

Table 2 Correlation co-efficient (*r*) between the different variables.

Variables	Values
Log P/O and log seed weight	0.8347**
Number of pollen grains per stigma and P/O ratio	0.7316**
Seed set percentage and log P/O ratio	-0.0070NS
Seed set percentage and number of pollen grains per stigma	-0.2107NS

** = Significant at 1%; NS = Non-significant

may not be justified in the case of *Phyllanthus*. Rather, the variations in the P/O ratios may be explained on the basis of sexual selection as follows.

In the genus *Phyllanthus*, seed set appears to be independent of the P/O ratio ($r = -0.007$) and of the number of pollen grains deposited on the stigma ($r = -0.2107$) (table 2). Thus, pollen grain availability clearly is not a factor limiting seed set in *Phyllanthus*. This substantiates the earlier assumptions made to advance the theory of local mate competition or sexual selection⁷⁻¹². Our results also corroborate, though for the first time across species, the recent report of Queller¹³, who observed that pollination did not limit fruit (seed) set in *Asclepias exaltata*.

The increase in the P/O ratio from herb to shrub habitat might be explained if we consider that shrubs, which are spatially more separated than herbs, are predisposed to greater pollen grain exchange between genetically diverse individuals and hence provide a natural advantage to male-male competition. This is perhaps a reason why we find an increase in the number of pollen grains on the stigma from *P. niruri*, an herb on one extreme, to *P. polyphyllus*, a shrub on the other. This aspect of sexual selection may be brought about by various ways like increased pollen grain number per anther or very simply by increase in the male to female flower ratio. In *Phyllanthus*, it seems to occur mainly through increase in the latter, the pollen grain number per anther remaining almost constant.

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SEXUALITY AND OXIDASE TESTS OF *HETEROPORUS BIENNIS* (BULL. EX FR.) LAZ.

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NOBLES¹ divided the family Polyporaceae into two major groups—a primitive group consisting of species which are bipolar heterothallic and do not produce extracellular oxidases in culture, and the other, the more advanced group, including species which are tetrapolar heterothallic and liberate extracellular oxidase enzymes. Review of the literature^{2,3} shows that in Polyporaceae, with exceptions, the species which are bipolar, cause brown rots in wood and exhibit negative oxidase reactions in culture; while the species which are tetrapolar, cause white rots and give positive oxidase reactions. The present paper gives the result of investigation on the sexuality and oxidase tests of *Heteroporus biennis* (Bull. ex Fr.) Láz., a fungus which is reported to cause white rots⁴.

The fungus was collected at Dehra Dun growing from the stump of *Dalbergia sissoo* Roxb. The hymenial layers of the basidiomes collapsed very quickly and did not shed basidiospores. But the culture established from context tissue of basidiome, when grown on 2.5% malt-agar media in a 10 cm Petridish and kept in light at (20 ± 2) °C were found to fruit readily within 2-3 weeks producing abundant ba-

sidiospores. Spore deposit was collected on the upper lid of the Petridish by placing it upside down. Twenty monospore cultures were isolated therefrom following the usual nonquantitative dilution method⁵ and their monokaryotic nature was confirmed by checking the presence or absence of clamp connections in the mycelia.

The monospore cultures were paired among themselves in all possible combinations by placing the inocula 25–30 mm apart on 2.5% malt agar slants and incubated at 25°C for 2 weeks. The hyphae from the confrontation line between the paired mycelia in each tube were examined under the microscope for the presence or absence of clamp connections. The presence of clamp connections indicates the compatible mating of the paired mycelia and the absence of clamp connections indicates incompatible mating. The results were recorded.

Analysis of the results shows that the basidiospores of *H. biennis* fall into four mating groups on the basis of their compatibility. This indicates that the species is tetrapolar with allelomorphs for heterothallism at two loci. The distribution of mating types among the basidiospores studied is given below following the methods of Nobles *et al*⁶, where the conventional symbols $A_1A_2B_1B_2$ have been used to designate the alleles governing the interfertility:

A_1B_1 : 2, 3, 9, 14, 16, 18

A_2B_2 : 5, 10, 15, 19, 25

A_1B_2 : 4, 7, 8, 22

A_2B_1 : 11, 12, 13, 20, 24

Illegitimate pairings:

$A_1B_1 \times A_1B_2$ – 2 × 8 & 2 × 22

$A_1B_1 \times A_2B_1$ – 2 × 13

Representative culture from each mating group was deposited in the American type culture collection, Maryland, U.S.A.

Oxidase tests were carried out by growing mycelia from tissue culture for 7 days at 25°C on 2.5% malt agar media containing 0.5% gallic acid and tannic acid in separate Petridishes following the method of Davidson *et al*⁷. Moderately strong diffusion zones were produced in both the media. Blue colorations also appeared when few drops of alcoholic gum guaiacum solution was placed on actively growing cultures. These reactions present positive proof of the production of extracellular oxidase enzymes by the test fungus.

The data from the present investigation, therefore, is compatible with the earlier views^{2,3} that in

Polyporaceae, usually the species which are bipolar, cause brown rots in wood and exhibit negative oxidase reactions in culture; while the species which are tetrapolar, cause white rots and give positive oxidase reactions.

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PAPAVER RHOEAS AND MORINGA OLEIFERA, TWO NEW HOSTS OF PAPAYA POWDERY MILDEW

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ULLASA AND SOHI¹ reported a new powdery mildew disease of papaya due to *Leveillula taurica*. Since this disease is becoming serious and endemic where varieties like 'Washington' and 'Coorg Honey Dew' are grown, especially during nursery stage and early stages of plant growth, a survey was conducted in July 1982 for possible collateral hosts of this powdery mildew in and around Bangalore. During our initial survey we collected powdery mildew infected leaves of *Papaver rhoeas* L. and *Moringa oleifera* Lam. from seedlings growing in close proximity to papaya nursery beds. Since seedlings of papaya, *Papaver* and *Moringa* were infected by *L. taurica* growing adjacent to each other, cross infection was suspected and further studies were initiated to know the host range and role of these plants as its collateral hosts.