



Popularization of Horse Gram (*Macrotyloma uniflorum*) in Vellore District of Tamil Nadu

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ABSTRACT

Horse Gram, *Macrotyloma uniflorum* (Fabaceae) although rich in proteins (20 %) but due to less acceptable taste and flavour of cooked products, it is consumed only by the farming community and low-income groups. In Tamil Nadu, total area cultivated under horse gram crop is 48,000 ha and covering an area of 8,000 ha in Vellore district. It is mostly grown under rainfed conditions during the month of October after the receipt of north east monsoon. In order to introduce new potential horse gram varieties, on farm trials were conducted through Krishi Vigyan Kendra during 2014-15. It was found that 32.35 per cent higher yield was obtained in the recommended variety CRIDA 18R over the local variety with higher BCR of 2.4. In the succeeding year 2015-16, front line demonstrations were conducted and found that variety CRIDA 18R of horse gram gave higher grain yield over the local variety Paiyur 2, with a net return of 29.7 per cent higher than the local variety. Thus, the study clearly revealed that the variety CRIDA 18R has more potential than the local variety under rainfed conditions of Vellore district.

Key Words: Horse gram, Number of fruits/plant, Grain yield, Net returns.

INTRODUCTION

The horse gram, *Macrotyloma uniflorum* (Fabaceae) is normally used to feed horses, though it is also commonly used in dishes. It is rich in proteins (20 %) but due to less acceptable taste and flavour of cooked products, it is consumed only by the farming community and low-income groups. Thus, it has remained an underutilized food legume (Aiyer, 1990). The district of Vellore comes under the North Eastern zone of Tamil Nadu wherein pulses are grown in a large area next to paddy and groundnut. In Tamil Nadu, total area cultivated under horse gram crop is 48,000 ha and in Vellore district, among the pulses red gram is grown in an area of 14,270 ha followed by horse gram covering an area of 8,000 ha.

In Vellore district, horse gram is mostly grown under rainfed conditions during the month of October

after the receipt of north east monsoon. Farmers get poor yield as they use age old their own stored seeds for cultivation and do not have awareness on high yielding varieties. Quality seeds contribute 10-15 per cent increase in yield in any crop. Other reasons for getting lower yield in case of pulse production are no adoption of seed treatment, non-application of micronutrient spray and no foliar spray of 2 per cent of diammonium phosphate (DAP) twice during flowering. Hence, to introduce and assess new horse gram varieties suitable for Vellore district, on farm trials were undertaken during 2014-2015 through Krishi Vigyan Kendra, Vellore and found that CRIDA 18R variety gave higher yield compared to local varieties. In the succeeding year 2015-16, the same variety was demonstrated and popularized to the farmers of Vellore district through frontline demonstrations.

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Table 1. Yield parameters of the OFT conducted during 2014-15.

Sr. No.	Parameter	CRIDA 18R	Local Paiyur 2
1	Plant population/ m ²	29.3	26.7
2	Grain yield (kg /ha)	900	680
3	Gross cost (Rs.)	7530	7370
4	Gross returns (Rs.)	18068	13671
5	Net returns (Rs.)	10538	6301
6	BCR	2.4	1.86

MATERIALS AND METHODS

In the year 2014-15, an on farm trial (OFT) was conducted in the Anaicut block of Vellore district to assess the potential horse gram variety suitable under rainfed conditions. Seven farmers' fields were selected in the Anpoondi village and were provided with the seeds of horse gram variety CRIDA 18R purchased from Central Research Institute for Dryland Agriculture, Hyderabad along with bio-fertilizers like *rhizobium* and *phosphobacterium*. Sowing was taken up during *Rabi* season under rainfed situation. Based on the results of OFT, the variety CRIDA 18R was found to be promising and suitable under drought conditions for Vellore district in comparison with local horse gram variety. Hence, in the succeeding year 2015-16, the variety was popularized through Frontline demonstrations by distributing seeds of CRIDA 18R for 0.4ha land to 10 farmers in the villages of Kanagasamudram, Edapalyam, Kamatchiammanpettai and Rengampet coming under K. V. Kuppam block of Vellore

district. The seeds were sown during the first week of Nov 2015.

