



WATER MANAGEMENT RESEARCH FARM, RENALA KHURD, DISTRICT OKARA

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DISTRICT OKARA



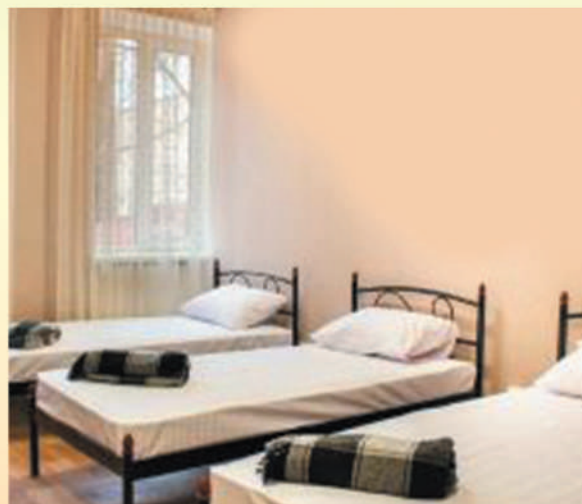
**Directorate General Agriculture
(Water Management) Punjab**

WATER MANAGEMENT RESEARCH FARM, RENALA KHURD, DISTRICT OKARA



The 2018 edition of the United Nations World Water Development Report stated that nearly 6 billion peoples will suffer from clean water scarcity by 2050. This is the result of increasing demand for water, reduction of water resources and increasing pollution of water, driven by dramatic population and economic growth. Likewise, Pakistan has also been facing water crisis and more than 90 percent of available water is being used for agriculture purpose. Considering these problems, main demonstration center has been established as the Water Management Research Farm (WMRF), Renala Khurd, District Okara where various research activities, demonstrations as well as training courses are carried out. The WMRF is spread over 75 acres of land allocated to Directorate General Agriculture (WM) during 2010-11 and construction of limited infrastructure was initiated in November 2011 under "Up-gradation of WMTI" project including office of the Deputy Director (Farm), machinery sheds and few residential houses. The infrastructure was quite inadequate to meet the multiple requirements of awareness creation/ capacity building, demonstration and research activities. Accordingly, following civil works were carried out under PIPIP at WMRF to cater for enhanced requirements of applied research and capacity development.

- Lecture halls for about 25 participants
- Hostel accommodation for 25 participants
- Guesthouse to accommodate experts and consultants
- Sheds for equipment and machinery
- Boundary wall for security of high-cost equipment/machinery
- Overhead water tank and pumping unit for domestic use.



Apart from the civil works, the project also provided necessary furniture, fixtures, office equipment and machinery required for the implementation of research & development activities and capacity building of OFWM staff/farmers. Similarly, various moisture measurement and monitoring systems have been installed at WMRF for manual and automated measurement of soil moisture. Likewise, field weather station has been installed for monitoring of weather parameters to correlate data with existing known parameters. The demonstration center at WMRF is also equipped with complete array of

