



PROPAGATION OF *DREPANOSTACHYUM FALCATUM* (NEES) KENG F. (syn. *SINARUNDINARIA FALCATA* CHAO & RENVOIZE) FOR SUSTAINABLE DEVELOPMENT OF RURALS IN GARHWAL HIMALAYAS

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GARHWAL HIMALAYAS



✚ *Drepanostachyum falcatum*
(Nees) Keng f.

1500-2300m

✚ *Himalayacalamus falconeri*
(Munro) Keng f.

1800-2300m

✚ *Thamnocalamus spathiflorus*
(Trin.) Munro

2400-3000m

✚ *Sinarundinaria anceps*
(Mitford) C.S. Chao & Renvoize

1800-2700m

Collectively called 'Ringal'

USES OF RINGAL

- ❖ **Myriad of uses. Dreaming household**
- ❖ **Construction-roofing, flooring, fencing, windows, doors**
- ❖ **Handicrafts, hookah pipes, walking sticks, Hats, Mats**
- ❖ **Stakes for cash crops, fencing around their kitchen gardens, agricultural lands**
- ❖ **Fresh sprouts for vegetables, Pickels, Curries**
- ❖ **Fuelwood and Fodder (*A. falcata*)**
- ❖ **Weapons and agricultural tools**

RINGAL FOR TRIBAL HUT



RINGAL IN HANDICRAFTS



- ❖ Apart from their economic value, ecological role—soil conservation, checks soil erosion
- ❖ Favoured habitat of red listed wild animals viz. Musk deer and Phaesant species like Monal and Western Tragopan



BREEDING FARM OF MUSK DEER

- **Socio-economic life of rural populace providing livelihood support.**
- **Cottage Industry and domestic market is Ringal based. Basketry is their mainstay of income**
- **Baskets of different designs (agricultural produce, manure, Dung, Utensils, washing clothes, wool, fuelwood, fodder etc)**



BASKETRY



VARIOUS USES OF BASKETS





**DOMESTIC USES OF
BASKETS**



Dwindling very fast

- ❖ Over exploitation and illegal harvesting
- ❖ Gregarious flowering, Parent stock completely dies off
- ❖ Climate change and change in land use
- ❖ Frequent Forest Fires



NATURAL REGENERATION

Regeneration slow and face intense grazing pressure, forest fires, upcoming weeds



CONSEQUENCES

- ✓ **Dense Thickets are barren now**
- ✓ **2-3 artisans in a village inhabited by 100 families.**

The villagers and artisans are in short supply of this life supporting resource affecting Livelihood

Solution?

Large Scale planting



PLANTING material ?

- ❖ **Seeds propagation is cheaper, gestation long (19-60 years), viable seeds are attacked by rodents and insects**
- ❖ **Long storage impossible as the viability is low (6-12 months)**
- ❖ **Replanting with rhizome, offsets is tedious, expensive, time consuming and slow**
- ❖ **Research into newer and rapid methods for sustainable production required**

