

## Effects of irrigation schedules and weed management practices on growth and yield of fenugreek (*Trigonella foenum-graecum* L.)

P.K. CHOVIATIA\*, K.V. JADAV AND S.P. KACHHADIYA

Department of Agronomy, College of Agriculture, Junagadh Agriculture University, JUNAGADH (M.S.) INDIA

### ABSTRACT

An experiment was conducted during the *rabi* season of the year 2006-07 and 2007-08 to study the effect of irrigation schedules and weed management practices on the growth and yield of fenugreek. There was a significant effects of irrigation schedules and weed management treatments on weed density, weed dry weight, seed yield and 1000-seed weight. Significantly the highest seed yield, straw yield and 1000- seed weight was observed when crop was irrigated five times, *i.e.* seedling, branching, flowering, pod formation and pod development stages. Weed density and weed dry weight was significantly lowest under two hand weeding *i.e.* at 20 and 45 DAS, but was at par with the pre-emergence application of pendimethalin 0.75 kg a.i. ha<sup>-1</sup>. These two treatments also gave higher seed yield. Based on benefit cost ratio, five irrigation at critical stages (1: 3.07) and application of pendimethalin 0.75 kg a.i. ha<sup>-1</sup> (1: 3.12) were found to be better management practices in fenugreek.

**Key words :** Irrigations, Weed control, Seed yield, Fenugreek

### INTRODUCTION

Fenugreek is one of the important minor spice crops. India is one of the major producer and exporter of fenugreek with an annual export of nearly 1500 tones. Fenugreek is raised in *rabi* season and fairly tolerant to frost and low temperature. It can be grown in all types of soil under irrigated conditions, but does best on loamy soils. Judicious use of water along with suitable agronomic techniques at appropriate crop growth stages would substantially increase both plant growth and yield. Increasing use of fertilizer and irrigation water would also increase manifolds weed problem. Therefore, application of irrigation water in proper amount and proper time will go a long way in arresting the problem created by weeds.

Fenugreek is slow growing crop during its initial stage and getting severe competition from the weeds during this stage. If unchecked, it may reduce the seed yield to the tune of 14.2 to 69.0 % depending upon their density and duration of competition (Tripathi and Singh, 1993). Sometimes, scarcity of labour does not permit mechanical weeding to keep the field weed free. In such situations, the use of herbicides is the way to eliminate the weed-crop competition. However, it is well known that the efficacy of pre-emergence herbicides depends upon soil moisture. Information on effect of irrigation schedules and weed management practices on growth and yield of fenugreek is scanty; therefore, present study was under taken.

### MATERIALS AND METHODS

A field experiment was conducted during *rabi* seasons of 2006-07 and 2007-08 at the Instructional Farm, College of Agriculture, Junagadh Agricultural University, Junagadh. Soil of the experimental area was medium black in texture, low in available nitrogen and medium in available phosphorus and potassium with the pH of 8.05. The treatments consisted of three irrigation schedules and six weed management practices including control. The experiment was laid out in split plot design with three replications. Irrigation schedules were allotted to main plot and weed management practices to sub-plots. Three pre-emergence herbicides *viz.*, pendimethalin, fluchloralin and metribuzin were included in weed management practices and applied at 0.75, 0.90 and 0.35 kg a.i. ha<sup>-1</sup>, respectively. The quantity of herbicide was diluted in water at the rate of 500 litter per hectare and applied in the treatmental plots using knapsack sprayer fitted with deflector type nozzle at optimum soil moisture condition. Fenugreek variety GF-1 was sown by drilling on November 9, in 2006 and November 11, in 2007 at row spacing of 30 cm with seed rate of 25 kg ha<sup>-1</sup>. Crop was fertilized with 20- 40-0 NPK kg ha<sup>-1</sup> as basal before sowing.

The data were recorded for seed and straw yield on net plot basis and then converted on hectare basis. Thousand seed weight was recorded by counting 1000 seeds from bulk produce of each plot. Weed density was recorded as number of weed plants occurred in a square meter area of each plot. These weeds were air dried

\* Author for correspondence. Present Address : Agricultural Research Station, Junagadh Agricultural University, Keriy Road, AMRELI (GUJARAT) INDIA