

## Use of computer software for comparison of crop water requirements to actual water applied in canal command area of Jayakwadi project

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■ **Abstract** : The comparison was made of water applied in canal command and water requirements of crop estimated by using CRIWAR software at Marathwada Agricultural University, Parbhani, Maharashtra for command area of Lohagaon minors and Signapur minors of Jayakwadi project. In the Singapur command area during *Rabi* 1999-2000 and 2000-2001, the excess water of 44.77 and 46.98 cm excess depth of water was applied, respectively than the requirement of the crops i.e. about 60 per cent more water was used in the command area for irrigating the crops. At the same time during summer 2000-01, 49.1 cm less depth of water was applied in the command, which directly affected the crops production. If the proper planning, designing of cropping pattern and proper release scheduled of water operated, the crops grown in summer can be saved and productivity can also be increased. It was observed that excess utilization of water in *Rabi* can be controlled by proper designing of cropping pattern, its implementation and required release scheduled of water, then the deficit of water in summer may not be faced. During *Rabi* and Summer 2004-05; 0.36 to 16.77 per cent less quantity of irrigation water was applied. Similarly in the command area of Lohagaon 135.1 to 160.8 per cent excess quantity of water was applied in *Rabi* 1999-2000 and 2000-01 and 25.18 per cent less quantity of water was applied in summer 2000-01. During *Rabi*, Summer 2000-01 and 2004-05, 4.86 to 25.18 per cent less water was applied in the command area. Therefore, proper designing of cropping pattern and water releasing schedule is very much important to irrigate the designed cropping pattern in the command area. But performing this is a time consuming, hence use of computer software is necessary for micro-level cropping pattern planning and water release scheduled for increasing the project efficiency and water use efficiency in the command area.

■ **Key words** : Software, Water requirements, Project potential, CRIWAR

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After the independence of India, many major medium and minor irrigation projects were constructed in Maharashtra alone total 1652 irrigation projects. Therefore, irrigation water should be preciously applied as required by the plants. Correct estimation of crop water is basic requirement towards achieving this goal. But many of the irrigation projects are not achieving the designed targeted project potential due to unscientific management of irrigation water in field. Due to giddy tendency, farmers are applying more water to the crops than its requirement and also wastages occurred in canal network etc.

Therefore, proper application of irrigation water in the field and the minimization of losses are necessary. To achieve the target project potential, accurate estimation of crop water requirement is necessary for every minors. But performing

this manually, is time consuming and tedious. Hence, use of software is very necessary for accurate estimation of crop water requirement for micro-level planning.

Several computer models like CRIWAR, CROPWAT, SWATRE etc. estimate the crop water requirements. A study in the Isfahan area in Iran indicated that the CRIWAR was more accurate than SWATRE for estimating the evaporation and water requirement of maize (Mostajeran, 1994). Water requirements and irrigation scheduling of major crops such as sugarcane, paddy, sorghum, pearl millet and others in the Mahi Right Bank canal command in Gujarat were determined using CROPWAT (Khandelwal *et al.*, 1996). The irrigation requirements for sweet pepper and beans were estimated using CRIWAR for Rimski Saneevi, Voivodina province in Greece (Rajic *et al.*, 1997). In Andhra Pradesh, Guntur District canal