Abstract. Technological interventions in tackling water scarcity in agriculture delve into the water productivity issue through available alternative water resources and on-farm techniques including both structural measures and agronomic practices accompanied by a sound water management approach. On-farm water management has been addressed under Congress Question 65 through deliberations on irrigation efficiency, soil moisture forecasts and hydrological predictions, efficient and timely distribution of water, controlling non-beneficial evaporation and reducing non-returnable losses of irrigation water at existing and state-of-the-art levels using technologies such as SCADA (Supervisory Control and Data Acquisition) and sensor technology.

A wide range of land, water and crop-related important parameters such as soil degradation, soil moisture, zero tillage, conservation agriculture, water demand and supply, future irrigation demand, biologically degradable mulching materials, cost-effective design of drip irrigation, water quality and cultivation practices through simulation for evaluating environmental impact and adaptation capacity of farmers were addressed. The major outcomes inferred increasing water productivity through optimizing agricultural water use that led to higher crop yields. IoT (Internet of Things) technologies can provide accurate and dynamic information of water consumption and rainfall in real time and have the potential of adapting to climate change scenarios.

Аннотация. Технологические вмешательства в решение проблемы нехватки воды в сельском хозяйстве углубляются в проблему продуктивности воды с помощью доступных альтернативных водных ресурсов и внутрихозяйственных методов, включая как структурные меры, так и агрономические методы, сопровождаемые рациональным подходом к управлению водными ресурсами. Управление водными ресурсами на фермах было рассмотрено в рамках Вопроса 65 Конгресса путем обсуждения эффективности орошения, прогнозов влажности почвы и гидрологических прогнозов, эффективного и своевременного распределения воды, контроля неблагоприятного испарения и сокращения невозвратных потерь поливной воды на существующих и современных уровнях с использованием таких технологий, как SCADA (Supervisory Control and Data Acquisition) и сенсорных технологий.

Был рассмотрен широкий спектр важных параметров, связанных с землей, водой и сельскохозяйственными культурами, таких как деградация почвы, влажность почвы, нулевая обработка почвы, ресурсосберегающее земледелие, спрос на воду и предложение, будущий спрос на орошение, биологически разлагаемые мульчирующие материалы, экономически эффективное проектирование капельного орошения, качество воды и методы выращивания с помощью моделирования для оценки воздействия на окружающую среду и адаптационной способности фермеров. Основные результаты заключались в повышении продуктивности воды за счет оптимизации использования воды в сельском хозяйстве, что привело к повышению урожайности сельскохозяйственных культур. Технологии IoT (Интернет вещей) могут предоставлять точную и динамическую информацию о потреблении воды и осадках в режиме реального времени и обладают потенциалом адаптации к сценариям изменения климата.

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