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A NOTE ON THE SEXUALITY AND MONOSPOROUS FRUITING OF *TRAMETES RIGIDA* BERK.

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IMPORTANCE of the study of sexuality of polypore fungi was greatly increased, particularly when Nobles[1,2] showed that this character may be used as an important taxonomic criterion. Interfertility tests have been made with a large number of fungi[1-8] and in many cases the results obtained have been utilized in solving taxonomic problems. The present paper gives the sexuality pattern of *Trametes rigida* Berk., a polypore common in India; with a note on the monokaryotic fruiting of one of its isolates.

Three collections from Visva-Bharati Mycological Herbarium (VBMH) (82464, 82465, 82466) of the fungus were made locally from dead logs of *Shorea robusta* Gaertn. f. Single spore cultures were obtained from fresh basidiocarps of each collection and their type of polarity was determined by pairing monosporous cultures in all possible combinations. Intracollection matings of these mycelia resulted in the following groups:

VBMH (82464)

A_1B_1: 1,3,5,16	A_1B_2: 6,9,10,12,14,15
A_2B_2: 2,4,11,18	A_2B_1: 7,8,13,17,19,20

VBMH (82465)

A_3B_3: 1,3,7,9,11	A_3B_4: 10,12,13,16
A_4B_4: 4,5,6,8	A_4B_3: 2,14,15

VBMH (82466)

A_5B_5: 2,3,5,6	A_5B_6: 8,11,12,17,18
A_6B_6: 4,7,9,10,15	A_6B_5: 1,13,14,16

In expressing the results, the conventional symbols A_1A_2, B_1B_2 . . . were used to designate the alleles governing interfertility. The presence of 4 mating groups in each collection indicates that the species is tetrapolar. Inter-collection pairings were done using the four mating groups of the three isolates and in all pairings mycelia with clamp connections were obtained. This proves that the three collections are conspecific and have multiple alleles at the mating type loci.

Table 1

VBMH 82464 monosporous culture numbers	VBMH 82465 monosporous culture numbers				VBMH 82466 monosporous culture numbers			
	3	8	10	14	2	4	8	16
1	+	+	+	+	+	+	+	+
4	+	+	+	+	+	+	+	+
9	+	+	+	+	+	+	+	+
17	+	+	+	+	+	+	+	+

Polysporous cultures of all the isolates showed hyphae with clamp connections in every septum, while in their respective monosporous cultures, the hyphae were regularly simple septate. One of these isolates (VBMH 82464) produced well developed fruit bodies in some of its monosporous culture tubes (Nos. 3,9,10,11,17) and their hyphae on repeated examinations were found to be simple septate. Moreover, all these fruitings were fertile producing tetrasterigmatic basidia and basidiospores, typical of the natural fruit bodies in size and shape. The fruiting monosporous isolates were paired with the four representative mating groups of each of the two other isolates and the result obtained is given below where '+' sign indicates the formation of clamp connections (table 1). In each pairing there developed mycelia with clamp connections at all septa. Pairing experiment was repeated several times and always the result was the same.

Genetic interpretation of this behaviour of a particular isolate of a tetrapolar species is rather difficult. If in the pairing experiment only one mating type would have emerged from each monosporous fruiter, then conclusion could be drawn that it is homokaryotic fruiting. But as all the pairings evolved mycelia with clamp connections and the species is tetrapolar, it seems that this isolate VBMH (82464) shows a tendency of homothallism.

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A NEW APPROACH TO PAPAYA PROPAGATION

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PAPAYA is commercially propagated by seed. This leads to variation and a varietal name becomes misnomer. Even after six or seven generation of inbreeding only a maximum of 90% homozygosity is attained. Hence to perpetuate the papaya true to the type, utilization of some easy method of vegetative multiplication is necessary. In the past, some attempts were made in this regard[1-4]. However, due to quite variable and low success in vegetative propagation, the same has not been used commercially. So far no information is available on the success of budding during different seasons in India. An attempt was, therefore, made in the present study to the efficacy of budding with a view to multiply papaya vegetatively.

Stock seedlings were raised from mixed seed of papaya and transferred to pots when these had attained a height of about 8 cm. When the seedling attained a diameter of 1 to 1.5 cm, these were ready for budding. For scion material, the vigorous female plants of Pusa Dwarf papaya were cut back to induce axillary growth (figure 1). Side shoots emerging from below the stump, having a length of 24 cm and 1.2 cm diameter, were taken for bud wood. In this regard juvenelity of the plant has to be given due consideration. It was observed that the female plant cut at a height of 30 cm to 60 cm gives rise to shoots which have vegetative buds. At a higher level the emerging shoots will have reproductive buds only. Using the above rootstock and Scion material, patch and shield budding was done during July, August, September and October. The top of the seedling stock was removed after a week of budding. The buds sprouted after 15 days of budding and attained sufficient length after a month (figure 2).

Figures 1, 2. 1. Axillary growth after heading back (30 cm) height. **2.** Growth of scion after a month of budding (Patch).

It was observed that patch budding gave better success than shield budding (table 1). The highest success of 90% take was obtained in patch budding when done in the first fortnight of September closely followed by 80% in the second fortnight of August, whereas in shield budding good success was obtained (80%) when done in the first fortnight of September.

It appears that timing is vital for the success of budding in papaya apart from other factors such as suitable rootstock and bud stick. This may be due to congenial temperature, rainfall and humidity. Favourable humidity conditions for good success and growth have been emphasised by a number of workers[5-6].

The present work has shown that under agro-climatic conditions of Varanasi, patch budding should be practiced during August and September for successful vegetative multiplication of the papaya. Since the success obtained ensures its commercial adaptability for the first time in India, this may revolutionise the cultivation of papaya.

Table 1 *Seasonal effect on success in different methods of budding in papaya*

Time of budding	Success (%)	
	Patch budding	Shield budding
30th July	60 0	37 5
30th August	80 0	56 0
15th September	90 0	80 0
15th October	50 0	40 0