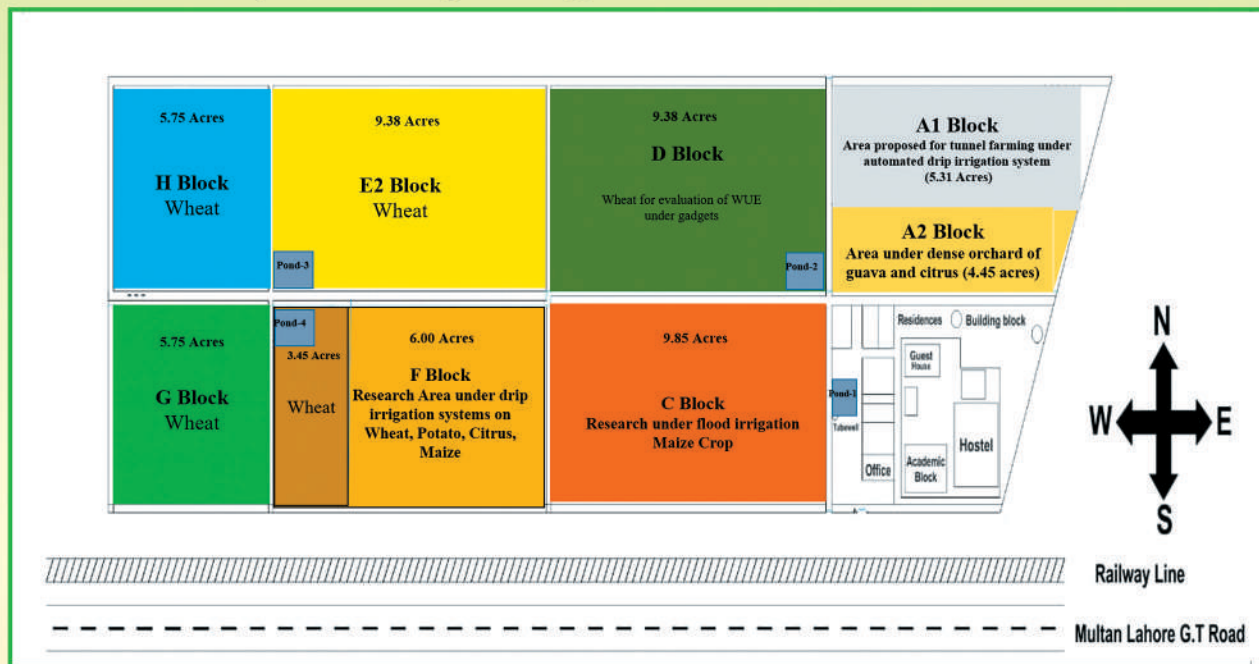
agricultural equipment and machinery for farm operations. Besides availability of limited financial resources from the non-development (G-18) budget, the cost of various installations, equipment & machinery and required agricultural inputs such as certified seeds, fertilizers, pesticides, herbicides, fungicides, etc. and other operational costs for demonstration activities are also being met from the PIPIP since 2012-13. List of equipment's procured for research & development and sustainable operation & maintenance is as under:

- Seven (7) Drip Irrigation Systems for research purpose
- Construction of water storage pond
- Construction of Rainwater harvesting pond
- Lining of watercourses
- Installation of tubwells
- Installation of 100 KW on-grid solar system
- Installation of center pivot system
- Installation of security cameras
- Development of lawn
- Four (04) Tractors
- Four (04) complete LASER Units
- Other agricultural machinery for farm operations



"Seeing is believing" is an established fact for acceptance of new

technology/ practice by the people particularly the farmers. Field demonstration of activities related to operation, maintenance, troubleshooting and crop cultivation under HEIS and dissemination of research outcomes is being shared with farmers/ private sector/ other align departments through celebrating farmers field days/ farmers gathering at WMRF.



COLLABORATIVE ORGANIZATIONS

Collaborating research activities are being carried out at WMRF with following organizations:

- International Water Management Institute (IWMI)
- Lahore University of Management Sciences (LUMS)
- University of Agriculture, Faisalabad and Depalpur Campus
- Pir Mahar Ali Shah - Arid Agriculture University Rawalpindi
- Institute of Agriculture Sciences, University of the Punjab, Lahore
- University of Education, Okara Campus
- Nuclear Institute for Agriculture & Biology (NIAB)
- South Asia Conservation Agriculture Network (SACAN)

AVAILABLE RESEARCH FACILITIES

- Six (06) Drip/Sprinkler Irrigation Systems (9 acres)
- Center Pivot (4.5 Acres)
- Flow Measurement Devices (3 Nos.)
- GSM Based monitoring equipment (4 No.)
- Research Area (11 acres under HEIS, 25 Acres for flood/ border irrigation, 2 acres under tunnel)
- Soil Testing Kits/ other lab equipment
- Boarding and lodging facilities for researchers



TRAINING COURSES COMPLETED AT WMRF

Since the handing over of newly constructed building of WMRF in 2019-20, twenty-five (25) courses of LASER Tractors operates have successfully been completed and about 503 LASER tractor operators have been trained.

