DRIP IRRIGATION FOR HIGHER PRODUCTIVITY IN CHEWING TOBACCO

Complete Details of Technology:

Chewing tobacco is a commercial crop grown in around 8,000-10,000 ha. in Tamil Nadu. Normally, 20-25 irrigations (600-750mm) are given to the crop, since the economic produce being the leaf. The western and southern zone of Tamil Nadu, where tobacco is grown generally faces decline in water availability due to erratic distribution of rain fall and the farmers have to depend on the ground water. In last few years the ground water recharge has become poor and irrigating agricultural crops by conventional method has become a difficult task. In order to improve the water use efficiency (WUE) thereby productivity and bringing additional area under irrigation, drip irrigation plays a key role.

A field experiment was conducted at the experimental farm of CTRI, Research station, Vedasandur (latitude 100 32^0N longitude 770 57^0) during 2008-10. The soil of the experimental site was alfisols with alkaline pH (8.1). low in available N(210 kg/ha).,P (6.5 kg/ha) and medium in available K (275 kg/ha). The treatments comprised of drip daily and drip alternate days with 50,75 and 100%ETc, irrigation at 1.0IW/CPE and conventional method of irrigation. The experiment was conducted in a randomized block design with three replications. Farm yard manure 25 t/ha was applied as basal manure, ridges and furrows were formed at a spacing of 90 cm and 45 days old seedlings were planted at a spacing of 75 cm. Phosphorus 44 kg P/ ha as super phosphate was mixed with 2.5 t/ha of sieved farm yard manure and spot applied. The drippers were kept near the root zone of the seedlings and the pressure gauge was maintained at 1.5 kg/cm3. The recommended dose of fertilizer, 75:50:50 kg NPK/ha was given to the crop. Nitrogen was given in the form of urea in two splits at 45 and 60 days. Potassium was given as Muriate of potash at 45 days after transplanting. The N and K fertilizers were placed near the root zone. Irrigation was given as per the treatments.

Chewing tobacco ‘Abirami’ released from this station was used for planting. The ‘Abirami’ is a sun cum smoke cured type of tobacco with a medium inters nodal length (5.5 to 6.0cm diameter) and leaf with ovate, moderately puckered surface having prominent mid ribs and venation. First grade leaf yield (FGLY) with daily drip at 100% ETc and alternate day drip at 100% ETc was comparable. The yield recorded with daily and alternate day drip at 100% ETc were 2.54 and 2.48 t/ha respectively. The FGLY increase with daily drip at 100% ETc and alternate day drip at 100% ETc was 14 and 11% respectively over the conventional method of irrigation. Total cured leaf yield (TCLY) at daily drip at 100% ETc and alternate day drip at 100% ETc was comparable with each other. The TCLY recorded with

daily drip at 100%ETc and alternate day drip at 100% ETc were 3.43 and 3.37 t/ha respectively. The study indicated that drip irrigation daily or at alternate days at 100% ETc are comparable, with respect to yield and net returns. Considering the labour availability and feasibility, it could be concluded that alternate day drip at 100% ETc would be sufficient for higher productivity, profitability, better chewing quality and lamina chemical quality.

Brief Description of Technology Including Salient Features:

Field was plough 3 to 4 times, Farm yard manure 25 tonnes was basal manure ridges and furrows were formed at 90 cm and 45 days old seedlings was planted at a spacing of 75 cm. Phosphorus 44 kg P/ ha as super phosphate was mixed with 2.5 t/ha of sieved farm yard manure and spot applied. Three flood irrigations @ 30mm, totally 90 mm was given to all the treatments at the initial stage of the crop (0-25 days).

Drip irrigation was followed from crop development stage onwards. Main pipe lines were laid out followed by secondary pipe lines. Drip laterals 16 mm was fitted in the secondary pipe lines at a distance of 90 cm spacing. Drippers were fitted at 75 cm spacing near the plant root zones. The output per hour of dripper was 4 litres. The pressure was maintained at 1.5 kg/cm3.The drip irrigation was given based on the pan evaporation and effective rain fall. The drip was operated daily as well as on alternate days. Drip irrigation daily or at alternate days at 100% ETc are comparable, with respect to yield and net returns. Considering the labour availability and feasibility, it could be concluded that alternate day drip at 100% ETc would be sufficient for higher productivity, profitability, better chewing quality and lamina chemical quality.

Benefits/Utility :

8 to 10% increased yield over the conventional method of irrigation. Higher water saving (> 40%) and water use efficiency Better chewing quality and lamina chemical quality