

ii. Synchrony of Sowing

It is critical to sow within the sowing season. Sowing must be completed within Nov-Dec (for the first crop) and 15th May-15th July) for second crop.

All attempts must be made for farmers in an area to sow together (block planting).

iii. Seed Treatment

Seeds can be treated with products such as Crusier, Regent, Friponil, Flip, which will reduce the infestation of water weevil and leaf miner.

3. Water Management

- Retain water used for puddling operation to grow rice crop. Allow 2 to 3 days for suspended sediments to settle before the germinated seeds are sown.
- Drain fields 2-3 days after sowing. Fields can then be flooded 6 to 7 days after draining.
- Grow the crop through flooded conditions of 3 to 4" (7.5 to 10 cm) if your field has a history of weed (red rice and grasses) problems.
- Ideally water should be completely drained for the application of fertilizers or post emergence herbicide
- Maintain adequate water level (3 to 4" or 7.5 to 10 cm) until around 90-95 days after seeding. Then drain the field completely.

4. Weed Management

- Weeds are controlled most effectively by the use of an integrated programme combining different control methods.
- Good weed management practice includes: cleaning of machinery and implements; good land preparation; choice of variety (traits: excellent early vigor, good tillering ability, early canopy); appropriate seed rate; field sanitation; fertilizer application.
- Water management is crucial for managing weeds in rice. Maintain 3-4 inches of water throughout the crop.
- Chemical control: weed control must be undertaken early. Herbicide application around 14-18 DAS is best recommended so that it can facilitate fertilizer application and subsequent irrigation. Some herbicide recommended are Nominee, Nomeny, Rice Weed Killer, Designee. Drain fields for effective herbicide application, then flood after 24-48 hours.

5. Nutrient Management

Fertilizer recommendation must be based on a chemical soil analysis.

The following Fertilizer Combination were found very effective:

Ø Triple Super Phosphate (TSP): 50-75 lbs per acre (56-84 kg/ha)

Ø Murate of Potash (MOP): : 50-75 lbs per acre (56-84 kg/ ha)

NB: TSP and MOP can be incorporated dry at land prep or broadcast at 14-21 DAS

Ø Urea: 1.5-2 bags/acre 185-247 kg/ha. It can be split in three application timings: 14-21, 40-42 and 60 DAS in proportions of 25, 50 and 25 % respectively

The third dose fertilizer will depend on the crop health (greenness, height etc)

Urea must be applied in field with reduce or low water content

Application of fertilizer must be done after weeds are managed

6. Insect Pest Management

- An Integrated Pest Management (IPM) approach is recommended to effectively manage insect pest populations.
- IPM includes: good land preparation, block planting, field sanitation, water management, rouging, regular monitoring, judicious use of chemicals.
- Some effective chemicals against early season pest and Paddy Bug (*Oebalus poecilus*) : Contact (Fastac, Ninja, Flip); Systematic (Pronto, Admire, Admister)

7. Diseases Management

Both varieties are resistant to rice blast disease (*Pyricularia grisea*) and tolerant to Brown Spots (*Bipolaris oryzae*, *Cochilobolus miyabeans*).

It is important to have an Integrated Disease Management (IDM) approach to manage rice disease, particularly Brown Spots. Some useful tips: sow within the season; use recommended seed rates, avoid excess nitrogen fertilizer, Use Potash (K) fertilizer, control alternative host, avoid water stress, good sanitation practices.

Recommended chemicals: Fugi-one. Stratego, Carbendazim, Manzate, Super Blast, have also shown promising results.

8. Harvesting

Drain fields between 90-95 days after sowing. Harvest at 18 - 20 % moisture for best milling recoveries, germination and vigour. Reduce grain moisture to less than 16% within 24 hours. Where controlled drying is not possible harvest at moisture content less than 16%.



GUYANA RICE DEVELOPMENT BOARD

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Subject to Periodic Revision

AROMATIC RICE VARIETY FOR PRODUCTION IN GUYANA



Background Information

Grain quality is one of the major objectives of the rice breeding programs in Guyana and other countries that are self sufficient in rice production. Quality rice varieties are notable by high market price. These varieties receive more attentions in the niche markets such as aromatic rice. Though market for quality rice might be smaller than regular rice, it usually generate high value thus more income for farmers.

Aromatic rice constitutes a special group of rice which is known as the best quality of rice world wide. It is known for its nut/popcorn-like aroma and taste. Aroma development in rice grain is influenced by both genetic and environmental factors. Aromatic rice contains several biochemicals, but the most significant one is identified as 2-acetyl-1-pyrroline (2AP). Varieties of aromatic rice include: basmati, jasmine, Texmati, Wehani, and wild peccan rice. When cooked, the grains have a light and fluffy texture.