RESEARCH STUDIES COMPLETED

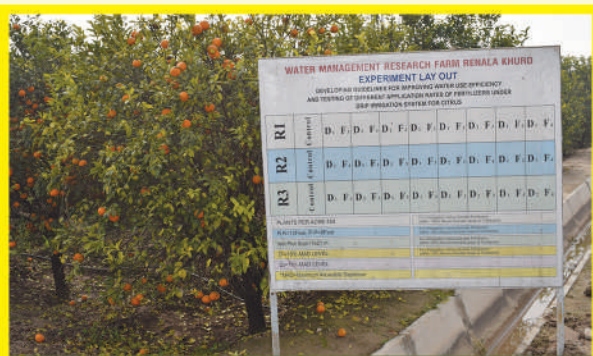
- Developing guidelines for improving water use efficiency and testing of locally developed water soluble fertilizers under drip irrigation system for various crops (Maize and Tomato) - under PARB Project in collaboration with UAF and NIAB
- Evaluation of Different Planting Geometries and Fertilizer Application Rates on Cotton for Crop Yield and its Attributes under Drip Irrigation-**PIPIP (OFWM & PU)**. Accepted for Publication - IJAAER
- Impact of Laser Land Levelling as compared to Conventional Land Levelling in Connection with water Saving and Yield of Maize Crop -**PIPIP (OFWM & M & E Consultants)**
- Effect of Different Planting Geometries, Irrigation Levels (MAD Level) and Fertilizer Levels on Maize Hybrid for Grain Yield under Drip irrigation - **PIPIP (OFWM & Research Wing)**
- Impact of Laser Land leveling as Compared to Conventional Land Leveling on Water Saving and Yield of Wheat Crop - **PIPIP (OFWM & M & E Consultants)**
- Evaluation of Different Planting Geometries and Fertilizer Levels under Surface and Sub-Surface Drip Irrigation System on Sugarcane for Water Productivity - **PIPIP (OFWM & PU)**. Accepted for Publication - IJAAER

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- Evaluation of Different Planting Geometries and Fertilizer Application Rates on Cotton for Crop Yield and its Attributes under Drip Irrigation-**PIPIP (OFWM & PU)** Accepted for Publication - IJAAER
- Evaluation of suitability of different sizes of beds and furrows width for cotton crop under High Efficiency Irrigation System - **PIPIP (OFWM)**
- Evaluation of Suitability of Different Sizes of Beds and Furrows Width for Cotton Crop under Drip Irrigation System (**OFWM & PU**) Data processing
- Effect of Different Planting Geometries, Irrigation Levels (MAD Level) and Fertilizer Levels on Potato Yield under Drip irrigation - **PIPIP (OFWM & Research Wing)** Accepted for Publication
- Effect of Different Planting Geometries, Irrigation Levels (MAD Level) and Fertilizer Levels on Maize Yield under Drip irrigation - **PIPIP (OFWM & Research Wing)** Accepted for Publication



- Evaluation of Water Productivity of Cotton Crop for Different Varieties and Plant Spacing with The Use of Single and Double Laterals Under Drip Irrigation System.
- Water Productivity of Wheat Crop with Different Sowing Methods Under Drip Irrigation
- Evaluation of Water Productivity of Potato Crop Planting with Adjustable Bed Planter of Different Bed Sizes Under Drip Irrigation System.
- Assessment of Water productivity of Hybrid Maize crop using different Fertilizer levels, MAD levels under drip irrigation system.
- Assessment of water productivity and comparison of different maize sowing methods (beds & furrows and ridges & furrows) with different fertilizer doses.
- Evaluation of Water productivity of Maize crop under different bed size and plant to plant distance





WATER MANAGEMENT RESEARCH FARM RENALA KHURD
EXPERIMENT LAY OUT
DEVELOPING SUSTAINABLE & HIGH IMPROVING WATER USE EFFICIENCY
AND TESTING OF DIFFERENT APPLICATION RATES OF FERTILIZERS UNDER
DIP IRRIGATION SYSTEM FOR CITRUS

Block	Treatment	Plot 1	Plot 2	Plot 3	Plot 4	Plot 5	Plot 6	Plot 7	Plot 8	Plot 9	Plot 10
R1 Control (Control)	D	F	D	F	D	F	D	F	D	F	F
	D	F	D	F	D	F	D	F	D	F	F
	D	F	D	F	D	F	D	F	D	F	F
R2 Control (Control)	D	F	D	F	D	F	D	F	D	F	F
	D	F	D	F	D	F	D	F	D	F	F
	D	F	D	F	D	F	D	F	D	F	F
R3 Control (Control)	D	F	D	F	D	F	D	F	D	F	F
	D	F	D	F	D	F	D	F	D	F	F
	D	F	D	F	D	F	D	F	D	F	F

ALWAYS WEAR YOUR SAFETY GEAR
MAINTAIN RECORDS
DO NOT DRINK WATER FROM THE PLOTS
DO NOT FEED ANIMALS
DO NOT USE TOBACCO
DO NOT USE FIRE



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