

## RESEARCH NOTES

### AH-107 (Gouri)—an Early Maturing Promising Cotton Variety

In project area of Northern Karnataka, 170 Co<sub>2</sub>, Mysore Vijaya, Hampi and DS-59 are the important cotton varieties recommended besides Varalaxmi and Jayalaxmi hybrid cottons. Amongst varieties 170 Co<sub>2</sub>, Mysore Vijaya and Hampi have lost their yielding ability while DS-59, a recently released variety, is yet to become popular amongst the farmers of Tungabhadra project. In these circumstances there is a great need for an improved variety that is high yielding and early maturing.

AH-107, named as Gouri, a new strain of *G. hirsutum* has been identified from a cross AV-2773 X DS-56 effected during 1974-75. It has undergone several yield and quality tests on research stations, farmers' field, Cotton Technological Research Laboratories at Bombay and Dharwad and Spinning Mills at Gokak and Banahatti.

AH-107 over Six seasons (1982-88) on research farms has given 23.2 q of seed cotton or 8.8 q of lint per ha representing 42.6 or 56.1 per cent increases in seed cotton yield or lint yield over 170 Co<sub>2</sub> (Table 1). Over three seasons and three research farms, AH 107 has given 21 q of seed cotton or 7.6 q of lint per ha as compared to 19 q of seed cotton or 6.3 q of lint per ha by Local check (Table 3). It has been tried in rice fallows of Aduthurai and Srivilliputhur during 1985 and it has given on an average 1360 kg/ha as against 1130 kg/ha by MCU 7. Similar yield trials on large plots basis ranging from half an acre to one acre on farmers' field over 21 locations and three seasons. (1985-88) indicate that AH-107 is distinctly superior to either 170 Co<sub>2</sub> or Sharada by way of recording an average yield of 1433 kg/ha

as against 1011 kg/ha by Sharada and 1230 kg/ha by 170 Co<sub>2</sub>.

Besides the distinctive higher yield of AH-107 over 170 Co<sub>2</sub>, it has a good compact plant type with less foliage and matures in about 150 days which is more relevant for double cropping system and thereby minimising production risks. It possess more synchronous flowering and fruiting habit. AH-107 yielded 1583 and 1682 kg/ha as against 932 and 1111 kg/ha by Sharada at 140 and 150 days, respectively indicating thereby significant superiority of AH 107 over Sharada. Besides the yield of seed cotton the wheat yield after AH-107 was 2253 kg/ha as against 2033 kg/ha after Sharada. This also speaks about the early completion of cotton life cycle and the high amount of leaf litter falling on the ground.

The technological evaluation for quality at CTRL, Bombay and Dharwad confirmed that AH 107 is superior to 170 Co<sub>2</sub> (Table 2). At 50's its CSP value is 2175 as against 1990 by 170 Co<sub>2</sub>. The mill test conducted at Gokak and Banahatti also show that AH 107 is having less trash content, better fibre maturity coefficient, better fibre elongation, less number of neps and less fibre index than 170 Co<sub>2</sub>.

Reaction of AH 107 to pest and diseases indicates that it is mildly susceptible to tolerant to jassids and thrips in the seedling stage. However, with one spray under irrigated conditions by systemic insecticides the crop would recover very rapidly. Regarding boll worm damage, its performance is same as that of any cotton varieties cultivated. Incidentally AH 107 has shown resistant grade to both alternaria and bacterial blight.

**Table 1** Performance of AH-107 over seasons at ARS, Arabhavi

Year	Yield of seed cotton kg/ha		Lint yield kg/ha		Ginning %		Mean fibre length mm	
	AH-107	Local check	AH-107	Local check	AH-107	Local check	AH-107	Local check
1982-83	2950	1610	1163	390	39.5	36.7	27.0	23.4
1983-84	1482	1225	580	443	39.2	36.2	26.7	24.6
1984-85	3035	1938	1162	658	38.3	34.0	22.2	25.4
1985-86	1233	1018	448	332	36.4	32.7	23.4	24.4
1986-87	2802	2250	1042	758	37.2	33.7	24.4	28.6
1987-88	2433	1730	880	598	36.2	34.6	24.5	26.7
Mean	2322	1628	879	563	37.8	34.6	24.7	25.3
% Increase	42.6	—	56.1	—	—	—	—	—

