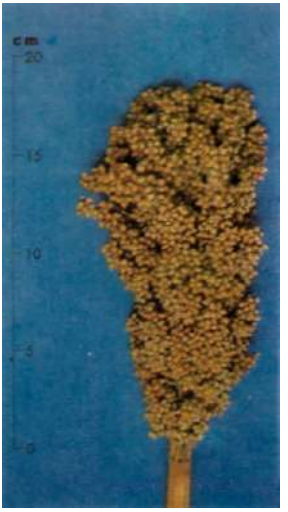
Midge-resistant Sorghum Variety ICSV 197



- **Tall (1.8-3.0 m)**
- **Matures in 115-125 days**
- **Highly resistant to sorghum midge**
- **Resistant to several leaf diseases**
- **Dual type (grain yield 2.8 t ha^{-1}; fodder 10.0 t ha^{-1})**
- **Recommended for midge-endemic areas at intermediate and low altitude**

ICRISAT

Plant Material Description no. 11

International Crops Research Institute for the Semi-Arid Tropics
Patancheru, Andhra Pradesh 502 324, India

1987

Purpose of Description

ICSV 197 was recommended in 1986 by the All India Coordinated Sorghum Improvement Project (AICSIP), ICAR, India, for minikit trials in sorghum midge-endemic areas in India where rainy-season (kharif) sorghum is grown. It is a dual-type midge-resistant sorghum variety and can be cultivated without protection against midge in the rainy season.

Origin and Development

ICSV 197 was developed by pedigree selection from a cross of IS 3443 ^{x} DJ 6514 made in the 1980 postrainy season at ICRISAT Center, Patancheru. The parent IS 3443 is a Caudatum-Zera Zera type Achigo landrace from Sudan. DJ 6514 is an improved midge-resistant Durra-kafir type sorghum variety bred by the University of Agricultural Sciences, Dharwad, India. Pedigree selection in progenies of the F_2, F_3, F_4, and F_5 generations was done alternatively under natural midge infestation at Dharwad during the late rainy season and at ICRISAT Center, Patancheru, during the late postrainy season, India. The F_6 bulk was evaluated for midge resistance under natural midge infestation at Dharwad during the late rainy season of 1983 and was observed to be a line with high midge resistance. During 1984-85 the pure line was tested in AICSIP yield trials and its sorghum midge nursery as SPV 692.

Synonyms. SPV 692; PM 11344.

Performance

ICSV 197 showed high levels of stable resistance to sorghum midge (*Contarinia sorghicola* Coq.) across locations and seasons in India, West Africa, and Latin America during 1984 and 1985 in different multilocation sorghum midge nurseries (see Table 1). It has also shown high levels of resistance to sorghum midge under no-choice conditions over seasons during 1983-85 at ICRISAT Center. ICSV 197 ranked first for grain yield among the varieties tested under midge infestation at Dharwad in 1984. It yielded on a par with CSV 11 (a released high-yielding variety) in different multilocation varietal yield trials of ICRISAT and in All India Coordinated Sorghum Improvement Project Preliminary Varietal Trials in 1984 and 1985 (see Table 2). ICSV 197 is a tall variety and gives good fodder yields (about 30% more than CSV 11).

Plant Characters

ICSV 197 is a photoperiod-insensitive medium-maturing (115-125 days) variety that grows to a height of 1.8 to 3.0 m. It has a tan plant color, a medium-thick and nonjuicy stalk, drooping leaves with a white midrib, and a

Table 1. Performance of ICSV 197 for midge resistance (% seed set) under different midge infestation levels over locations and seasons, 1984-85.

Cultivar	Headcage conditions				Natural conditions			Damage rating[1]		
	ICRISAT Center		Dharwad		ICRISAT Center	Dharwad	Burkina Faso	1984 ISMN[2]	1984 MLMN[3]	1985 MLMN[4]
	1984R[5]	1984P	1984R	1985R	1984R	1984R	1985R			
ICSV 197	94	85	94	84	85	90	82	1.5	1.5	1.3
Resistant check:										
DJ 6514	91	92	91	83	79	64	99	1.9	1.5	1.3
Susceptible checks:										
CSH *1*	14	17	4	15	13	26	57	4.1	4.5	4.5
Swarna/local	0	15	9	13	22	-	50	3.9	4.8	5.0
SE	±0.9	±2.2	±1.0	±2.0	±3.5	±4.7	±5.0	-	-	-
CV (%)	4	10	5	9	12	8	36	-	-	-

1 = Damage rating: 1 = <10% damage; 2 = 11-25% damage; 3 = 26-40% damage; 4 = 41-60% damage; and 5 = >60% damage.

2 = International Sorghum Midge Nursery (average damage rating across 10 locations: Dharwad, Navsari, Parbhani, ICRISAT Center, Kovilpatti, Tolichowki (in India), Ghana, Sotuba (in Mali), and El Salvador.

3 = Multilocation Midge Nursery (average damage rating across four locations: ICRISAT Center, Dharwad, Hisar, and Pantnagar).

4 = Average damage rating across three locations: ICRISAT Center, Dharwad, and Hisar.

5 = R= rainy season; P = postrainy season.

Table 2. Grain yield (kg ha^{-1}) of ICSV 197 across locations in different yield trials[1].

Cultivar	AVT 84	ARSVAT 84	ISVAT 85	ACISIP PVT 84K	AICSIP PVT-1 85K
ICSV 197	3515	2800	3562	3582	3153
CSV 11	3321	2900	3772	3768	3281
Hybrid check	3788	3430	4563	4608	4419
Trial mean	3148	2670	3680	3144	2942

1. AVT = Advanced Varietal Trial (36 entries) conducted at 8 ICRISAT locations in India. ARSVAT = Asian Regional Sorghum Varietal Adaptation Trial (36 entries) conducted at 12 locations in Asia. 1SVAT = International Sorghum Varietal Adaptation Trial (25 entries) conducted at 20 locations in different semi-arid tropical countries. AICSIP PVT = All India Coordinated Sorghum Improvement Project Preliminary Varietal Trial (PVT 84K—49 entries; PVT-1 85K—32 entries) conducted in India at 9 locations in 1984 and at 10 locations in 1985.

short and erect boot leaf. The panicle is semi-compact at the base, loose and broad at the apex, and is distinctly clustered with a primary axis halfway. Glumes are short, straw-colored, and cover about a quarter of the grain. ICSV 197 responds favorably to nitrogen and high plant population (up to 0.18 million plants ha^{-1}). This dual-type variety is well adapted for growing in both rainfed and irrigated areas during the rainy season. Like other commercial sorghum cultivars, it is susceptible to shoot fly and stem borer attack and requires chemical protection in very late plantings. But it is less susceptible to leaf diseases (anthracnose, rust, and zonate leaf spot).

Seed Characters

ICSV 197 has asymetrical and small light cream grains (2 g 100^{-1}) with a beak, without subcoat. The pericarp is thin and lustrous. The grain contains 10.3% protein and 2.9% lysine (per 100 g protein). The roti and porridge quality of ICSV 197 is good and comparable in India with that of CSV 11, a popular sorghum variety, and CSH 11, a popular hybrid.

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