

## **Abstract**

In spite of multi sources of irrigation water the College of agricultural studies farm, there has been a continuous and growing complaint of irrigation water shortage. This shortage complaint sometimes embraced domestic water supply.

This is actually the main incentive behind this study. The main objective of the study is to estimate the actual total monthly capacity of all the college farm water resources, the actual farm water requirements and judge the situation.

The computer program (cropwat 4 windows) was used to estimated the actual reference evapotranspiration ( $ET_0$ ), crop coefficient ( $K_c$ ) for farm crops and hence the actual farm crop water requirements.

Gross water requirements was estimated by adding about 15% total losses.

Individual monthly water sources capacity was estimated for the four water sources i.e : Two shallow wells, one deep bore and the river pump station.

The total monthly water capacity of the college ranges between (56722) and (65988)  $m^3$ , While the total monthly water requirement ranges between (4776.1) and (13943.4)  $m^3$ . This yields a monthly water surplus that ranges between (48818.7) and (58508.6)  $m^3$ . This water surplus can monthly irrigate the areas ranges between (48 fedd) and (136 fedd).

The current irrigation water rates are estimated to be 210 SDG per feddan.

The study results showed that the monthly water capacity of the college farm is more than sufficient, even under the present operational time table. More water can be made available if the operational time is raised from six hours per day to eight hours.

The chemical laboratory tests of Shambat shallow wells water quality showed that Shambat water is highly suitable for irrigation.

The biological laboratory tests showed that the infectious bacterial load is very high and that the shallow wells water is not safe for human use.