

# **FARMERS PARTICIPATORY APPROACH TO INCREASE WATER PRODUCTIVITY IN TRANSPLANTED RICE UNDER BHADRA COMMAND**

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## **Abstract**

The Farmers participatory approach (1.0 acre for each treatment) was carried out on three farmer's field in summer 2008 and Four farmer's field in *kharif* 2008 at different villages of Honnali and Channagiri taluks of Davangere district, Karnataka, India with two treatments *Viz.*, T<sub>1</sub>: Irrigation 1 DASPW (one day after subsidence of ponded water), T<sub>2</sub>: Recommended practice (maintaining 2.5 cm upto 10 DAP and 5 cm from 11 DAP to PM). The present investigation was taken up to demonstrate the water saving technology on farmers field to save the precious water, based on the experiment conducted on water management studies in transplanted rice and drum seeded rice at research station for three seasons. Giving irrigation one day after subsidence of ponded water recorded higher grain yield (8.56 to 12.51 percent and 5.26 to 9.38 percent in summer 2008 and *kharif* 2008, respectively) over recommended practice of water management on farmers field. In drum seeded rice, maintaining saturation from 25 DAS to PM recorded higher grain and straw yield during *kharif* 2001 (6904 and 9736 kg/ha, respectively) and *kharif* 2004 (6174 and 6756 kg/ha, respectively), where as during summer maintaining saturation 2.5 cm from 25 DAS to 40 DAS and 5 cm from 41 DAS to PM recorded significantly higher grain and straw yield (7039 and 9512 kg/ha, respectively). In transplanted rice, maintaining saturation recorded higher grain and straw yield during *kharif* 2004 (5732 and 6528 kg/ha, respectively) and summer 2007 (6545 and 7034 kg/ha, respectively), where as during *Kharif* 2006 irrigation 2 days after subsidence of ponded water recorded higher grain and straw yield (6210 and 6458 kg/ha, respectively).

## **Summary**

Rice is the major crop of India and occupies largest cropped area of 43 million hectares with an annual production of 109.5 million tones. In Karnataka, rice is grown over an area of

1.42 million hectares with a production of 3.6 million tones (Anon., 2004). The Bhadra command is the major rice growing area in the state covering 1.05 lakh hectares and is mainly grown under canal irrigation during *kharif* and summer seasons. Exploring ways to produce more rice with less water is essential for food security and sustaining environmental health. Water saving irrigation, such as saturated soil culture and alternate wetting and drying can drastically cut down the unproductive outflows and increase water productivity. However, these technologies mostly lead to some yield decline in the current transplanted rice.

Keeping this in view the study on “Farmers participatory approach to increase water productivity in transplanted rice under Bhadra Command” was under taken to know the yield advantage of transplanted rice under different moisture regimes.

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In transplanted rice, maintaining saturation recorded higher grain and straw yield during *kharif* 2004 (5732 and 6528 kg/ha, respectively) and summer 2007 (6545 and 7034 kg/ha, respectively), where as during *Kharif* 2006 irrigation 2 days after subsidence of ponded water recorded higher grain and straw yield (6210 and 6458 kg/ha, respectively). The results are in line with the findings of Nayak *et al.*(1981), Kumar *et al.* (2006) and Thiyagarajan *et al.* (2002).

Total water requirement in ha-cm was highest in irrigation 2.5 cm from 25 DAS to 40 DAS and 5 cm from 41 DAS to PM (226, 254 and 224 ha-cm in *kharif* 2001, summer 2002 and *kharif* 2004, respectively) in durm seeded rice (Table 5 & 6), Where as in transplanted rice (Table 5), maintaining 2.5 cm up to 10 DAT and 5 cm from 11 DAT to PM recorded higher total water requirement (220, 220 and 246 ha-cm in *kharif* 2004, *kharif* 2006 and summer 2007, respectively). The results are in line with the findings of Ganesh (2000) and Ganesh and Jayadevahakkali (2000).

Irrigation 4 DASPW recorded higher water use efficiency recorded in drum seeded rice (50.05, 37.67 and 41.83 kg/ha-cm in *kharif* 2001, summer 2002 and *kharif* 2004, respectively) and transplanted rice (50.56, and 43.78 kg/ha-cm in *kharif* 2006 and summer 2007, respectively) compared to rest of the water management treatments. Patjoshi and Lenka (1998) reported the higher water use efficiency (46.95 kg ha-cm<sup>-1</sup>) in maintaining saturation throughout crop growth than 3 to 5 cm continuous standing water (36.07 kg ha-cm<sup>-1</sup>) without any decline in yield and Guled (1993) observed that giving irrigation once in 5 days recorded significantly higher water use efficiency (4.5 kg ha-cm<sup>-1</sup>).

### **Conclusion**

From this study, it can be concluded that giving irrigation one day after subsidence of ponded water is found to be better than recommended water management practices for rice production.