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# Pearl Millet

## Male-Sterile Line ICMA 4

### and its Maintainer Line ICMB 4

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- **Medium height (1.1-1.2 m)**
- **Matures early (ca 49 days to flowering)**
- **Has large grains (ca 10 g 1000<sup>-1</sup>)**
- **Has bold, loose, and bristled heads**
- **Glumes are purple**
- **Produces medium and tall hybrids**



**ICRISAT**

#### **Plant Material Description no. 7**

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## Purpose of Description

ICMA 4 and ICMB 4 were recommended by the All India Coordinated Millets Improvement Project (as 834A and 834B) for large-scale distribution and utilization in the production of experimental hybrids.

## Origin and Development

An  $S_4$  progeny was selected from Serere 10LB, obtained from Serere Research Station, Uganda, which maintained sterility on an individual, selected plant of Serere 10LA.  $F_1$  plants from a cross between an individual male-sterile plant and a selected plant from the  $S_4$  maintainer progeny were backcrossed four times to the B line as the recurrent parent, using plant(A) x plant(B) crossing with continuing pedigree selection. An A/B pair with similar phenotype and a stable male-sterile reaction was finally selected.

**Synonyms.** S10A/S10B; 834A/834B.

## Performance

**Parental lines.** The expression of male-sterility of ICMA 4 has remained stable over sites and season. ICMB 4 is an average pollen-shedder. Both ICMA 4 and ICMB 4 exhibit poor seed-set under dry weather conditions. No downy mildew incidence has been observed in ICMA 4 and ICMB 4 in downy mildew nurseries at Hisar and ICRISAT Center, as compared with maximum levels of 82% in the susceptible check, hybrid NHB 3. It is as susceptible to ergot and smut as the released and widely used male sterile lines 5141A and 111A.

**Hybrids.** In a preliminary yield test the highest-yielding hybrid on ICMA 4 yielded up to 22% more than MBH 110 (2990 kg ha<sup>-1</sup>) and was equally early in maturity (Table 1). Hybrids on ICMA 4 can often be recognized by the characteristic head traits inherited from the male-sterile line. Lodging occurs in some excessively tall hybrids. The hybrids have high seedling vigor, good growth rates, high biomass and bold seeds.

**Table 1. Grain yield of ICMA 4 hybrids, rainy season 1983.**

Hybrid	Grain yield (kg ha <sup>-1</sup> )			% of MBH 110
	PHF <sup>1</sup>	Hisar	Mean	
834A x 5595-1	3120	2440	2780	92.2
834A x (J1281 x SS-40)-2-3-16	3587	2827	3207	116.4
834A x (B282 x 3/4 Ex-Bornu-100)-11-9-2	3893	3200	3547	117.7
834A x (Gam 73 x MC)-74	4013	3280	3647	121.0
834A x 50-3-1-2	3347	3133	3240	107.5
834A x (B816 x 3/4 Ex-Bornu-105-11)-1-6-2	2800	4560	3680	122.1
834A x (5054B x F4FC1498-1-1-4)-11-1	3000	2373	2687	89.2
834A x (LCSN72-1-2-2 x S10B-106)-2-2-1	4240	3467	3354	111.3
MBH 110	2618	3280	2949	100.0
MBH 110	2640	3427	3034	100.0
BJ 104	1764	2164	1964	65.2

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**Table 2. Morphological characters of ICMA 4 at ICRISAT Center, dry (summer) season 1984.**

Character	5141A (check)	ICMA 4
Time to 50% bloom (d)	51	49
Plant height (cm)	85	113
Head length (cm)	15	17
Head girth (cm)	5.2	8.6
Effective tillers/plant	4.0	2.6
1000-grain mass (g)	6.3	9.6

## Plant Characters

ICMA 4 and ICMB 4 are of medium height (1.1-1.2 m), shy in tillering and medium-early in maturity (about 50 days to 50% flowering) (Table 2). Heads are loose, well exerted, mostly bristled with purple glumes and are medium-long (17 cm), having good girth (8-9 cm) and a sharply conical shape. Plants have broad leaves, good seedling vigor and high growth rate.

## Seed Characters

The grain is large, 9-10 g 1000<sup>-1</sup>, round, and dark gray in color.

## **Plant Material Descriptions from ICRISAT**

Leaflets in this series provide brief descriptions of crop genotype identified or developed by ICRISAT, including:

- germplasm accessions with important agronomic or resistance attributes;
- breeding materials, both segregating and stabilized, with unique character combinations; and
- cultivars that have been released for cultivation.

These descriptions announce the availability of plant material, primarily for the benefit of the Institute's cooperators. Their purpose is to facilitate the identification of cultivars and lines and promote their wide utilization. Requests should be addressed to the Director General, ICRISAT, or to appropriate seed suppliers. Stocks for research use issued by ICRISAT are sent to cooperators and other users free of charge.

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