- While spraying pesticide, use 500 liters of water/ha in case of power sprayer. Keep the field bund clean to minimize disease and pest attack.

Insect Pest Control

- Give one application of Furadan 3G @30 kg/ha or Thimet 10 G @ 10 kg ha at three weeks after transplanting and then spray applications of Monocrotophos 36 EC @1.5 Litres/ha or Chlorpyriphos 20 EC @ 2.5 Litres/ha twice at15 days interval thereafter, to keep the crop free from insect pests.
- For the control of Gundhi bug, apply Chlorpyriphos @ 25 kg/ha or spray Monocrotophos @ 1.5 litres/ha.
- For the control of leaf folder, spray Quinalphos 25EC @ 2 litres/ha.

Disease Control

- For control of fungal diseases such as blast and brown spot spray 0.1 % Hinosan or 0.1 % Bavistin. Sheath blight can be controlled by spraying Sheath mar @2ml/litre.
- For control of bacterial diseases such as bacterial leaf blight (BLB) and bacterial leaf streak, drain the field, and apply an extra dose of K fertilizer @20 kg/ha. Delay top dressing of N.
- For control of viral diseases such as Tungro and Grassy stunt remove the infected plants and control the insect vector by applying Furadan @ 30 kg/ha.

Harvesting, Drying and Storage

- Drain out water from the rice field after 15 days from the milk formation stage. Harvest the crop when 80% of the grains in panicles are ripened. Dry the harvested paddy. Thresh with paddle thresher or power thresher. Clean paddy grains by winnowing. Dry gradually under shade. Store the rice in improved storage bins.

Points to remember

- Never use the harvested hybrid rice grains for raising the next crop.
- Apply N in four equal splits at basal, 21 DAT, panicle initiation and panicle emergence.
- Apply K in two splits 3/4th in basal and 1/4th at panicle initiation.
- Nursery sowing should be very thin (20 gms/sq.m.) to get robust seedlings.
- Transplant only one or two seedlings /hill at 15cmx15cm or 15cm x20cm.

Production Technology for Hybrid Rice Ajay
CRRI Technology Bulletin 60

Editing and layout : G.A.K. Kumar, S.K. Sinha & Sandhyarani Dalai
Photography: P. Kar, B. Behera & Dipti Ranjan Sahoo

Laser typeset at the Central Rice Research Institute, Indian Council of Agricultural Research, Cuttack (Orissa) 753 006, India and printed at Bholanath Press, BBSR. Published by The Director, for the Central Rice Research Institute, Cuttack (Orissa) 753 006.

Production Technology
for Hybrid Rice- Ajay

R.N. Rao, S.N. Ratho, D. Panda, K.S. Rao, V.Sarkunan , K.S. Behera, S.S.C. Patnaik, S.K. Mohanty, S. Das, Padmini Swain and K.M. Das

RICE hybrids have higher yield potential due to the phenomenon of heterosis or hybrid vigour and can produce 7-8 t/ha which is more than 1 t/ ha over the best high-yielding varieties of similar duration. So far, in India, thirty three hybrids with duration of 90 to 140 days have been developed and released for cultivation in irrigated lands.

The Central Rice research Institute has developed two hybrids, Ajay and Rajalaxmi for the first time in the country for both irrigated and shallow lowlands. Both these hybrids were released during 2005 by Orissa State Seed Subcommittee. Of these two hybrids, the hybrid Ajay (CRHR-7,IET18166) is a F1 hybrid developed through three-line system of hybrid rice breeding from the cross CRMS31Ax IR42266-29-3R. This hybrid is based on an indigenous CMS lines other than IR 58025 A which was widely used for the development of hybrids.

This hybrid is medium statured (110cm), non-lodging with moderate tillering habit and high spikelet fertility (>85%). It has non-shattering habit with long slender, non-aromatic transuluscent grains with good milling (62%HRR), cooking and eating qualities. The hybrid matures in 125-130 days and has an yield potential of 6.5 tons (Kharif) to 7.5 tons (rabi) per hectare which is more than 1.0 t/ha over the comparable checks, Tapaswini and Lalat. The hybrid is resistant to leaf blast, moderately resistant to RTD, BLB and has field tolerance to stem borer and WBPH. The hybrid also has tolerance to excess stagnant water for a period of 10-15 days and can tolerate brief spells of submergence. Ajay also performed extremely well under boro situation.

