

Abstract

This study was conducted at Atbara farm of the Arab Company for Crop Production where center pivots were used for producing alfalfa as a forage crop. The objectives were evaluation of the performance of the center pivot irrigation system, the irrigation scheduling practiced in the farm and crop water requirement. The low level of both macro–and micro – nutrients suggests the need for addition of nitrogenous, phosphatic and potassic fertilizers together with foliar spray of micro–nutrients. Also, the results showed that the uniformity coefficients, using Christiansen (C_u) and Heirman and Hein (C_{uHH}) methods was relatively low being 84.14% and 85.32%, respectively. The distribution uniformity (D_u) was 80% at 50% speed which is below the acceptable value. The results also revealed that the application efficiency is 77.72%. For proper irrigation scheduling, a recent innovation having the trade name “Watermark” coupled with a special resistance digital meter were used for monitoring the soil moisture. It becomes evident from these results that when appropriate scheduling programmes are followed, as by using the “Watermark”, three to four irrigations can be eliminated in one month which will reduce the fuel cost and finally the total cost of operation of the center pivot irrigation system.