

- Kharibaowli (Delhi).
- Masjidbazar (Mumbai).
- Lucknow & Tanakpur (M.P.)
- Hyderabad (A.P.)

#### Risk Factors :

- Bach requires slightly water logged area.
- It is highly sensitive to salinity.
- Best results obtained in black cotton soil.

#### Favourable Factors :

- The crop is free from grazing and browsing.
- The crop is resistant to insect - pests and fungal attack.
- It is free from vagaries of nature, such as storm, hail frost etc.
- The first year crop provides planting material for next season for at least one hectare besides marketable produce.

#### Economics of the system :

Expenditure incurred on the cultural operation is Rs. 1,20,000/ha (including cost of planting materials, preparation of field, FYM, wages and cost of irrigation, etc.)

- 35 qtl/ha dried rhizomes (Rs. 20-25/kg)
- Planting material sufficient for one hectare, i.e., 1,10,000 propagules @ Rs. 1.50 per propagule valued at Rs. 1,65,000/-) and

- Essential oil 8-10 ml per kg of dried rhizome @ Rs. 1400-1500/lit. valued at Rs. 45,000/-

The Benefit Cost (B/C) analysis of the Bach-Paddy system reveals a return of 1.57 in case and propagules and dried rhizomes per hectare and 1.29 in case of returns on propagules and essential oil per hectare.



A view of Bach-Paddy Agroforestry system

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## BACH-PADDY AGROFORESTRY SYSTEM



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## INTRODUCTION :

The main component of the system is growing of agri crop - Paddy (*Oryza sativa*), tree (Silvi) crop - Khmer (*Gmelina arborea*) with medicinal crop - Bach (*Acorus calamus*).

*Acorus calamus* is commonly known as sweet flag in India. The leaves of *Acorus calamus* have a lemony smell and the roots have a sweet fragrance. *A. calamus* is a perennial herb, semi-aquatic and smelly plant having rotund joints with large sword shaped leaves. It is upto 6 feet tall, aromatic and bears small yellow / green flowers with indefinitely branched rhizomes.

**Scientific name :** *Acorus calamus* L.

**Local name :** Gudvach, Vacha, Bach

**Family :** Araceae

**Occurrence :** Kashmir to Kanyakumari and North - Eastern region of India.

**Use full part :** Leaves and Rhizome.

## IMPORTANCE :

*Acorus calamus* has several medicinal uses in Ayurveda. The rhizomes of *Acorus calamus* are considered to possess anti-spasmodic, carminative and anthelmintic properties and have been used in Asia for the last 20 years for a number of beneficial reasons.

*Acorus calamus* is very popular in remedies against cough and cold and also other respiratory disorders like bronchitis.

*A. calamus* depresses the central nervous system and forms a well known ingredient in

formulations against psycho-somatic disorders like epilepsy.

The emanations from the roots of *A. calamus* repel some insects.

**Importance :** Products available in the market :

A. **Bach powder** - It is used as a medicine against hysteria, epilepsy, loss of memory and stammering,

B. **Bach extract** - Bach extract is used in the form of powder and balm which is useful against bronchitis, cough and cold in Ayurvedic, Unani and Siddha systems of medicine. As per the Ayurveda it is used as an anaesthetic against toothaches and headaches.

C. **Bach Oil** - Its essential oil has anti-ageing properties. Dried powder of bach enhances memory. The oil of bach is used as an ingredient for flavouring liquors it is also used in the perfume industry.

## NURSERY TECHNIQUE :

**Raising of Bach plants :** Old rhizomes should be cut into the small pieces of 4-5cm in length having two internodes. These pieces are then put into the soil at 4-5 cm depth during the month of May. New sprouts may arise after 15 to 20 days. This material is used for raising new crop of bach.

## CULTIVATION TECHNIQUES OF BACH

**Soil :** *A. calamus* prefers clayey loams and light alluvial soils. Such fields are irrigated with green manure before planting.

**Farm Yard Manure :** 15 trolleys per hectare of Farm Yard Manure should be used for the Bach-

paddy system. It should be applied in three doses. One fourth of which should be applied as basal dressing, half after two months of planting and the remaining dose should be applied within six months of raising of the crop.

## Time of showing raising plant :

Second week of July - August.

## Planting material required :

1,11,000 propagules / ha

**Spacing :** 30 cm x 30 cm.

## Irrigation :

Irrigation should be applied at intervals of seven days during the winter season and at intervals of three days during the summer months.

## Weeding/hoeing :

It is recommended to be carried at an interval of three months.

## Harvesting :

Best within 10 months of sowing/raising of propagules.

## Yield :

35 qtl./ha of dried rhizomes.

## Storage :

Air dried rhizomes can be stored in polythene bags for 8 to 10 months.

## Markets for Bach :

- Jabalpur (M.P.)
- Katni (M.P.)
- Indore (M.P.)