



Yield Gap Analysis of Rice Under Priyadarshini Jurala Command Area Using RS and GIS

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ABSTRACT

The Priyadarshini Jurala is a multipurpose project across the river Krishna in the state of Telangana, India, designed for growing irrigated dry crops in 41,360 ha, but the farmers are growing rice crop to a large extent (28,381 ha) by consuming huge quantity of irrigation water resulting in low water productivity (0.17 kg m^{-3}). A yield gap analysis (YGA) was done in rice crop in the command area using remote sensing and GIS. One representative distributary was selected in each head, middle and tail reaches falling in Atmakur and Gadwal mandals under right canal and Itikyal, Pebbair and Veepanagandla mandals under left main canal. The weather data pertaining to these five mandals during the crop growth period for *kharif* 2009 and 2010 was used as input data for the model. ORYZA2000 model was used to simulate the growth and development of rice in the area under potential production conditions. It was also assumed that the crop is well protected against diseases, pests and weeds, so that no reduction in yield takes place. Our study showed that the potential yields for the variety BPT 5204 varied from 6.49 to 7.64 t ha^{-1} during *kharif* 2009 and from 5.51 to 7.76 t ha^{-1} during *kharif* 2010. In the right main canal (RMC), the yield gap ranged from 41 to 64 per cent and 28 to 73 per cent with an average of 52 and 57 per cent during *kharif* 2009 and 2010. Similarly, it was 46 to 71 and 50 to 81 per cent with an average of 59 and 65 per cent in the left main canal (LMC). Furthermore, the yield gap was higher in the tail reach distributaries (D34 and D23) and in general the yield gap was more in the LMC than RMC during both the years of study.

Keywords: Irrigation project, ORYZA, Potential yield, Yield gap

The Priyadarsini Jurula Project (PJP) is a multipurpose project constructed during 1995 across the river Krishna, near Revulapalli village erstwhile Mahabubnagar district, Telangana, India. This project was mainly designed to cultivate irrigated dry crops in the drought prone mandals of erstwhile district. However, paddy is being cultivated on a large scale leading to water shortage in the tail end areas. Yield gap analysis (YGA) is an important

method to understand the opportunities to meet the projected demand for agricultural products and to support decision-making on research, policies, development and investment that is needed. The

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