Thailand, India, and Pakistan are leading and competitive producers, developers and exporters of aromatic rice in the world. Recent developments of aromatic rice varieties are starting to come from emerging countries like the U.S., Myanmar, and Cambodia. Due to an increasing demand by importing countries towards aromatic rice, Aromatic attribute have recently received much attention in the stronger breeding programs. Guyana has embarked on a breeding program to develop its own aromatic rice to allow its farmers an opportunity to enter the niche market and enjoy the premium price for its novel product.

Breeding Progress

In spite the fact that the gene(s) governing aroma are difficult to transfer and express and the conventional methods of plant selection for aroma are not easy because of the large effects of the environment and the low narrow sense heritability of aroma, continued efforts are directed to achieve such objective.

Many strains in the program were identified to possess aroma. One line G08-07 (tentatively "GRDB 13") is in the most advance stage of testing. It was evaluated in farmer's field across the country on 20 locations first crop 2013. In the second crop the evaluation continues on more 300 acres in farmer's field across the country. Some of the important on information characters and production practices generated so far is highlighted here under.

Important Characters of Aromatic Line (G07-08)

Agronomic Characters

S. N	Traits	Remarks
1	Seedling Vegetative Vigour (Vg)	Extra vigorous
2	Tillering Ability (Ti)	Low (direct seeded)
3	Culm Strength (Cs)	Strong
4	Lodging Incidence (Lg) (%)	0
5	Plant Height (Ht)	Intermediate
6	Leaf Senescence (Sen)	Late and slow
7	Panicle Exsertion (Exs)	Well exserted
8	Panicle Treshability (PT)	Easy
9	Spikelet Fertility (SpFert)	Highly fertile
10	Phenotypic Acceptability (PAcp)	Excellent
11	Tillers/m ²	252
12	Days to Complete Flowering	85-86
13	Maturity (Mat) Days	115-125
14.	Grain Yield (t/ha)	5.5 – 7.1 (35-45 bags/ac)

S.N	Disease	Reaction
1	Blast (<i>Pyricularia grisea</i>)	Resistant
2	Brownspot (<i>Cochliobolus miyabeanus</i> (<i>Bipolaris oryzae</i> , <i>Drechslera oryzae</i>).	Moderately Resistant
3	Sheath Blight (<i>Thanethoporus cucumeris</i> , <i>Rhizoctonia solani</i>)	Moderately Resistant
4	Sheath Rot (<i>Soracladium oryzae</i>)	Moderately Resistant

Diseases

Grain Characters

S.N	Traits	Remarks
1	Grain Length (GrL) (mm)	11.2
2	Grain Width (GrW) (mm)	2.5
3	Grain Shape (GrS)	Slender
7	Milled Rice Length (MrLn) (mm)	7.3
8	Milled Rice Width (MrW) (mm)	2.1
9	Milled Rice Shape (MrS)	Slender
10	1000 Grain Weight(GW) (g)	28.66
11	Chalkiness (Clk) (%)	0.9
12	Scent (Set)	Present
13	Seed Coat (Bran) Colour (SCC)	Straw
14	Alkali Spreading Value	7
15	Head Rice Recovery (HRR)- Paddy (%)	50.1
16	Total Rice Recovery (TRR)- Paddy (%)	65.5
17	Head Rice Recovery (HRR)- Brown (%)	66.5
18	Total Rice Recovery (TRR)- Brown (%)	86.4
19	Grain Expansion- Length (GEL) (%)	72.8
21	Grain Expansion- Width (GEW) (%)	68.5
22	Cooking Time (mins)	16
23	Dormancy (Days)	21-28 weeks

2. Crop Establishment

i. Seed and Seed Rate

- Certified seeds where possible.
- On fairly level and uniform fields sow only 100-120 lbs/ac (112.2-134.7 kg/ha) clean seeds.
- Under less favorable conditions (uneven land, unclean seeds, etc.), the seed rate can be increased up to 140 lbs/ac (157.2kg/ha).
- Do not use muddy or stagnant water when soaking seed.
- Soak seeds for 24 to 30 hrs. At the end of the soaking period remove/drain off excess water.
- Incubate (*press*) seeds for 36-48 hrs, when broadcasting by hand. 24 hrs will be sufficient if broadcasting is to be done by aircraft.
- Light wetting (watering) may be necessary during incubation.