

Characters of A and B lines, TNAU, India.

Line	Plant ht (cm)		Panicle length (cm)		Panicle exsertion <sup>a</sup> (cm)	Tillers (no.)		Root length (cm)		Straw dry wt (g)		Root dry wt (g)		Root to straw ratio		Grain setting (%)	
	A	B	A	B		A	B	A	B	A	B	A	B	A	B	A	B
V20	64	66	19.9	18.0	1.52	8	6	13.6	12.2	5.8	4.1	4.7	2.5	1.23	1.64	19.5	80.9
Zhen-shan 97	57	73	20.8	19.6	1.54	19	6	18.6	17.2	12.5	4.3	6.0	2.5	2.08	1.72	13.5	79.8
Er-jiu-Nan 1	63	65	18.8	17.3	1.64	20	8	18.0	17.0	14.5	4.5	8.5	3.0	1.71	1.50	11.0	88.6
Yar-ai-Zhao 1	67	68	18.5	19.3	1.66	17	9	14.0	14.8	8.5	7.5	7.5	5.0	1.13	1.50	16.2	68.5
Yar-ai-Zhao 2	70	78	22.5	21.2	1.68	15	6	10.6	11.6	8.3	6.1	5.5	4.7	1.51	1.30	9.6	74.7
IR46827	62	69	19.9	17.9	1.61	24	18	17.8	19.3	17.8	5.0	8.5	3.5	2.09	1.43	14.3	77.2
IR46828	62	74	22.1	19.8	1.62	19	13	17.7	15.1	17.5	5.2	7.0	3.3	2.50	1.56	7.5	77.9
IR46829	58	67	20.0	18.1	1.58	11	7	14.5	16.3	16.5	4.8	6.0	4.0	2.75	1.20	11.5	81.8
IR46830	58	63	21.4	18.5	1.60	21	8	18.2	17.1	15.3	4.6	7.7	4.0	1.99	1.15	17.6	76.6
TNMS31	90	96	22.0	21.5	1.65	17	10	14.7	14.2	16.6	11.5	9.2	8.5	1.80	1.35	9.5	85.9
TNMS37	82	93	22.1	22.9	1.74	15	9	18.9	17.2	18.3	9.0	8.0	6.5	2.29	1.38	17.9	87.9
Mean	67	74	20.7	19.5	1.62	17	9	16.1	15.6	13.8	6.1	7.2	4.3	1.92	1.43	13.5	80.0
CD (0.05)	16	21	2.3	2.6	ns	6	5	3.2	2.5	5.2	2.6	2.1	1.8	0.48	ns	3.4	12.4

<sup>a</sup>Values were zero for A.

size reflected by spikelet sterility. The reduction in height of A lines may be due to lack of panicle exsertion from the

boot leaf. Poor panicle exsertion in the male sterile lines may be associated with a nonrestorer gene or it may be due to

interaction between nonrestorer gene and sterile cytoplasm. □

#### Performance of three new hybrid rices

Xie Fangming, Hunan Hybrid Rice Research Center, Changsha, Hunan, China

We evaluated the yield potential and grain quality of three new hybrid rices in Changsha in May-Sep 1986. Seeds were sown 14 May; 30-d-old seedlings were transplanted at 2 seedlings/hill and 20×15-cm spacing in a randomized block design with 3 replications.

II-32 A/MH63 performed well and is expected to be released commercially (see table). Although its yield was not significantly higher than that of Shan You 63, a widely grown hybrid in south and southwest China, its seed production is considerably higher because the cytoplasmic male sterile (cms) line II-32 A possesses such floral traits as large stigma, good panicle, and stigma exsertion, suitable for a higher natural outcrossing rate.

The cms lines used in the new hybrids possess a cms system different from that of WA types. Tian-Ai A is gametophytic, others are sporophytic. MH63, the R line used in the four combinations, was derived from a strain of Gui 630/IR30.

Lodging caused some yield loss due to heavy rain during grain ripening. □

Performance of new hybrid rices in yield trials in Changsha, China, 1986.

Character	II-32 A/ MH63	Tian Ai A/ MH63	Guang-Tan 69 A/ MH63	Shan You 63 (check)
Plant height (cm)	119	119	123	117
Growth duration (d)	137	132	133	129
Panicles (no./m <sup>2</sup> )	296	342	320	311
Filled spikelets (no./panicle)	122	93	97	106
1000-grain wt (g)	27.2	27.6	25.5	29.3
Yield (t/ha)	8.5	7.8	7.4	8.3
Brown rice yield (%)	79.7	78.7	80.4	
length (mm)	6.5	6.7	6.6	
width (%)	2.6	2.5	2.4	
length: width	2.5	2.7	2.8	
Total milling yield (%)	75.7	72.7	73.8	
Head rice (%)	33.6	62.5	41.0	
Chalky rice <sup>a</sup> (%)	15.5	32.0	27.0	
Chalky area of milled rice <sup>a</sup> (%)	1.8	2.3	4.3	
Gel consistency (mm)	27	35	38.5	
Alkali spreading value (scale)	6.7	5.6	6.5	
Amylose content (%)	20.3	21.2	21.1	

<sup>a</sup>Based on the weight of rough rice.

