ABSTRACT
The irrigation water requirement of major crops and total water available in the Natuwadi dam located in Konkan region of Maharashtra was estimated. A linear programming model was formulated to suggest optimal cropping pattern giving the maximum return at different water availability levels. The objective function of the model was subject to following constraints: total water available and land during Rabi season, minimum area under rice and sugarcane for local food requirement and preference to grow particular crop in a specific area. This model has given the optimal cropping pattern for a command area of 2050 ha at water availability levels of 100, 90, 80 and 70 per cent and net returns of 120, 109.50, 99.10 and 88.64 million rupees, respectively. It is found that, the water available in the command area may support optimally 36.50, 1018, 50, 273, 45, 98 and 127 ha of rice, banana, sugarcane groundnut, chilli, brinjal and maize for fodder, respectively, to get maximum returns of 120 million rupees at 100% water availability levels. Banana appears to provide the most consistent profit in the command area.

Key words : Water requirement of crops, Water availability levels, Cropping pattern, Linear programming model, Net benefit