In the village of Edapalayam, an off campus training was conducted to enrich the knowledge on critical technologies to be followed in horse gram cultivation. In the training, farmers were advised about the importance of land preparation, selection of quality seeds, seed treatment with bio fertilizers and bio control agents, soil test based fertilizer application and foliar spray of pulse wonder during flower initiation stage. Farmers took up the cultivation of CRIDA 18R horse gram variety as per the advisory of scientists of Krishi Vigyan Kendra, Vellore. The frontline demonstrations were conducted by comparing the CRIDA 18R variety with local horse gram variety Paiyur 2. A demonstration plot was also laid out at the KVK farm premises for research comparison.

RESULTS AND DISCUSSION

From the results of the on farm trial conducted

Table 2. Yield parameters of FLD conducted during 2015-16

Sr. No.	Parameter	CRIDA 18R	Local Paiyur 2
1	Number of fruits/plant	47.5	38.1
2	Number of branches/plant	5.8	3.7
3	Plant height (cm)	35.7	59.6
4	Plant population/ m ² *	16.7	15.1
5	Grain yield (kg /ha)*	343	273
6	Gross cost (Rs.)	5249.1	5249.1
7	Gross returns (Rs.)	9421.5	7234.5
8	Net returns (Rs.)	4172.4	1985.4
9	BCR	1.79	1.38

Popularization of Horse Gram

during 2014-15, it was found that the plant population maintained in the demonstration plot was 29.3 as compared to 26.7 in farmers' practice plot. This in turn gave 32.35 per cent higher yield in the recommended horse gram variety CRIDA 18R over the local variety with higher BCR of 2.4. It was clearly revealed (Table 1) that the variety CRIDA 18R was having more potential than local variety under rainfed conditions.

It was pertinent to mention that during Nov 2015, unexpected heavy rainfall led to loss of crop stand at farmers' field who took up sowing in first week of Nov 2015 and hence there was a decline in grain yield as compared to yield obtained during 2014-15.

Growth parameters / Plant attributes

- **Plant type:** Horse gram variety CRIDA 18R is short bushy bunch type of plants while the local variety are spreading tall climbing habit plants
- **Plant height:** It is recorded a height of 59.6 cm in local horse gram variety of Paiyur 2 while CRIDA 18R plants were shorter with a height of 35.7 cm
- **Branching habit:** CRIDA 18R horse gram variety has more number of branches and nodes (56.8%) than the local variety which contributed to higher grain yield. (Table 2)
- **Maturity:** CRIDA 18R variety matures in 85-87d about 15-20d earlier than local variety
- **Non-shattering pods:** One of important character impressed the farmers is that pods of CRIDA 18R horse gram do not shatter after maturity and/or even on delayed harvest

Yield parameters

- CRIDA 18R horse gram variety bears more number of fruits per plant (24.7%) than local variety.

- In comparison with local Paiyur 2 horsegram variety, CRIDA 18R gave 25.6% higher yield.
- CRIDA 18R horse gram variety gave away net returns of 29.7% higher than the local variety.
- CRIDA 18R horse gram variety seeds are brownish red in colour and are bold seeded which the fetched the farmers about Rs.50 per kg in the market compare to Rs.40 per kg in case of local variety.

The findings were in line with CRIDA research achievements 2010 where it was found that CRIDA's new horse gram varieties, CRIDA 18R and CRHG 4 performed better (up to 33% higher grain yield and 10-25d early maturity) than local checks in Andhra Pradesh, Tamil Nadu and Kerala.

CONCLUSION

Based on the results of on farm trial and frontline demonstrations conducted during 2014 to 2016, it was found that 32.35 per cent higher yield was obtained in the recommended variety CRIDA 18R over the local Paiyur 2 variety with higher BCR of 2.4. Further CRIDA 18R variety bear on an average 47.5 fruits per plant (24.7% more than local) and its seeds are brownish red in colour and are bold seeded fetching the farmers' higher price (Rs.10 per kg more than local variety). Thus the study clearly revealed that the variety CRIDA 18R has more potential than local variety under rainfed conditions of Vellore district.

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