



Strategy for Popularizing Rice Hybridization to Attain Food Security In India

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ABSTRACT

In general, food security is based on three conditions viz., availability, accessibility and affordability. Owing to uncontrolled population trends across the world, providing food security became a challenge. In India rice is the staple food. Through hybridization, production can be increased, there by meet the growing demands. To popularize hybrid rice and to overcome the drawbacks in rice hybridization, a strategy is put forward focusing the seed village concept.

KEYWORDS: Food Security, Rice Hybridization, Benefits And Drawbacks, Seed Village

Food security is said to exist when all the people at all the times have access to sufficient, safe, nutritious food to maintain a healthy and active life. Commonly, concept of food security is defined as including both physical and economic access to food that meets people's dietary needs as well as their food preferences.

Food security is based on 3 conditions-

Food availability- Consistent availability of food grains in terms of production round the year.

Food accessibility- Available food grains whether accessible to public in every corner of the country i.e., nearness in terms of distance.

Food affordability- Whether the accessible food grains are available at affordable prices.

Rice is the staple food for more than 50% of world's population. India being one of the country, with same situation. With the growing trends in population, food grains requirement also increased. So, in order to meet the growing demands, productivity has to be increased. In this context, India growing traditional varieties has a productivity of only 3.3 mt/ha as against China with 50% area under hybrids has a productivity of 6.6 mt/ha. So, hybridization of rice can be treated as one of the solutions to meet the challenges of food security as India is going to be the most populous country by 2020.

ADVANTAGES OF HYBRIDIZATION OF RICE:

Yield advantage: Primarily 15-20% higher yield is observed over existing varieties. Also hybrids are highly responsive to water and fertilizers. As such it contributes to productivity and there by food security.

Nutritional advantage: We can incorporate the genes for preventing the loss of nutritional elements in milling such as Golden rice, which is a rich source of Vit-A by genetic engineering.

Resistance to biotic and abiotic stresses: Hybrids resistant to biotic (insects and pests) and abiotic (drought, floods, cold, salinity, salt etc.) stresses can be bred through hybridization. As a result cost of production is reduced, that adds to productivity and higher returns.

SOCIO-ECONOMIC BENEFITS OF RICE HYBRIDIZATION:

Economic benefits: The hybrid rice seed production is fast becoming a lucrative proposition for entrepreneurial farmers. With the average seed yield of 1.5 to 2.5 t/ha and at average procurement price of Rs. 30 – 40 per kg, the gross returns are Rs. 60,000 – 80,000 per hectare. The cost of seed production is around Rs. 25,000 – 30,000 per hectare. Hence the net profit by undertaking hybrid rice seed production works out to be Rs. 35,000 – 50,000 per hectare and hybrid rice growers are benefited substantially.

As the seed replacement ratio (SRR) in states other than Andhra Pradesh, Tamil Nadu, Maharashtra, Assam are less than 50%. So, there is ample scope for seed industry.

Employment generation and women empowerment: Women can start seed production as an employment generation activity. Besides, hybrid rice seed production generates additional employment for 60 – 80 person days/per hectare, particularly for rural women in activities like supplementary pollination, roguing, etc. as such women empowerment can be achieved..

Social development: Employment, income adds to their social and cultural development, with progress in their living standards.

DRAWBACKS IN RICE HYBRIDIZATION:

High cost of seed: Mostly private sector is producing hybrid seeds, cost of 1 kg is around RS 150-200/- which is too costly. Public sector production is very limited that cannot serve the purpose alone.

Limited areas of production: Most of the seed is procured from A.P. state and that too 85% of seed from only two districts viz., Warangal and Karimnagar.

Tastes and preferences: Tastes and preferences changes from one region to another. In south, people prefer medium slender grain and should be non-sticky but hybrids are long and sticky types.

However through hybridization we can incorporate the characters, we desire. A success story of hybrid from DRR(Directorate of Rice Research) Hyderabad, DRRH-3 was bred which became an alternative to BPT-5204, a revolutionary and highly preferred variety of A.P. for a long time. DRRH-3 is in fact the first medium slender grain type hybrid developed in India.

Table – 1: Grain quality features of DRRH-3

Hybrid	Milling (%)	HRR (%)	WU (ml)	ASV	AC (%)	GC (mm)
DRRH-3	72	67	205	5.0	23.8	63
BPT 5204	72	68	200	5.0	23.4	23

HRR: Head rice recovery; WU: Water uptake; ASV: Alkali spreading value; AC: Amylose content; GC: Gel consistency.

Table – 2: Performance of DRRH-3

Year	DFF	Yield (kg/ha)	Advantage (%)over BPT 5204
2005	103	5739	18
2006	101	5539	20
2007	98	6051	30
Mean	101	5776	23

DFF : Days for flowering

EXTENSION STRATEGY FOR POPULARIZATION OF HYBRID RICE:

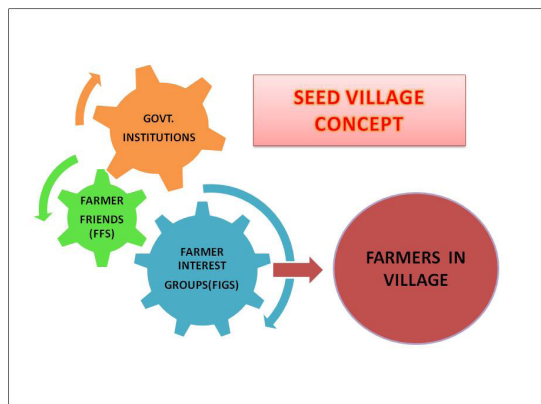
ATMA(Agricultural Technology Management Agency) is a registered society of farmers formed at district level, for technology dissemination. Farmer friend (FF) is a progressive farmer of a village who acts as a coordinator between government and farmers. FF needs to coordinate with various village institutions like Gram Panchayat to motivate and encourage farmers, formed into Farmer Interest Groups(FIGs) to adopt new techniques and have a safe, secure livelihood.

Phase-1: ICAR institutes and State Agricultural Universities (GOVT.) have to identify the stage of adoption of hybrid rice and use appropriate strategies for motivating farmers for adoption. Early adopters in each village so called farmer friend(FF) of ATMA are chosen for training in rice hybridization, who in turn needs to train FIGs in a village.

Phase-2: FF of ATMA is to be provided with an experimental plot and with all the incentives for hybrid seed production. Regular supervision by scientists and continuous follow up has to be made. The media and methods are to be used in parallel to have idiosyncratic effect.

Phase -3: FF of ATMA in collaboration with sarpanch of the village needs to select FIGs(Farmer Interest Groups) in village on voluntary basis for hybrid seed production and motivate them for collective farm-

ing. There by sufficient hybrid seed for the village is produced in the village itself and thus developing a **seed village** concept. There by external dependence for inputs is reduced.



Phase -4: after distribution if any excess is obtained could be sold outside the village that gives additional income. Construction of warehouses has to be given top priority in the plans proposed by ATMA. To encourage this, awareness campaigns need to be conducted for their construction at village level by Gram Panchayat. These can be provided on rent basis to FIGs in the village to store their agricultural produce.

As such the entire process results in achieving LEISA((Low external input utilization for sustainable agriculture)and also check the price fluctuations. Hybrids according to the tastes and preferences can be bred and their by extending the areas of production to many places. Fixation of MSP, providing subsidy to farmers in inputs in our country, cutting on subsidy exports to farmers in other countries are other ways of encouraging hybrid rice to achieve food security.

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