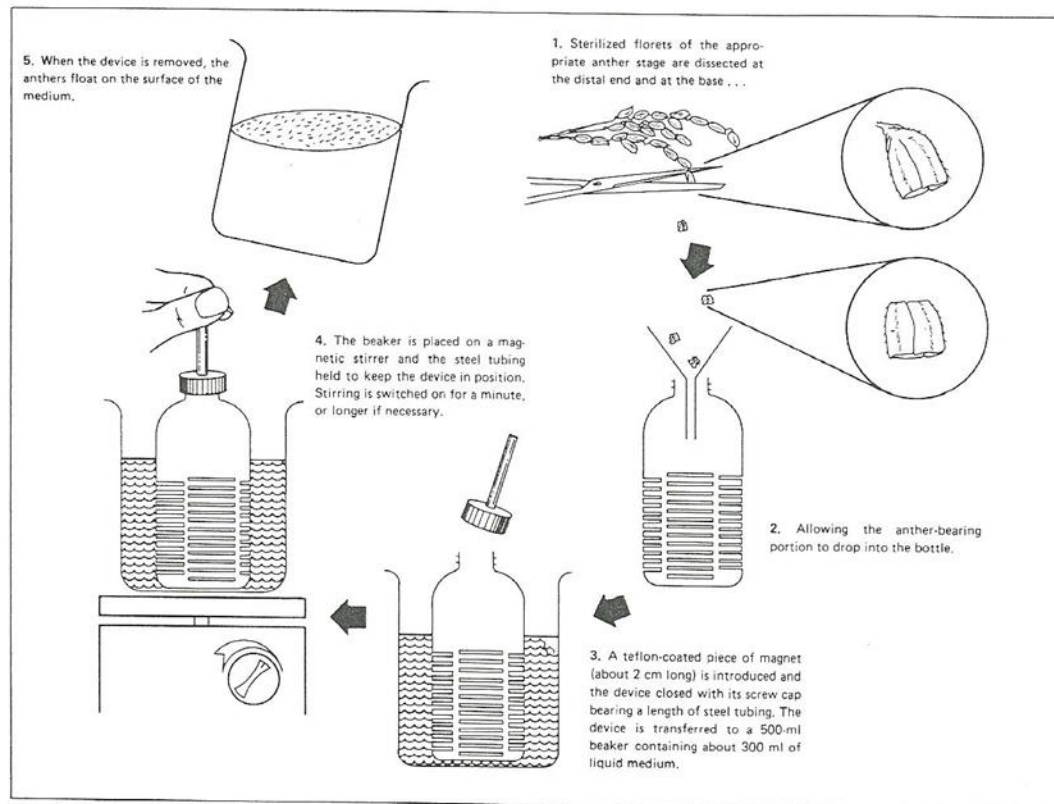
## Genetic Evaluation and Utilization TISSUE CULTURE

### A simple device for mass extraction of rice anthers

S. K. Raina and S. Hadi, Biotechnology Centre, Indian Agricultural Research Institute, New Delhi 110012, India

Anther culture techniques for use in breeding generally show low efficiency.

Inoculating several thousand anthers is necessary to generate a pollen-plants population large enough for selecting desirable type(s). Because their flowering duration is short, several F<sub>1</sub> hybrids or other material may have to be utilized within a short period. Isolation of anthers becomes a cumbersome and labor-intensive job.



Procedure for mass extraction of anthers from rice florets. All operations are carried out under aseptic conditions and, therefore, all the necessary instruments, glassware, etc. are sterilized.

These limitations restrict the quantity of anther culturing possible and have often been criticized as impractical.

We have evolved a simple device for mass extraction of anthers (see figure). We used an animal cage feeding bottle (125 ml capacity) made of polypropylene or polymethylpentane and fitted a 3.5-cm length of steel tubing into the screw cap of the bottle. From the bottom to about 3/4 up the bottle, horizontal slits about 1.5 mm wide and 3 cm long are made 4 mm apart in 4 vertical rows. Slits of one row correspond to the gaps of the adjacent row.

When florets are stirred in the bottle, the slits allow the anthers to pass through, leaving empty glumes behind. After each lot of florets, the debris can

be removed and the device rinsed with sterile distilled water.

We have recorded anther yields of over 80% and found that anthers can be

isolated in less than 50% of the time needed in conventional methods.

The device is resistant to breakage, autoclavable, and reusable. □

## Pest Control and Management DISEASES

### Leaf blast (Bl) outbreak in dry season rice

*N.K. Dhal, S.S. Nanda, S.S. Mishra, and B. Mishra, Regional Research Station (RRS), Chiplima 768026, India*

Bl caused by *Pyricularia oryzae*, known to be endemic in the hilly tracts of Orissa during wet seasons, has invaded

dry season rice in the Hirakud command areas of Western Orissa. Leaf Bl appeared for the first time in the 1982 dry season and was severe in 1986.

We surveyed disease incidence and found that popular varieties Daya, IR50, and ORS26-2014-4 were affected, with disease intensities ranging from 41.2 to 82.9%. However, IR36 and Pratap were resistant. Disease intensity