ABSTRACT

Usrya Ahmed Ebrahim Byan, Studies on water requirements of some Fabaceae crops. Unpublished M.Sc. thesis, Ain Shams Univ., Faculty of Agriculture, Horticulture Dept., 2002.

Two experiments were laid out for each of cowpea (*Vigna unguiculata* [L.] wal.) cvs. Kafr El-Shekh 1 and Dokki 331 as summer crop, pea (*Pisum sativum* L.) cvs. Master B and sugar pea (*Pisum sativum* var. macrocarpon) cvs. Snow Wind as winter crop, to study their response to different levels of water regime in sandy and clay soils. Cultivars, soil types and amount of irrigation water exerted considerable effect on yield and yield attributes of cowpea and pea plants. Results may indicate to raise Dokki 331 cultivar in sandy soil and supplied by 120% of irrigation water calculated by class A pan method to achieve high yield of cowpea. Kafr El-Sheikh 1 cv is not recommended under lower amounts of irrigation water. On the other hand, clay soil and irrigation with 80% of water (class A pan method) seemed to be the suitable conditions for growing Master B cultivar, whereas Snow Wind cultivar can thrive well under sandy or clay soil condition.

Water consumptive use (WCU) of cowpea was greater than that of pea and amounted to 0.426, 0.532 and 0.639 m^3/m^2 for cowpea and 0.101, 0.127 and 0.152 m^3/m^2 for pea when irrigated by 80, 100 and 120% of water calculated by class A open pan method, respectively. Values of ETa for cowpea and pea plants increased considerably and remarkably by increasing the amount of irrigation water. Crop coefficient (Kc) for pea suggested by FAO can work well under South Delta environmental conditions in Egypt.

On the other hand, water use efficiency (WUE) of cowpea was less than that of pea under different levels of water regime treatments.

Key words: Cowpea, pea, Sugar pea, Soil type, Water regime, Yield, Water use efficiency (WUE), Water consumptive use (WCU), Evapotranspiration (Et), Crop coefficient (Kc).

CONTENTS

ABBREVIATION

C°	Centigrade degree
Ca	Calcium
Cm	Centimeter
WCU	Water Consumptive Use
CV	Horticulture Cultivar
Etc.	Evapo-transpiration of crop
Eto	Reference Evapotraspiration mm / day
Fig	Figure
g	Gram
g / plant	Gram per plant
K	Potassium
Kc	Crop Coefficients
LAI	Leaf Area Index
LSD	Least Significant Difference
Mg	= Magnesium
%	= Percentage
RH%	=Relative Humidity %
WUE	Water Use Efficiency