Phase VIII
(Part I)

Status Report

on

Crop Kc, Water Requirement of Kharif Cotton and Pigeon pea

for

Project on;

"Determination of Crop Coefficients for Major Crops by Lysimetric Studies"

at

DEPARTMENT OF IRRIGATION AND DRAINAGE ENGINEERING,
DR. PANJABRAO DESHMUKH KRISHI VIDYAPEETH
AKOLA- 444104 (MAHARASHTRA)

Phase VIII (Part I)
Status Report on Crop Kc, Water Requirement of Kharif Cotton and pigeon pea

"Determination of crop coefficients for major crops by Lysimetric studies"

Dr. Panjabrao Deshmukh Krishi Vidyapeeth, Akola.

Title of the Project: Determination of crop coefficients for major crops by Lysimetric studies" at Dr. Panjabrao Deshmukh Krishi Vidyapeeth, Akola.

Location: Department of Irrigation and Drainage Engineering, Dr. Panjabrao Deshmukh Krishi Vidyapeeth Akola.

Duration: **Three years.**

Total outlay: Rs. 38.38 lakhs.

Investigators:

Principal Investigator	:	Dr. M.M. Deshmukh, Head, Department of Irrigation and Drainage Engineering Dr. PDKV, Akola
Co-Principal Investigator	:	Dr. A.N. Mankar, Assistant Professor, Department of Irrigation and Drainage Engineering Dr. PDKV, Akola.
Coordinator for the project for three universities **(MPKV, Rahuri; Dr PDKV, Akola and VNMKV, Parbhani)**	:	Dr. S.D. Gorantiwar, PI CAAST-CSAWM and Director of Research, MPKV, Rahuri.

INTRODUCTION:

The Project is being executed at Department of Irrigation and Drainage Engineering, Dr. Panjabrao Deshmukh Krishi Vidyapeeth, Akola. This project is undertaken for determination of crop coefficients of cotton and pigeon pea during Kharif season. As per schedule of reporting requirements, following are the details regarding the status of Kharif cotton and pigeon pea. The harvesting of the crops is expected in the month of December, therefore the crop Kc values will be provided after harvesting in Part II of the report.

DETAILS OF WORK:

Cultivation of Kharif cotton and pigeon pea:

The cultivation of Kharif cotton and pigeon pea was done in the month of June 2023, the sowing of cotton (CV- PDKV JKAL-116 BG) was done on 28th June 2023 and the sowing of pigeon pea (CV- PDKV Ashlesha) was done on 30th June 2023. Following

images shows the different field practices done during the entire growing period of cotton and pigeon pea.

Photographs taken during the cultivation of Cotton

Sowing of Cotton on 28th June 2023, in presence of Dr. Munjaji Bhosle, (Hydrologist, NDKSP, PoCRA, Mumbai), Er. Sagar Ghaymukte (Asst. Hydrologist, NDKSP, PoCRA, Mumbai) and PI, Co-PIs of the project

Germination of Cotton

Cotton plants inside and around lysimeter 30 days after sowing

Cotton plants inside and around lysimeter 60 days after sowing

Cotton plants inside and around lysimeter 90 days after sowing

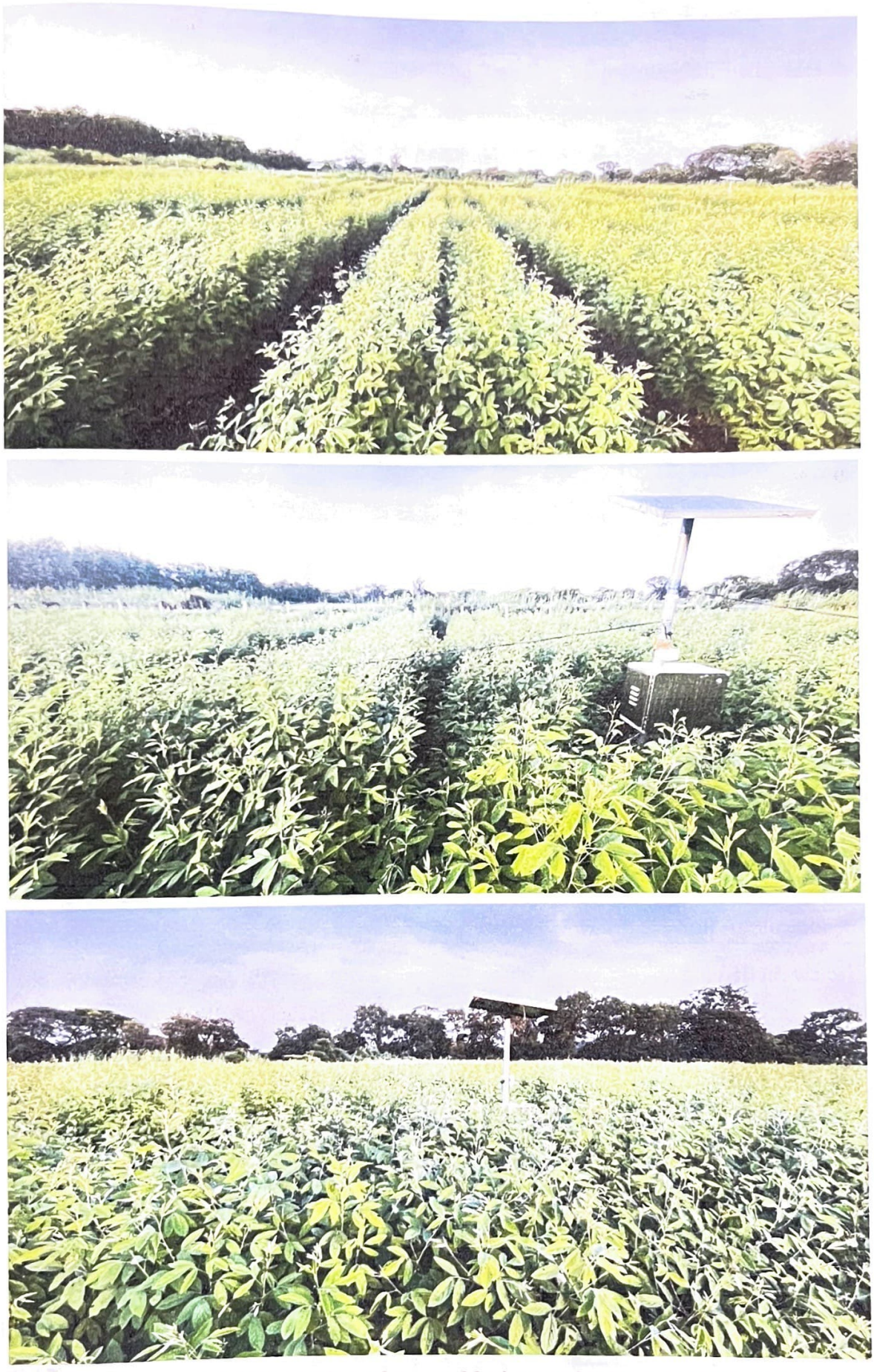
Photographs taken during the cultivation of pigeon pea

