Saving Water with Alternate Wetting Drying (AWD)

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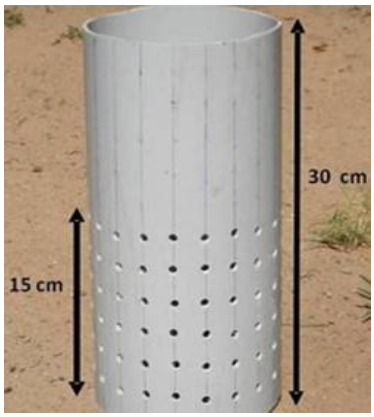
Rice Fact Sheet

Alternate Wetting and Drying (AWD) is a water saving technology that farmers can apply to reduce their irrigation water use in rice fields without any yield penalty. In AWD, irrigation water is applied a few days after the disappearance of the ponded water. Hence, the field is alternately flooded and non flooded. The number of days of non-flooded soil between irrigations can vary from 1 day to more than 10 days depending on a number of factors such as soil type, weather and crop growth stage.

How to implement AWD?

A practical way to implement AWD safely (without yield loss) is to monitor the depth of ponded water on the field using a 'field water tube' ('pani pipe'). After irrigation, the water depth will gradually decrease.
When the water level has dropped to about 15 cm below the surface of the soil, irrigation should be applied to re-flood the field to a ponded water depth of about 5cm. From one week before to one week after flowering, the field should be kept flooded, topping up to a depth of 5 cm as needed. After flowering, during grain filling and ripening, the water level can be allowed to drop again to 15 cm below the soil surface before reirrigation.



Field water tube made up of PVC. Note the holes on all sides.

AWD can be started a few weeks (12) after transplanting. When many weeds are present, AWD should be postponed for 23 weeks to assist suppression of the weeds by the ponded water and improve the efficacy of herbicide. Local fertilizer recommendations as for flooded rice can be used. Apply fertilizer N preferably on the dry soil just before irrigation.

A field tube in flooded field

The Field Water Tube (Pani Pipe)

The field water-tube can be made of 30cm long plastic pipe or bamboo, and should have a diameter of 1015 cm so that the water table is clearly visible, and it is easy to insert your hand inside the tube to remove soil. Perforate the tube with many holes on all sides, so that water can flow readily in and out of the tube, in equilibrium. Hammer the tube in to the soil so that half (15cm) part protrudes above the soil surface. Take care that the tube does not penetrate through the bottom of the plow pan. Remove the soil from inside the tube so that the bottom of the tube is visible.

When the field is flooded, check that the water level inside the tube is the same as outside the tube. If it is not the same after a few hours, the holes are probably blocked with compacted soil and the tube needs to be carefully re-installed. The tube should be placed in a readily accessible part of the field close to a bund, so that it is easy to monitor the ponded water depth. The location should be representative of the average water depth in the field (i.e. it should not be in a high spot or a low spot).

Water at 15 cm below the soil surface: Time to irrigate the field again

Assam Agribusiness and Rural Transformation Project (APART)

The World Bank is the funding agency of APART
Department of Agriculture, Assam is the nodal department for implementation of APART
ARIAS Society is the State level coordinating and monitoring agency for APART
Assam Agricultural University is the leading Agricultural University of the State and implementing agency of APART, imparting research and scientific support.
International Rice Research Institute (IRRI) is the rice global leader providing technical and hand-holding support in the implementation of APART