EXTRACTION OF MATERIAL FOR MULTIPLICATION



NURSERY THROUGH PART CLUMP, RHIZOME AND OFFSETS



CULM CUTTINGS PLANTING IN THE FIELD



Multiplication of Ringal through Culm cuttings

Training imparted to labour for preparation of culm cuttings



PROPAGATION THROUGH BRANCH CUTTINGS

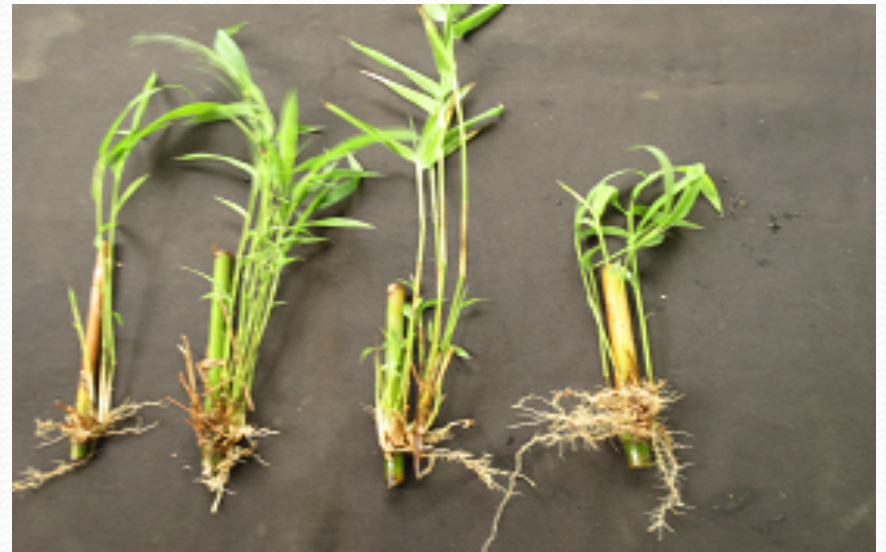


Table 1. Interactive effect of SxT on rooting and allied parameters

SEASON	TREATMENT	CHARACTERS					
		Mean sprouting (%)	Mean No. of Sprouts	Mean sprout Length (cm)	Mean rooting %	Mean No. of roots	Mean root Length (cm)
March-June	Control	65.3	4.0	13.2	43.3	3.4	8.7
	IAA500ppm	68.3	7.5	14.5	56.7	4.5	7.9
	IBA500ppm	66.7	5.0	16.9	51.7	5.7	10.2
	NAA500ppm	57.3	4.0	13.7	40.0	4.0	7.1
July-October	Control	73.7	4.0	14.1	56.7	4.0	7.5
	IAA500ppm	69.7	4.5	15.6	41.7	6.5	10.4
	IBA500ppm	78.3	5.5	17.2	53.3	7.9	9.1
	NAA500ppm	60.3	3.0	13.7	43.3	5.1	7.7
Nov.- Feb.	In all treatments	0	0	0	0	0	0
Significance		**	*	***	***	***	*
CD		6.520	1.075	1.215	5.731	0.805	1.104

* =Significant at 5%, ** = Significant at 0.1 %, *** = Significant at 0.01%

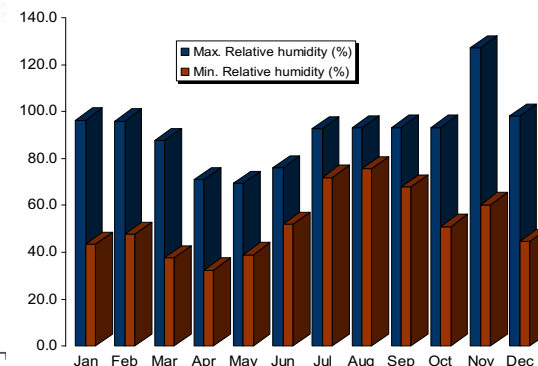
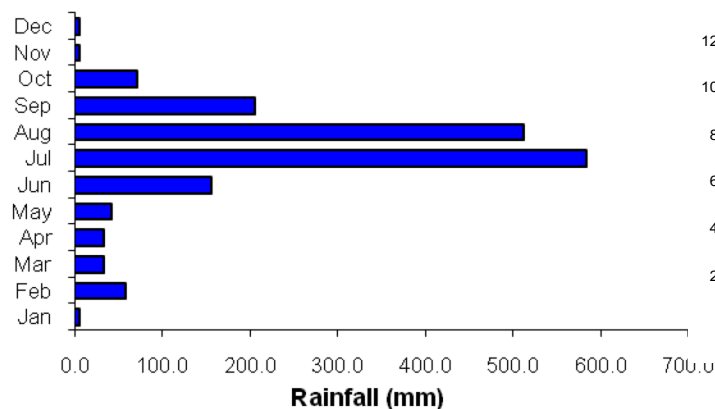
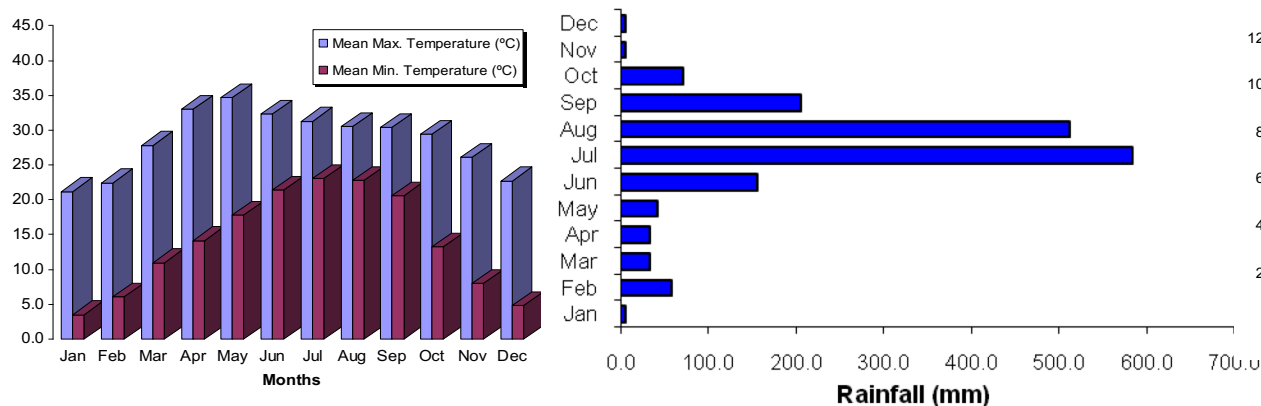