The hybrid has shown good performance in the states of Orissa, Chattisgarh, Jharkand, Bihar, West Bengal and Goa. Seed production of the hybrid was found to be commercially feasible as the two parental lines do not differ widely in flowering duration resulting in good flowering synchronization in seed production plots.

Suitable agronomic management practices are to be followed to obtain the potential yield of the hybrids.This bulletin gives information on production technologies to be followed for obtaining optimum yields by cultivating the hybrid, Ajay.

Suitable Hybrids for Orissa

Rice hybrids perform better in dry season than in wet season. Suitable hybrids should be chosen for different locations and ecosystems. Procure fresh hybrid seeds each time only from approved seed agencies before raising the crop. For Orissa, use hybrids, Ajay, Rajalaxmi, KRH 2 and Sahyadri.

Nursery Bed Preparation

- Plough the seed bed area twice when the land is dry. Impound water for four to five days. Drain excess water. Puddle the area twice or thrice. Level it by laddering.
- Prepare raised and levelled wet nursery beds of 1 m width with provision of drains of 30 cm width between the beds. Apply NPK @ 500: 500: 500 g/ 100 m^2 of nursery area and 100 kg of farmyard manure (FYM) for every 100 m^2 of nursery area before final land preparation.
- Use 20-25 g of seeds per 1 m^2 of nursery area. Nursery area of 600 m^2 is required for one hectare of main field.

Selection of Seeds

- Use faithfully labelled hybrid seeds.
- As hybrid seeds are light, never use salt solution for discarding light and half-filled grains before sowing. These grains normally have good germination.

Seed Rate

- As the test weight of this hybrid is low, 12 to 15 kgs of hybrid rice seeds are sufficient to transplant in one hectare of land.

Seed Treatment

- Treat the seeds with Carbendazim (Bavistin) @2 g/kg of dry seeds after soaking in water for 24 hours.
- Spread the treated seeds on a hard floor under shade. Cover with wet gunny bag and straw and sprinkle water 2-3 times a day. Seeds will sprout in one to two days.

Time and Method of Sowing

- The right time for sowing seeds is mid-June for wet season and early December for dry season.
- Sow the sprouted seeds on levelled and drained wet nursery

Nursery Management

- Irrigate with a thin film of water two to three days after sowing of sprouted seeds. Give light irrigation afterwards.
- After 15 days of seedling growth, apply Carbofuran (Furadan 3G) @ 250 g/ 100 m^2 of nursery.
- Keep the nursery weed-free.

Land Preparation

- Irrigated medium land with drainage facility is suitable for growing hybrid rice.
- Apply and incorporate 5 t/ha of FYM/ compost during the dry ploughing.
- Irrigate the field and puddle 7 to 10 days before transplanting to incorporate the weeds, if any. Puddle the land again, and level it by laddering prior to transplanting.

Transplanting

- Uproot seedlings and dip the roots of the seedlings in Chlorpyriphos solution @ 1 ml/litre of water, overnight before transplanting.
- Transplant 25 to 30 days old seedlings erect at a shallow depth of 2 to 3 cm on puddled and levelled land (with no standing water) @ one to two seedlings/hill with a spacing of 20 cm (row-to-row) and 10 cm (plant-to-plant) or 15x15 cm between plants and rows. Rows should preferably be in the north-south direction.

Fertilizer Application

- Apply NPK @ 100 : 50 : 50 kg/ha in wet season and 120 : 45 : 90 kg/ha in the dry season. Soil test based fertilizer application especially for P and K is preferred over blanket dose.
- Apply one fourth of total N, entire amount of P and three fourths of K as basal after draining out the standing water but before final puddling. Top-dress the remaining N in three equal splits, each at three weeks after transplanting, panicle initiation(PI) and panicle emergence stages. Also apply remaining one fourth of K at panicle initiation.

Irrigation and Cultural Practices

- Irrigate the field two days after transplanting. Maintain continuous shallow submergence to a water depth up to 5 cm till mid-grain filling stage.
- Complete gap filling to replace dying plants within 7 to 10 days after transplanting.
- Weed out the rice field at least twice. Once at 21 days after transplanting (DAT) and again at 42 DAT.

Plant Protection

- Protect the crop from insect pests and diseases with regular monitoring of pest attacks and by following need based