
Pigeonpea Hybrid ICPH 8 (ICPH 82008)



- First commercial pigeonpea hybrid
- High yield potential
- Vigorous growth
- Matures in 115-135 days
- Wide adaptation
- Drought tolerance



ICRISAT

Plant Material Description no. 40

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ICPH 8 (ICPH 82008) is the first hybrid of a pulse crop released for commercial cultivation. The performance of this pigeonpea hybrid has been outstanding in diverse environments, particularly in the central zone of India.

Origin and Development

Hybrid ICPH 8 was bred by hybridizing a genetic male-sterile line ms Prabhat (DT) and a male-fertile inbred line ICPL 161, both developed at ICRISAT Center. To develop the male-sterile line, the *ms₁* gene was transferred from the original medium-duration source genotype (MS 3A) to a short-duration pigeonpea cultivar Prabhat by backcrossing. ICPL 161 was derived through pedigree selection from the cross ICPX 74076 (ICP 6 x Pant A2) with selection number 74076-46-BI-1-HINDT4-B.

Synonym

ICPH 82008

Plant Characters

The ICPH 8 plants are vigorous, semispreading, and indeterminate in growth habit with profuse branching, flowering, and podding characteristics. Plant height varies between 125 and 173 cm with an average of 140 cm (Table 1). It flowers 80-85 days after sowing and reaches 75% maturity in 115-135 days. ICPH 8 has yellow flowers and green stems; its leaves are narrow and green. The pods are green with dark purple streaks. Though naturally susceptible to major pigeonpea diseases, the hybrid escapes both fusarium wilt and sterility mosaic diseases because of its short duration.

Table 1. Agronomic characterization of pigeonpea hybrid ICPH 8 and a control cultivar UPAS 120, central zone, India, 1984-89.

Trait	ICPH 8	UPAS 120
Time to 50% flowering (days)	80-85	73-81
Time to 75% maturity (days)	115-142	112-132
100-seed mass (g)	7.0-8.0	6.5-8.3
Plant height (cm)	125-173	100-140
Total dry matter (t ha ⁻¹)	5.87	3.06

Seed Characters

The seeds of ICPH 8 are brown and round, with a 100-seed mass of 7-8 g. The average protein content of *dhal* made from ICPH 8 is 23.3%, and the hybrid's cooking time is comparable with that of currently grown varieties.

Cover, clockwise from bottom right : ICPH 8 plants produced by pollination (left) of male-sterile flowers by insects. Insects collect pollen from a male-fertile anther (top left) and pollinate a male-sterile anther, such as the one alongside.

Performance

ICPH 8 has been extensively tested for 6 years in central India. In experimental plots its average seed yield was 1.78 t ha⁻¹ (Table 2), indicating a 41% superiority in yield over that of the control cultivar UPAS 120. In multilocational agronomy trials conducted in 1989 by the All India Coordinated Pulses Improvement Project (AICPIP) the hybrid yielded 1.4 t ha⁻¹, a seed yield 49.6% higher than that of the control cultivar Pragati (ICPL 87). Similarly, in 12 minikit trials conducted in Maharashtra and Gujarat states of central India during 1989, ICPH 8 gave 25.6% higher seed yields than that of the control cultivar Pragati (Table 3). This hybrid has shown good plasticity at plant densities ranging from 16 to 66 plants m⁻² without adversely affecting its seed yield. It performs well under drought stress and under excess-moisture conditions.

Table 2. Seed yields of pigeonpea hybrid ICPH 8 compared with those of the control cultivar UPAS 120, central zone, India, 1984-89.

Year	No. of trials	Seed yield (t ha ⁻¹)	
		ICPH 8	UPAS 120
1984	7	2.58	1.93
1985	2	1.52	1.01
1986	3	1.09	0.79
1987	7	1.50	1.13
1988	10	1.48	1.15
1989	12	1.94	1.21
Weighted mean		1.78	1.26

Table 3. Seed yields of pigeonpea hybrid ICPH 8 compared with those of the control cultivar Pragati (ICPL 87) in minikit trials, central zone, India, 1989.

State	No. of trials	Seed yield (t ha ⁻¹)	
		ICPH 8	Pragati
Maharashtra	5	1.43	1.19
Gujarat	7	2.07	1.61
Weighted mean		1.80	1.44

Seed Production Technology

ICRISAT has developed a commercially viable seed production technology for production of the hybrid. This technology and the parental seeds have been made available to several private and public seed companies for large-scale seed production.



Roguing to remove fertile plants from female rows in a public-sector company's seed-production plot of ICPH 8 at Nandikotkur, Andhra Pradesh, India.

Plant Material Descriptions from ICRISAT

Leaflets in this series provide brief descriptions of crop genotypes 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 to 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.

ICRISAT is a nonprofit, scientific, research and training institute receiving support from donors through the Consultative Group on International Agricultural Research. It serves as a world center for the improvement of grain yield and quality of sorghum, pearl millet, finger millet, chickpea, pigeonpea, and groundnut, and acts as a world repository for the genetic resources of these crops. The plant materials announced in these leaflets are end-products of this work, which is aimed at enhancing the agricultural productivity of resource-poor farmers throughout the semi-arid tropics.