

Water shortage is the most important environmental problem in Iran, hence the greatest threat to food security in the long term. Agriculture is the largest consumer of freshwater. Water use efficiency in the farming system of the country is low. There are different strategies to face this problem including crop transplanting particularly for the main crops such as corn. Therefore, this study was conducted to evaluate the effects of sowing methods and seed priming on the water use efficiency for the supper sweet corn in Mashhad, Iran in 2014. The treatments included five different types of seed priming (hydropriming, polyethylene glycol (PEG), sodium sulfate, zinc sulfate and control) and 4 planting methods (transplanting the seedlings grown in two different cell sizes (37 ml and 150 ml) and two direct seeding dates (the first one was at the time of planting seeds in the trays and the second one at the time of transplanting to the field). The results showed that yield was not affected by seed priming though the speed of emergence increased in primed seeds. In the transplanting system (transplants produced in 37 cc cell size) the highest plant density (7 Plant m^{-2}) was achieved while in the direct sowing (5 Jun) the lowest density (5 plant m^{-2}) was observed. Directly seeded plants had significantly higher cob weight and number of grain per cob compared with transplanted plants though in the transplanting system grain yield increased to 10 t ha^{-1} compared with 6.5 t ha^{-1} in the direct sowing, mainly due to higher plant density in the transplanting system. Water use efficiency was significantly increased from 0.9 in direct sowing to 1.6 kg m^{-3} in transplanting system. This is due to both the reduction of the amount of water required for transplants production and an increase in grain yield.