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Abstract

Improperly designed concrete lined canals and unlined earth canals, and other water conveyance systems and canal networks were found to be the cause of poor water distribution in Kalacha irrigation scheme. Over irrigation on the other hand for the upper quarter of the 78-acre scheme and under irrigation for the rest of the ¾ portion of the scheme, resulted into the schemes soil degradation of 58.5 acres of the scheme. The soil fertility for the upper quarter was found to have been sustained by nature's action with the flood water activity of the rainy season acting as an agent in bringing in silt laden erosion water and the manure from animal droppings along the main canal water drinking points. Scientific technological intervention (STI) in proper irrigation design from the area's topography, scheme plot surveys and farm block designs into regular rectangular or square plots that are easy to irrigate, and the newly installed plastic piped water conveyance system with proper control valves are improvements that have been put in place by KARI to upgrade the Kalacha infield scheme operation system considerably. In addition to the improved water head works at the borehole in which a technologically innovative device was fabricated to make the community take advantage of the artesian water head of 1.5 m (a naturalized hydraulic pressure 0.15 bar) and its potential water quantity abundance of 30 l/s from the previously capped 7 – 15 l/s water variation flow. An over-night water storage masonry tank of capacity 50,000 litres is to be used for daytime water supplementary supply to livestock drinking from the canal at peak hours. The results showed there was need to protect the animal drinking canal and preserve it as it brought animals manure deposits near the farm. Labor being a problem in this low income area this manure transportation is useful to the scheme. The rainfall flood system is also left intact to help inundate the farm with manure laden flood water. When this scheme is fully rehabilitated and fully operational, it will serve as an improved income earning project for the Kalacha community and a life line for the domestic home fed goats. A projection to up-scale its activities will see it as a fodder seed production unit for the greater Chalbi district.

Key words: Irrigation, Fodder, Livestock, Technology, Drought, Greenhouse effect