

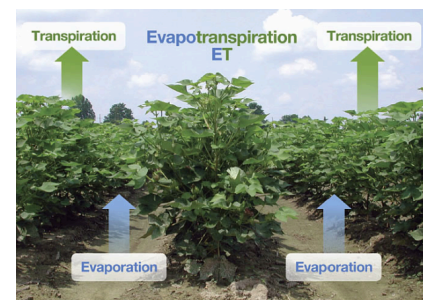


**HUTAN AGRI LESTARI**

## BROAD ACRE CROP IRRIGATION

Broad Acre Crops require well-drained soils and climatic conditions that is warm, temperate & sunny with 4-5 months dry months (very low rainfall) Moisture stress is the main cause of lower crop yield but this can be managed with well-designed irrigation system. Irrigation is a “management tool” applied whenever rainfall is inadequate to meet the water requirements of a crop as a result of “Evapotranspiration”.

**Irrigation is not a substitute for Best Management practice**



This brochure provides an overview on crop irrigation and water supply that includes:

- Irrigation objectives
- Irrigation systems for Maize, Cotton and Soybean
- Water requirement for Maize, Cotton and Soybean
- Water supply and water source
- Investment analysis

**We provide cost effective and sustainable irrigation solutions**



## Broad acre crops irrigation objectives

1. Produce 2 crops per year, aimed at maximum potential yield and maximum Net Profit / Ha
2. A well designed irrigation system would minimize moisture stress so as to achieve maximum yield potential
3. Irrigation can be used to apply fertilizer more frequently and at critical growth stage (targeting increased yield)

### Pivot irrigation systems



### Impact irrigation systems



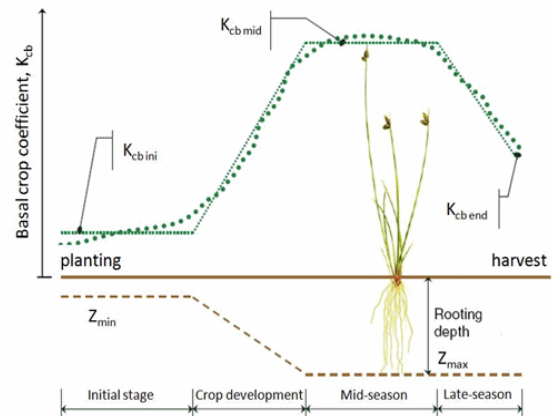
### Drip irrigation systems



## Water supply and crop requirements

Crop coefficients ( $K_c$ ) vary according to plant age and site conditions that include soil type, rainfall, sunlight, temperature, humidity and wind. Crop water requirement depends on crop coefficient ( $K_c$ ) and evapotranspiration ( $ET_p$ ). Water requirement =  $ET \times K_c$ .

1. Irrigation for “Germination” before and/or after planting
2. During “crop development”, water requirements gradually increase, apply irrigation to avoid wilting
3. Maximum water requirement at the “mid-season stage” to coincide with flowering and fruit set (critical period – no moisture stress)
4. After “maturity”, minimal or no irrigation is required as the plants use available soil moisture
5. Fertilizer, bio-fungicide & bio-pesticide can be applied via irrigation



### Water requirements

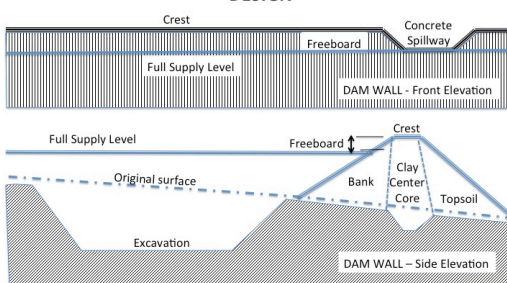
- Maize: 750 – 900 mm
- Cotton: 700 – 1,300 mm
- Soybean: 600 – 750 mm

### Water source

Adequate, reliable and good water quality is fundamental to any irrigation system:

- Water source /dam design capacity: + 150% of maximum water requirement
- Expert is required for site selection, soil assessment, dam design and construction
- Reduce evaporation by constructing deeper storage

### IRRIGATION STORAGE DAM DESIGN



## Irrigation investment analysis

- Total Investment cost: US\$ 2,000 to US\$ 3,500 / Ha (excluding water storage)
- Potential Gross Margin Income from 2 crops/year: US\$ 4,500 per Ha/Year

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