncolytic alkaloids are effective against leukaemia. Vinblastin sulphate is used particularly to treat Hodgkin’s disease beside lymphosarcoma, choriocarcinoma, neuroblastoma, carcinoma of breast, lung and other organs, in acute and chronic leukaemia. Vincristin sulphate arrest mitosis in metaphase and is very effective for the treatment of acute leukaemia in children and lymphocytic leukaemias. It is used against Hodgkin’s disease, Wilm’s tumor, neuroblastoma, rhabdosarcoma and reticulum cell sarcoma.

Chloroform fraction of crude drug showed significant and sustained hypotensive action and sedative and tranquilizing properties similar but more marked than total alkaloids of Rauvolfia serpentina. The alkaloid also causes relaxant and antispasmodic effect on smooth muscles of the intestine and uterus, and direct myocardiac and central nervous system depression.