Sowing of pigeon pea on 30th June 2023

Germination of pigeon pea

Pigeon pea plants inside and around lysimeter 30 days after sowing

Pigeon pea plants inside and around lysimeter 60 days after sowing



Pigeon pea plants inside and around lysimeter 90 days after sowing

Plant Protection Measures

For healthy and disease free plants, the spraying of insecticides, herbicides and pesticides were done at different stages of crop according its requirement. Following are the details of insecticides, fungicides and pesticides applied during the growth period for healthy growth of cotton and pigeon until 90 DAS.

Table 1. Plant protection measures in cotton

Sr. No.	Date of Application	Weedicide/ Insecticide/ Fungicide/ Pesticide	Quantity
1	29-06-2023	Pendimethelene 38.7 % CS	40 ml/10 lit. water
1	10-07-2023	Chloropyriphos 20 EC	30 ml/ 10 lit. water
2	15-07-2023	Benfurocarb 3% G (IIL Tadakhi)	Soil Application
4	04-08-2023	Dimethoate 30% EC + 100 gm 19:19:19 + Gibberellic Acid (10 ppm)	20 ml/ 10 lit. water
5	08-08-2023	Pyrithiobac Sodium 6% + Quizalofop ethyl 4% MEC (Hitweed Max)	25 ml / 10 lit. water
6	29-08-2023	Profenophos 50% EC + 00:52:34	30 ml + 75 gm / 10 lit. water
7	30-09-2023	Indoxacarb 14.5 SC	10 ml / 10 lit. water
8	07-10-2023	Fipronil 15% + Flonicamid 15% (Apache)	06 gm / 10 lit. water

Table 2. Plant protection measures in Pigeon pea

Sr. No.	Date of Application	Weedicide/ Insecticide/ Fungicide/ Pesticide	Quantity/10 lit. water
1	01-07-2023	Pendimethelene 38.7 % EC	40 ml/10 lit. water
2	07-07-2023	Imazethapyr 10% SL	20 ml/ 10 lit. water
3	07-07-2023	Trichoderma Powder	Soil Application
4	15-07-2023	Imazamox 35% + Imazethapyra 35% Wg (Odessy)	2 gm / 10 lit. water
5	04-10-2023	Fipronil 15% + Flonicamid 15% (Apache)	06 gm / 10 lit. water
6	05-10-2023	Emamectin Benzoate 5 SG	2.5 gm / 20 lit. water

Plant Growth Observations

During the process of planting and growing the crops, there were several observations made regarding growth of crops. Observations were made from inside and outside the lysimeter at different intervals i.e., 30 days after sowing, 60 days after sowing, 90 days after sowing for cotton and pigeon pea. The overall observations taken were height of crop, number of branches, number of leaves, number of flowers, and number of

capsules/pods. Following table illustrates an overall details about the growth parameters till date.

Table 3. Average plant growth parameters of Cotton from Lysimeter 1 and 2

Parameters	30 DAS	60 DAS	90 DAS
Height (cm)	18.505	56.72	106.58
Branches	0	6.135	20.47
Leaves	8.34	53.94	124.27
Flowers	0	11.84	37.92
Pods	0	0	14.07

Table 4. Average plant growth parameters pigeon pea from Lysimeter 1 & 2

Parameters	30 DAS	60 DAS	90 DAS
Height (cm)	24.17	100.43	158.06
Branches	0.00	8.00	21.31
Leaves	20.26	229.88	666.82
Flowers	0.00	0.00	0.00
Pods	0.00	0.00	0.00

Daily observations of crop evapotranspiration and other parameters are being taken. After harvesting crops, crop coefficient values and water requirement for cotton and pigeon pea will be determined and will be reported in Part II of phase VIII report.

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