

Notes

# GUYANA RICE DEVELOPMENT BOARD



*BURMA RICE RESEARCH STATION*

**WATER MANAGEMENT  
IN RICE CULTIVATION**

**RICE THE GRAIN OF LIFE**

### **Importance of Water**

Water is a very important factor in rice production. Apart from its role as a constituent of plant cells and its involvement in the chemical processes that take place in the rice plant, water is also required for the following activities associated with rice production.

- 1) Land Preparation: Secondary land preparation or puddling is an important part of seedbed preparation for the rice crop. It assists in creating a suitable environment for the exploitation of native fertility by the developing rice seedlings.
- 2) Weed Control: Many of the common weeds in the rice crop are sensitive to early flooding, especially if flooding is done before these weeds germinate. This is very cheap and effective way of controlling these weeds.
- 3) Fertilizer Application and Utilization: When fertilizers are applied on moist soil or in a shallow depth of water, these quickly dissolve in the water and enter the cation exchange complex where the nutrient elements are available for absorption by the roots of the rice plants. Water is therefore important in the dissolving, absorption and translocation of the nutrient elements within the plant. Deep flooding reduces the efficiency of fertilizer utilization
- 4) Tillering: Adequate availability of water is important during the tillering stage for optimum tillering. Moisture stress or deep flooding will both reduce the number of tillers per unit area.
- 5) Heading and Grain Filling: Adequate availability of water during heading and grain filling stages is very important. Moisture stress during these important development stages may result in increased 'wind' grain content or completely aborted panicles.

### **How to Manage Water**

#### **1) Early Flooding:**

Water used in the final stages of seed-bed preparation may be retained and the 'pre-germinated' seed can be sown in that water. If this water management system is used it will be necessary to allow an interval of 48 to 72 hours (2 to 3 days) between the final wet operation and the time of sowing. This will allow the suspended particles in the water to settle, thus increasing the chance of seedling survival. Fields should also be relatively level, permitting a 2 to 3 inches flood throughout the field. Water depth exceeding 3 inches decreases the chance of seedling survival.

This water management system is sometimes referred to as 'under water cropping' or 'wet sowing' and it is widely used by farmers to control red rice, grass weeds and Jhussia.

#### **2) Early Flooding followed by Drainage:**

In situations where fields are not level or where large amounts of vegetation (plant residue) are worked into the soil, draining may be necessary 48 to 72 hours after 'wet sowing' to ensure a good plant stand. Reflood fields within 5 to 8 days after draining to prevent the establishment of red rice, grass weeds and Jhussia.

#### **3) Midseason Draining:**

Draining or reducing water depth for fertilizer or herbicide application may be necessary for best results from these inputs. Midseason draining may also be necessary to alleviate toxic conditions that may develop in some soils. Drain for 5 to 8 days depending on weather conditions, then reflood to a depth of 3 to 4 inches.

#### **4) Draining in Preparation for Harvesting:**

Dry, firm fields provide for efficient harvesting and allow for minimum damage to fields resulting from harvesting operation. Draining should therefore be done early enough to provide satisfactory harvesting conditions without affecting the grain filling process.

Our major commercial rice varieties are ready for harvesting approximately 108 to 112 days after sowing.

Heading (flowering) therefore takes place approximately 63 to 70 days after sowing depending on field and environmental conditions.

Draining in preparation for harvesting can therefore be done approximately 90 days after sowing or 18 to 22 days before the projected harvesting date depending on weather conditions.

This will allow adequate time for grain-filling process to be completed and also for field conditions to be suitable for harvesting and subsequent land preparation activities.