

### Good water management practices

#### **1. Construct field channels to control the flow of water to and from your field.**

- Field channels allow water to be delivered to the individual seed beds separately.
- The ability to control water to your field is important when you need to retain water (especially after applying fertilizer so nutrients are not lost) or when you need to drain the field for harvest.

#### **2. Level the Field**

- A well-leveled field is crucial to good water management. An unlevelled field requires an extra 80–100 mm of water to give complete water coverage. This is nearly an extra 10% of the total water requirement to grow the crop.
- Most fields need to be plowed twice before you can level. In wet land preparation, the second plowing should be done with standing water in the field to define high and low areas.

#### **3. Construct bunds (meres) and repair any cracks or holes.**

- Good bunds are a prerequisite to limit water losses. Bunds should be well compacted and cracks or rat and snake holes should be plastered with mud at the beginning of the crop season to limit water loss.

- Lower levees of 5–10 cm height in the bunds can be used to keep the ponded water depth at that height. These levees can be heightened with soil when more stored water is needed.
- Bunds should be high enough (at least 20 cm) to avoid overflowing during heavy rainfall.

#### **Important Tips!**

- Field can be drained 24-48 hours after sowing to enhance a uniform establishment of the crop.
- In some cases where the fields have history of weed and red rice, the crop is allowed to emerge through water.
- After weed control and fertilization irrigation is provided and depth of water is adjusted as plants grows.
- Continuous flooding of water generally provides the best growth environment for rice.
- Lowland rice is extremely sensitive to water shortage (below saturation) at the flowering stage. Drought at flowering results in yield loss from increased spikelet sterility, thus fewer grains.
- Keep the water level in the fields at 5 cm at all times from flowering to heading.



## **GUYANA RICE DEVELOPMENT BOARD**

**BURMA RICE RESEARCH STATION**

### **LAND PREPARATION AND WATER MANAGEMENT IN RICE**



### Why Land Preparation?

- **Land preparation** is important to ensure that the rice field is ready for planting. A well prepared field controls weeds, recycles plant nutrients, and provides a suitable soil surface for direct seeding.
- Initial land preparation begins after your last harvest or during fallow period. Generally, it will take 3–4 weeks to prepare the field before planting.

### Types of Land Preparation

**Primary tillage**—1<sup>st</sup> and 2<sup>nd</sup> cut (Rome or disc) 4 to 6" (10 to 15 cm) and harrowing (Rome). The primary tillage operations may be carried out at intervals, which allow for the emergence (by rainfall or irrigation) and successive destruction of volunteers.

**Figure 1: Primary Land Tillage using Disc Plough**



- **Secondary Tillage**—If rainfall is inadequate, fields are irrigated to allow for the secondary tillage operations. Harrowing also referred to as puddling is important to create a hard pan to prevent water loss.



**Figure 2: Secondary Land Tillage (Harrowing)**

**A well prepared rice field has the following characteristics:**

- Mud and water are thoroughly mixed
- Weeds, rice straw, and stubble have been plowed under the soil and are thoroughly decayed
- Land is free of stubbles and leveled

### Importance of Land Leveling

- A level field allows for a more even distribution of seeds and uniform irrigation. A level field reduces weed pressure and helps control water.

- Good land leveling is best achieved using laser-assisted leveling. Well maintained fields require laser leveling once every 3–4 years.
- Between laser leveling operations, the field can be leveled using a drag bucket or a back blade.



**Figure 3: Bucket leveler with laser attachment, Hydraulically operated drag buckets**

- It takes approximately 8 hours to level one ha of land using the bucket leveler.
- After land leveling, lightly till the soil at 1–3 cm to reduce compaction.

### Water Management

- Rice is typically grown in banded fields that are continuously flooded until the completion of grain filling. Continuous flooding helps ensure sufficient water and control weeds.