



## **DEPARTMENT OF AGRICULTURAL ENGINEERING**

### **AI3601 POST- HARVEST TECHNOLOGY**

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## Harvesting

For paddy, harvesting refers to the cutting and gathering of panicles attached to the stalks.

Harvesting at the right time and in the right way maximizes grain yield and minimizes grain losses and quality deterioration.

Once the plants have reached full growth (approximately three months after planting) and the grains begin to ripen-the tops begin to droop and the stem yellows-the water is drained from the fields.

As the fields dry, the grains ripen further and harvesting is commenced

### Stage of harvest :

- Many factors must be considered to obtain optimum rice harvest.
- The grain must be mature, high in quality and have proper moisture content.
- Field should be sufficiently dry to support harvesting and transport.
- Timely harvesting ensures good grain quality, high market value and improved consumer acceptance.
- The right stage for harvesting is when about 80% panicles have 80 % ripened spike lets and their upper portion is straw colored. The grain contains about 20% of moisture.
- Rice should be harvested when the grains on lower part of the panicle are in hard dough stage.
- Maturity may be hastened by 3-4 days by spraying 20 % NaCl a week before harvest to escape monsoon rains.

## Harvesting methods :

Depending on the size of the operation and the amount of mechanization, rice is either harvested by hand or machine. The different harvesting systems are as follows:

### Manual harvesting

Manual harvesting makes use of traditional threshing tools such as threshing racks, simple treadle threshers and animals for trampling or by hand using sharp knives or sickles. Gives 55-60 % grain recovery.



### Manual harvesting and machine threshing

Rice is manually threshed, then cleaned with a machine thresher.

### Machine reaping and machine threshing

A reaper cuts and lays the crop in a line. Threshing and cleaning can then be performed manually or by machine.

### Combine harvesting

The combine harvester combines all operations from paddy harvesting to rice extraction - cutting, handling, threshing and cleaning. Gives 50 % recovery.

## Average yield :

A well-managed crop of mid-late duration varieties yield about 60-70 quintals/ ha.

Short duration varieties yield about 45-55 quintals.

About 40-60 quintals/ ha of fodder also becomes available per season.



## Post Harvest Technologies

### Threshing



Threshing is the process of beating paddy plants in to separate the seeds or grains from the straw.

To maintain the high quality of the harvested grain should be threshed immediately after harvesting.

Avoid field drying and stacking for several days affects grain quality due to over drying. Stacked grain high moisture

causes discoloration and yellowing.

**Threshing can be done manually or mechanical**

### **Manual threshing**



The manual methods of threshing are treading by flail method, and beating stalks against tubs, boar racks.

Threshing can be done by trampling using bull rubbing with bare human feet (in hills) or liftin bundles and striking them on the raised wooden plat Pedal threshers are also used.

Freshly threshed rice must be dried well in the sun.

### **Machine threshing**



Mechanical threshing removes rice grains from th plant, speeds up threshing (thus reducing losses) reduces labor requirements.

Power driven stationary threshers are also used. Freshly threshed rice must be dried well in the sun

