

ON-FARM TESTING OF FCV TOBACCO HYBRIDS (CH-1 & CH-3) IN NORTHERN LIGHT SOIL AREA OF ANDHRA PRADESH- AN ANALYSIS

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Technology transfer is a key step for development of agriculture. On-farm testing has been identified as a tool to refine or modify the technology for better adoption by the farmers. Besides, these trails provide an opportunity for farmer management decisions.

On-farm testing is to test and evaluate the research results at farmers' field. The study was undertaken with the following objectives:

1. To assess the potential characteristics of the new pipeline hybrids CH-1 and CH-3.
2. To analyze the acceptability and suitability of the hybrids and to identify the constraints in recommended situations.
3. To assess the acclimatization of the genotypes to the complexity of social and natural environments in NLS zone.

Three villages viz., Gopalapuram from Lower NLS, Ankalagudem from Middle NLS, and Achiyypalem from Upper NLS were selected to carry out on-farm trials based on purposive random sampling. One hectare was allotted as a representative area for testing of two hybrids viz., CH-1 & CH-3 in comparison with ruling variety, Kanchan at three locations during 2007-08 & 2008-09 crop seasons (Annual Report of CTRI, 2009-10). Observations were recorded on morphological characters, yield parameters and pest and disease incidence.

The recommended production and plant protection practices were scrupulously followed by the farmers in the on-farm trails. The hybrids were planted at 100 cm X 60 cm in one hectare plot each.

Green manuring with sunhemp and application of FYM @ 10-12 tones/ ha was done. Farmers were supplied healthy seedlings as input. The planting was undertaken in October month by following the recommended flat planting. The recommended fertilizer dose i.e. 115:60:120 of NPK ratio was applied by Dollop method. Suckers were controlled with the help of 4% Decanol @ 10 ml per plant. The crop growth and cultural practices were regularly monitored.

a) Yield performance of hybrids in NLS Region

Observations on yield, content of nicotine, reducing sugars, and chlorides in cured leaf, pest and disease incidence besides farmer opinion were recorded for all the three varieties.

At Achiyypalem (upper NLS), the hybrid CH-1 recorded 3000 kg /ha cured leaf with 80% bright-grades, CH-3 yielded 2813 kg/ha cured leaf with 75% bright-grades against the check variety Kanchan, with cured leaf yield of 2375 kg/ha with 70% bright-grades (Table-1). At Ankalagudem (middle NLS) the hybrid CH -1 recorded 2050 kg/ha cured leaf with 68% bright-grades and CH-3 gave 2063 kg/ha cured leaf with 65% bright-grades against the check variety Kanchan, with cured leaf yield of 2000 kg/ha with 60% bright- grades. At Gopalapuram (Lower NLS), the hybrid CH-1 recorded 2765 kg/ha cured leaf with 75% bright-grades, CH-3 yielded 2555 kg/ha cured leaf with 72% bright grades against the check variety Kanchan, with cured leaf yield of 2230 kg/ha with 70% bright-grades. The hybrids produced more number of mean curable leaves (32) than the check variety (28).

Table 1. Yield data of the hybrids in NLS region (2007-08 & 2008-09)

Variety	Upper NLS		Middle NLS		Lower NLS		Average yield & quality	
	Yield (kg/ha)	Bright grades (%)	Yield (kg/ha)	Bright grades (%)	Yield (kg/ha)	Bright Grades (%)	Yield (kg/ha)	Bright grades (%)
CH-1	3000	80	2050	68	2765	75	2605	74.33
CH-3	2813	75	2063	65	2555	72	2477	70.67
Kanchan	2375	70	2000	60	2230	70	2201	66.67

Thus, the hybrids CH-3 and CH-1 recorded 11.7 -17.01 percent higher cured leaf mean yield and 4 - 7.7 percent higher bright mean grade out turn over Kanchan.

b) Quality performance of tobacco hybrids in NLS region

The results revealed that the chemical quality traits like nicotine, reducing sugars, and chlorides in both the hybrids and in check, Kanchan were within the prescribed limits at three locations.

of Cucumber Mosaic Virus (upper NLS) and Tobacco Mosaic Virus (Lower NLS) was observed to be low. However, the incidence of TMV was recorded to an extent of 15-20% in Middle NLS (Ankalagudem).

The farmers exposed to On-farm Trails (OFTs) were convinced with the performance of new pipe line hybrids CH-1 and CH-3 under farm situation. Farmers have shown interest to grow CH-1 and CH-3 hybrids because of their higher vigor, short internodes, more number of curable leaves and high

Table 2. Cured leaf quality of the tobacco hybrids in NLS region (2008- 2009)

Variety	Upper NLS			Middle NLS			Lower NLS		
	Nicotine	Reducing sugars	Chlorides	Nicotine	Reducing sugars	Chlorides	Nicotine	Reducing sugars	Chlorides
CH-1	2.68	18.74	1.71	2.83	7.91	0.25	2.37	15.19	0.53
CH-3	2.69	15.40	0.99	4.12	9.58	0.43	3.12	12.87	0.56
Kanchan	1.88	18.20	0.32	3.57	13.68	0.27	2.45	18.08	0.55

c) Pest and Disease incidence

Observations were recorded on the incidence of pests and diseases. The incidence of stem borer was observed at Gopalapuram in both the experimental as well as in control plots. The incidence of *Spodoptera* was found to be negligible in three plots at three locations. Incidence of bud worm was noticed in middle NLS and lower NLS. However, tobacco aphid was the major pest observed in NLS area. The recommended pest management practices were advocated for adoption by the farmers. The incidence

yielding capacity and higher per cent of bright grade out turn. Among the two hybrids, the farmers preferred CH-1 in NLS region.

There is a need to introduce tobacco hybrids for getting high productivity coupled with higher leaf quality, which improves the net income of tobacco farmers. As the hybrids CH-1 and CH-3 performed better in the field situation, there is a need to introduce these hybrids among NLS area in order to get higher benefit cost ratio to the farmers.

Table 3. Pest and disease incidence in NLS region (2008-09)

Pest /Disease	Upper NLS (%)			Middle NLS (%)			Lower NLS (%)		
	CH-1	CH-3	Kanchan	CH-1	CH-3	Kanchan	CH-1	CH-3	Kanchan
Stem borer	3	3	3	5	5	5	5	5	5
Tobacco caterpillar	2	2	3	5	5	5	5	5	5
Tobacco budworm	-	-	-	5	5	5	2	2	2
Aphids	2	2	2	10	10	10	5	5	5
TMV	-	-	-	15	15	20	5	5	5
CMV	2	2	2	-	-	-	-	-	-
Brown Spot	-	-	-	-	-	-	2	2	2

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