

## Influence of irrigation schedules based on IW:CPE ratios and herbicidal weed control in isabgul (*Plantago ovata* Forsk)

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### ABSTRACT

Application of isoproturon was most effective for the control of all weeds, which resulted in 99.32% weed control efficiency and 49.00 % higher mean seed yield over unweeded control. The higher WUE (3.606 kg ha<sup>-1</sup> mm<sup>-1</sup>) was observed under 0.4 IW:CPE ratio and higher net return (Rs ha<sup>-1</sup> 28904) were obtained under the treatment combination (0.4 IW:CPE ratio and application of isoproturon @ 0.5 kg ha<sup>-1</sup> as pre-emergence). The interaction effect of irrigation schedule and herbicidal weed control practices was found non-significant in some cases.

**Key words :** Isabgul, *Plantago ovata*, *Blonde psyllium*, Irrigation, IW:CPE ratio, Herbicide

### INTRODUCTION

*Blonde psyllium* (*Plantago ovata* Forsk) is an important medicinal crop of Gujarat. Due to low cost of production and higher return from the crop. Gujarat commands near monopoly in the production and export of isabgul seed and seed husk to the world market. It is cultivated in India about 1.3 lakh ha with production 77000 MT seed. (Desai and Devra, 2008). Earning about 130 crores rupees from the isabgul seed and 150 crores rupees from husk were exported valued together Rs.280 crores. Isabgul is raised as a *rabi* season crop and grown in all type of soil under irrigated conditions but does best on loamy soils. Water is scarce commodity, which if used judiciously along with suitable agrotechniques would substantially increase both plant growth, yield and yield attributes. With the introduction of high yielding varieties coupled with increased use of fertilizers and irrigation on weed problem have increased manifolds. Application of irrigation in proper amount and in proper time will go a long way in arresting the problem created by weeds. The predominant method of weed control by mechanical hoeing and manual weeding is found to be laborious and time consuming not only this but in peak period of crop growth. Labour is not easily available. Under these situations the chemical control of weeds is found to be effective and economical. Establishing proper herbicidal weed control and irrigation scheduling can enhance the productivity of isabgul. With these dual purpose agronomic aspects in mind, an attempt has been made to conduct an experiment on "Influence of irrigation schedules based on IW:CPE ratios and herbicidal weed control in isabgul (*Plantago ovata* Forsk).

### MATERIALS AND METHODS

A field experiment was conducted during winter

seasons of 2006-07 at College Agronomy Farm, B.A. College of Agriculture, Anand Agricultural University, Anand. The soil was sandy loam in texture. Low in organic carbon, available potassium with pH 7.8. The treatment consisted of four irrigation schedules based on IW:CPE ratios and four herbicidal weed control practices. The experiment was laid out in split plot design with allocation of irrigation schedule in main plots and herbicidal weed control in sub-plots. The treatments were replicated four times. Isoproturon and oxadiargyl were applied @ 0.5 kg ha<sup>-1</sup> as pre-emergence and post-emergence, respectively, in 500 liter ha<sup>-1</sup> of water. Isabgul variety GI-2 was sown by broadcasting the seeds on November 15, 2006, at 4.0 kg seed ha<sup>-1</sup> and fertilized with 30+15 kg NP ha<sup>-1</sup>.

### RESULTS AND DISCUSSION

The results obtained from the present investigation are present below:

#### *Effect on weeds:*

The major weeds observed in the experimental field were *Chenopodium album* (32.1%) *Chenopodium murale* (18.8 %), *Argemone mexicana* (8.0%), *Tribulus terrestris* (10.6%), *Cyperus rotundus* (14.0%), other weeds with low density (16.5%) were *Eragrotis major* Rome and Sch., *Dactyloc tenium aegyptium*, *Eleusine indica*, *phyllanthus niruri*, *Argemone mexicana* and *Cynodon dactylon*. Weed density at 15 DAS was not influenced by different irrigation schedules. Irrigation at 0.4 IW:CPE ratio accounted for the significantly lowest weeds while, significantly lower total weed count was noticed under irrigation schedule I<sub>1</sub> (0.4 IW:CPE ratio) at 30 DAS. At 60 DAS both (I<sub>4</sub>) and (I<sub>1</sub>) contributed lower total weed counts. The irrigation schedule I<sub>1</sub> (0.4 IW:CPE