**Table 3** Performance of AH 107 over locations and seasons

Variety	Year	Kapas (K) and Lint (L) yield in kg/ha							
		Arabhavi		Siraguppa		Raichur		Average	
		K	L	K	L	K	L	K	L
AH 107	1985-86	1233	448	2170	790	—	—	1541	564
	1986-87	2802	1042	1990	760	—	—	2396	901
	1987-88	2433	880	1912	630	2775	915	2374	803
	Average	2156	790	2024	726	2775	915	2103	756
Local Check	1985-86	1018	338	2670	830	—	—	1844	581
	1986-87	2250	758	1840	680	—	—	2148	719
	1987-88	1730	598	—	—	—	—	1730	598
		1666	562	2255	755	—	—	1907	632

In general cotton yields in GLBC area are reducing year due to the continuous use of old traditional varieties like 170 Co<sub>2</sub> and Mysore Vijaya. As a result cotton cultivation

in GLBC area has become uneconomical. Since interspecific hybrid cottons like Varalaxmi and Jayalaxmi have not made any impact in this area unlike Malaprabha and Tungabhadra

Table 2 Micro and full spinning test results

Fibre Properties	Micro spinning test				Full Scale spinning test			
	CTRL, Dharwad		CTRL, Bombay		Gokak Mill			
	AH 107	Sharada	170 Co <sub>2</sub>	AH 107	AH 107	Sharada	170 Co <sub>2</sub>	
Mean fibre length (mm)	25.7	22.1	25.7	26.7	23.9	24.2	22.3	25.0
2.5% Span length (mm)	28.1	23.8	28.3	29.5	26.1	28.0	26.2	29.5
Uniformity ratio %	46.0	50.0	47.0	46.0	46.0	54.0	52.0	48.0
Fineness (Millitex)	159.0	155.0	125.0	134.0	126.0	—	—	—
Micronaire value	4.1	3.9	3.2	3.4	3.2	—	—	—
Maturity Coeff.	0.7	0.72	0.62	0.80	0.80	0.82	0.67	0.73
Bundle Strength 'O' guage g/t	44.0	43.7	38.6	39.7	44.0	—	—	—
PSI lb/mg	8.8	8.15	7.80	7.4	8.2	—	—	—
Tenacity								
50's CSP	—	—	—	1990	2175	—	—	—
g/t	—	—	—	9.55	10.44	—	—	—
Stelometer g/t	—	—	—	—	—	18.9	15.5	16.4
Shirley Elongation	—	—	—	—	—	6.66	6.12	6.40
M/c	—	—	—	—	—	3.96	2.95	3.16
Nephs	—	—	—	—	—	38.0	77.0	86.0

project areas, there was an urgent need for the development of new cotton varieties with good yield potentiality for this tract. Besides GLBC area, in other projects where irrigation is available for 6 to 7 months, an idea of growing early maturing cotton varieties in kharif followed by some rabi crops like wheat, maize, safflower or bengalgram was thought off. Accordingly AH 107 cotton variety was developed and tried under several situations. In one of the farmer's field (Sri Korishettar of Soundatti) the economics of growing AH 107 in Kharif followed by wheat in rabi was worked out as against the sole crop of DCH 32. Incidentally growing AH 107 followed by wheat was profitable by Rs. 500/- per ha than growing DCH 32 alone.

Since there is a great demand of medium staple cotton than long staple cotton in the country, varieties like AH 107 have

greater impact on national economy. Hence, Gouri has better prospects in the years to come.

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## **Soil Solarization for Weed Control**

Weeds cause heavy losses to crops. Any weed management practice/system should aim at reducing the weed seed build-up in the soil, which may act as a potential seed bank in subsequent years. Mulching the soil with transparent polyethylene sheet in the hot season prior to planting controls the weed germination (Chan and Katan, 1980). Little information is available regarding weed control by soil solarization in the country. Hence, the experiment was conducted to study the weed seed germination control by soil solarization.

Solar heating involves the use of heat as a lethal agent for weed seed germination through the use of traps for capturing solar energy by means of transparent polyethylene soil mulches. The following procedure was adopted for effective solar heating of soil.

- 1) Transparent polyethylene sheet was used to transmit most of the solar radiation that heats the soil.
- 2) Soil mulching was done during the period of high temperature and intense solar irradiation.