

Macro-proliferation technique for Kutki Multiplication

A. Nature of technology: Mass Propagation Technology

B. Process in Brief:

Picrorhiza kurrooa, Royle ex Benth. commonly known as Kutki is an important temperate medicinal plant found in western Himalayas, which has a great potential for commercial cultivation in higher temperate regions (above 2700 mts.). It possesses an inherent proliferation capacity coupled with offset planting capabilities to reproduce further, which can be utilized for vegetative multiplication by exploiting such characters of the species. Keeping this clue in mind, 'Macro Proliferation' Technique was developed for vegetative multiplication of this important medicinal plant which ensures that each propagule possesses some parts of shoot along with rhizome parts and few roots at the time of separation from mature healthy plant. By application of this technique a healthy mature plant of Kutki can be multiplied 6 to 10 times successfully. In addition to multiplication >50% yield of rhizomes and roots can be recovered for marketing or for various other uses. Time of separation, portion of shoot/root/rhizome to be retained in each propagule and providing appropriate growing conditions for planting of separated propagules are found to be critical factors for achieving success through this technique. In general it is always better to go for this technique during rainy season and plantation of propagules in poly-house or sand trays.

Besides, time of macro-proliferation (separation) and appropriate conditions for rapid establishment of macro-proliferated propagules are very critical and were standardized accordingly.

Table: Success rate of this technique under varied conditions

S. No.	Time of Macro-proliferation (Month of the year)	Conditions for rapid establishment of macro-proliferated propagules	Success Rate
1.	April to October	Placement in Poly-hose conditions for 1½ months and subsequent planting in the field	Almost 100%
2.	July to September	Placement in Sand trays for 1 ½ months and subsequent planting in the field	> 90%
3.	August	Direct planting in field for 2 ½ to 3 years	>75%

Field Application:

It is simple manual technique which requires secateurs or scissors to separate macro-proliferated propagules from healthy mature mother plant. The technique should be performed either in morning/evening hours under shade conditions. The separated propagules should be planted

immediately as per the facilities available to avoid desiccation or placed in moist clothes/moss. The specifications of separated propagule *i.e.* shoot length >1", rhizome length >1", fine roots: 2 no. or more and leaves retained: ½ to 2 should be considered strictly for better survival and initial growth.

C. Beneficiaries of technology

1. Prominent Beneficiaries/User groups

Technique was standardized and thereafter, produced around 2.5 lakhs plants under the National Medicinal Plants Board (NMPB) project and Himachal Pradesh State Forest Department funded project. The planting material was supplied to various end users like farmers, NGO's, State Forest Department etc.

2. Number of clients to whom technology has been transferred / sold

Technique has been disseminated to various stakeholders such as local communities including farmers, Mahila Mandals etc., NGO's and field functionaries of State Forest Departments. Till date it has been demonstrated to >500 people through various training programmes during the last five years organized by the Institute. Besides this, a booklet and a pamphlet in simple Hindi were published containing this technique and distributed to various stakeholders.

3. Potential for future dissemination (As the case may be)

The propagation technique developed will be disseminated /transferred in temperate regions of the North West Himalayas through training and demonstration programmes and by developing and disseminating user friendly publicity material in vernacular language for popularizing this technique in the field at grass root level.

D. Economic significance

1. Potential to address livelihood issues and generated additional income

The species is an important temperate medicinal plant and grows only in higher temperate Himalayas. It is important to exploit niche area advantage by popularizing this species among local communities of higher temperate Himalayas which possesses great potential in addressing livelihood issues and generating additional income in those areas.

2. Productivity enhancement and Economic Benefits over replaced technology

It is a new tested technique for this species and the desired germplasm along with its genetic identity can be maintained in the nursery as well as multiplied according to the requirements/demand for field planting.

3. Impact of Technology (As the case may be)

By adopting this technology sustained supply of planting material of desired genetic worth can be maintained from the nursery for cultivation in the field. People can be trained for producing nursery stock of this species themselves for meeting out their requirements. Depletion of this species in its natural zone could be halted to some extent by encouraging cultivation of this species in farmers field.