

## Cytoplasmic male-sterile lines of postrainy season sorghum developed at All India Coordinated Sorghum Improvement Project, MPKV, Rahuri

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The All India Coordinated Sorghum Improvement Project (AICSIP) at Mahatma Phule Krishi Vidyapeeth (MPKV), Rahuri was established in 1973 with the objective of developing high-yielding sorghum (*Sorghum bicolor*) varieties and hybrids with tolerance/resistance to biotic and abiotic stresses. The Review Team of 1985 to 1987 stressed the need for research on postrainy season sorghum and accordingly a decision in Annual Group Meeting of AICSIP 1992 was taken on this issue to have the postrainy season sorghum research concentrated only at MPKV, Rahuri. Despite the maximum sorghum area under postrainy season sorghum and known advantages of heterosis in sorghum especially in rainy season no concerted efforts were made in this direction particularly in cytoplasmic male sterile (CMS) lines in postrainy season sorghum background. Accordingly, this center had been pursuing a postrainy season sorghum breeding program since past several years. These efforts resulted in developing 20 male sterile lines. These are 42A, 49A, 53A, 36642A, 104A, 116A, 117A, 127A, 1222A, 484A, 1543A, 4111A, 9168A, 9176A, 152016A, 1409A, 185A, RMS 2010-10A, RMS 2010-16A and RMS 2010-24A. Among these, the line 104A is being extensively used in hybrid development programs. The postrainy season sorghum hybrids CSH 15 and CSH 19, which are nationally released, are based on CMS 104A. The salient features of the above CMS lines are given below.

### 42A

It is developed from a cross 1528 B × SPV 504 during 1986. It has non-tan plant pigment, green colored midrib, semi compact long panicle with bold grains. It has dwarf plant stature and is medium in maturity. It is tolerant to shootfly and charcoal rot.

### 49A

It is developed from a cross 116 B × 26B during 1986. It has non-tan plant pigment, green colored midrib, semi compact panicle with medium bold grains. It has tall plant stature and is medium in maturity. It is tolerant to shootfly and charcoal rot.

### 53A

It is developed from a cross 116 B × 26B during 1987. It has non-tan plant pigment, green colored midrib, semi compact panicle with flat grains. It has tall plant stature and is medium in maturity. It is tolerant to shootfly and charcoal rot.

### 36642A

It is developed from a cross 1528 B × SPV 504 during 1987. It has non-tan plant pigment, green colored midrib, semi compact long panicle with medium bold grains. It has dwarf plant stature and is medium in maturity. It is tolerant to shootfly and charcoal rot.

### 104A

It is developed from a cross 296 B × SPV 504 during 1988. It has non-tan plant pigment, green colored midrib, medium thick stem, exerted boot leaf touching the base of earhead, semi compact and cylindrical panicle with flat apex, reddish base colored glumes, plant height of 130 cm, awns, broad leaves with erect phyllotaxy, good grain withering reaction, partial senescence, bold and flat seed, yellow and corneous endosperm, and is photo-insensitive. It is tolerant to shoot fly. The postrainy season sorghum hybrids CSH 15 and CSH 19, which are nationally released are based on this CMS line. It has been notified under 821(E) dated 13/9/2010.

### 116A

It is developed from a cross 296 B × SPV 504 during 1988. It has non-tan pigment, medium plant stature, dark green and broad leaves, bolder round seed with creamy white luster color, slightly curved peduncle and spindle shaped earhead. This male sterile line has good potential for grain yield (2 t ha<sup>-1</sup>). It is moderately tolerant to shootfly.

### 117A

It is developed from a cross 296 B × SPV 504 during 1988. It has non-tan pigment, dark green and broad

leaves, and bolder round seed. This male sterile line has good potential for grain yield, medium plant stature, slightly curved peduncle and spindle shaped earheads. It is moderately tolerant to shootfly.

#### **127A**

It is developed from a cross 1409 B × 2077 B during 1988. It has non-tan pigment, dark green and broad leaves, and bolder round seed. This male sterile line has good potential for grain yield, medium plant stature, slightly curved peduncle and spindle shaped earheads. It is tolerant to shootfly.

#### **484 A**

It is developed from a cross 296 B × Swati during 1989. It has non-tan pigment, light green and broad leaves, and medium round seed. This male sterile line has good potential for grain yield, medium plant stature and cylindrical shaped earheads. It is tolerant to shootfly.

#### **4111A**

It is developed from a cross 104 B × Degaon dagadi during 1989. It has non-tan pigment, dwarf plant stature, green and broad leaves, and medium round seed. This male sterile line has good potential for grain yield and semi compact earheads. It is tolerant to shootfly.

#### **1222A**

It is developed from a cross 104 B × Degaon dagadi during 1990. It has non-tan pigment, and dark green and broad leaves. This male sterile line has longer semi compact earheads and medium plant stature. It is tolerant to shootfly.

#### **1543A**

It is developed from a cross 104 B × Degaon dagadi during 1990. It has non-tan pigment, dark green and broad leaves. This male sterile line has semi compact earheads with medium size seed, medium plant stature and is mid-late in maturity. It is tolerant to shootfly and charcoal rot.

#### **9168A**

It is developed from a cross 104 B × RS 29 during 1990. It has tan pigment, tall plant stature, light green and narrow leaves. This male sterile line has semi compact earheads with bolder round seed, laxy panicle with white seed and good quality seed set. It is early in maturity and tolerant to shootfly.

#### **9176A**

It is developed from a cross 104 B × Degaon dagadi during 1990. It has tan pigment, tall plant stature, and light green and broad leaves. This male sterile line has semi compact earheads with bolder round seed, laxy panicle with white seed and good quality seed set. It is early in maturity and tolerant to shootfly.

#### **152016A**

It is developed from a cross (1543 B × 2077B) × 116B during 1990. It has non-tan pigment, medium plant stature, green and broad leaves, and medium round seed. This male sterile line has good potential for grain yield and semi compact earheads. It is tolerant to shootfly.

#### **1409A**

It is developed from a cross 104B × ICSB 36209 during 1997. It has non-tan pigment, medium plant stature, green and narrow leaves, elliptical and semi compact panicle, medium round seed, longer panicle with medium size seed and good seed yield potential. It is early in maturity and tolerant to shootfly.

#### **185A**

It is developed from a cross 185B × Swati suitable for *rabi* season during 2009. It has tan pigment, medium plant stature, dark green and broad leaves, semi compact and longer panicle with small, round seed and good seed yield potential. It is early in maturity and has higher shootfly resistance.

#### **RMS 2010-10A**

It is developed from a cross 104B × (1543B × SP 6234B) during 2010. It has non-tan pigment, medium plant stature, dark green and broad leaves, semi compact panicle with round, medium size seed and good seed yield potential. It is early in maturity and has bold and pearly white grain. It is also tolerant to shootfly.

#### **RMS 2010-16A**

It is developed from a cross (1543B × 36642B) × 1409B during 2010. It has non-tan pigment, medium plant stature, dark green and broad leaves, semi compact panicle and good seed yield potential. It is early in maturity and has bold, round and pearly white grain. It is also tolerant to shootfly.

**RMS 2010-24A**

It is developed from a cross 1409B × (4111B × 7463B) during 2011. It has non-tan pigment, medium plant

stature, dark green and broad leaves, longer semi compact panicle and good seed yield potential. It is late in maturity and has bold, round and pearly white grain. It is also tolerant to shootfly.