Table 2. Effect of Phytohormones on rooting of *D. falcatum*

TREATMENT	CHARACTERS					
	Mean sprouting (%)	Mean No. of Sprouts	Mean sprout Length (cm)	Mean rooting %	Mean No. of roots	Mean root Length (cm)
Control	69.5	4.0	13.7	50.0	3.7	8.1
IAA500ppm	69.0	6.0	15.1	49.2	5.5	9.2
IBA500ppm	72.5	5.2	17.1	52.5	6.8	9.7
NAA500ppm	58.8	3.5	13.6	41.7	4.6	7.4
Significance	*	*	***	*	***	***
CD	5.761	0.726	0.923	3.726	0.682	0.925

Table 3. Effect of season on rooting of *D. falcatum*

TREATMENT	CHARACTERS					
	Mean sprouting (%)	Mean No. of Sprouts	Mean sprout Length (cm)	Mean rooting %	Mean No. of roots	Mean root Length (cm)
March-June	64.4	5.1	14.6	47.9	4.4	8.5
July-October	67.1	4.7	14.8	48.3	5.1	8.6
Nov.-February	0	0	0	0	0	0
Significance	*	***	*	*	***	*
CD	0.768	0.621	0.39	0.584	1.154	3.714

* =Significant at 5%, ** = Significant at 0.1 %, *** = Significant at 0.01%

MULTIPLICATION THROUGH MACROPROLIFERATION



A new technique of multiplication in *D. falcatum*



Farmer friendly technology for conservation *in situ*



Establishment of Nursery (Jaunpur range)





Future strategies



- ☀ To promote villagers for cultivation on agricultural lands
- ☀ To introduce Ringal in agroforestry system
- ☀ Value addition of the product

- ✚ Save our forests
- ✚ Save women from drudgery
- ✚ Improve rural economy



CONSERVATION AND REHABILITATION STRATEGIES

- ✓ Cultivation of Ringal on community, wasteland, fallow land, panchayat land, around schools and other premises etc.
- ✓ Encourage people to grow Ringal on agricultural bunds and agroforestry systems, agroforestry models
- ✓ Educate people on sustainable harvesting methods, harvesting age, frequency and intensity etc.- sizeable amount of seeds



THANKS