CHAPTER - VI

SUMMARY AND CONCLUSION
An experiment on "studies on effect of integrated weed and nutrient management on productivity of fodder sorghum - mustard cropping system under rain fed condition" was carried out in kharif 2005 and 2006 and rabi season of 2005-06 and 2006-07 in the PCFC block (field No. 366) of central experimental farm of Indian Grassland and fodder research Institute, Jhansi – 284003.

The variables in valued in this study were four weed management treatments viz. hand weeding by khurpi at 30 DAS, weeder cum mulcher at 30 DAS, isoproturon @ 0.75 kg/ha and weedy cheek with combination of 3 level of fertilizer does viz. 100%, 75%, 50% NPK (Recommended dose) and 2 level of FYM viz. 25% and 50%, respectively. The experiment was laid out in randomized block design. In all there were 11 treatments combination and these were replicated 4 times. The soil of the experimental plot was sandy clay loine in texture with medium in organic carbon, low nitrogen, medium phosphorus and high potassium.

The fodder sorghum (HC-136) was sown on July 20, 2005 and July 14, 2006 and was harvested on October 24, 2005 and October 16, 2006. The mustard (Varuna) was sown on Nov. 18, 2005 and Nov. 20, 2006 and was harvested on March 11, 2006, and March 14, 2007. Fodder sorghum and mustard was sown at 30 cm row spacing using 25 and 6 kg/ha seeds, respectively.

Fertilizers were applied at the recommended rate of 80 kg/ha nitrogen, 40 kg/ha, phosphorus and 40 kg/ha potash in fodder sorghum and 60 kg/ha nitrogen, 40 kg/ha phosphorus and 40 kg/ha potash in mustard, respectively. FYM was applied at the rate of 5 and 10 tonnes /ha. As per treatment whole quantity of phosphorus, potash and half dose of nitrogen were applied at time
of sowing and remaining N was top dressed at 25 days after sowing. As per

treatment, isoproturon was applied the next day of sowing in sorghum as pre-
emergence and two leaves stage of crop in mustard as post emergence.

The soil analysis was done in center soil testing laboratory at crop
production division, IGFRI, Jhansi similarly, oil content analysis was done at
Nuclear research laboratory, IARI, New Delhi.

In order to investigate into the objectives of the experiment the
observation were recorded at different interval on plant population/m² plant
height (cm), number of functional leaves/plant, leaf area index, fresh and dry
weight of plant/m², number of branches of mustard, crude protein content,
number of siliquae/plant, weight of siliquae/plant, weight of per siliquae,
number of seeds per siliquae, weight of seeds/ siliquae, test weight of seed,
oil content (%), green fodder yield, seed yield, stover yield, protein yield,
weed population/m², dry weight of weed/m², weed index, weed control
efficiency, nutrient uptake by crop and weeds and soil pH, EC, organic
carbon, soil moisture, Available nitrogen, phosphorus, potassium from each
treatments. The results of experiment are summarized as fallowed:

(i) Plant population of fodder sorghum was significantly influenced in
different treatment and was found maximum in hand weeding by
khurpi at 30 DAS + 75% NPK (RDF) + 25% FYM followed by
isoproturon @ 0.75 kg/ha + 75% NPK (RDF) + 25% FYM.

(ii) Height of the individual plant was significantly influenced to potential
nature of crop and was maximum in hand weeding by khurpi at 30
DAS combination with 75% NPK (RDF) + 25% FYM followed by
isoproturon @ 0.75 kg/ha + 75% NPK (RDF)+ 25% FYM.
(iii) Number of functional leaves was more in hand weeding by kthurpi at 30 DAS + 75% NPK (RDF) + 25% FYM followed by isoproturon @ 0.75 kg/ha + 75% NPK (RDF) + 25% FYM.

(iv) Leaf area index (LAI) was more in hand weeding by kthurpi + 75% NPK + 25% FYM followed by isoproturon @ 0.75 kg/ha + 75% NPK (RDF) + 25% FYM.

(v) Fresh weight of plant/m² was significantly higher in hand weeding by kthurpi at 30 DAS + 75% NPK (RDF) + 25% FYM followed by isoproturon @ 0.75% Kg/ha + 75% NPK (RDF) + 25% FYM.

(vi) Dry weight of plant/m² was more in hand weeding by kthurpi at 30 DAS + 75% NPK (RDF) + 25% FYM followed by isoproturon 0.75 kg/ha + 75% NPK (RDF) + 25% FYM and hand weeding by kthurpi at 30 DAS + 50% NPK (RDF) + 50% FYM.

(vii) Hand weeding by kthurpi at 30 DAS + 75% NPK (RDF) + 25% FYM produced higher crude protein content and crude protein yield.

(viii) Hand weeding by kthurpi at 30 DAS + 75% NPK (RDF) + 25% FYM produced maximum green fodder yield and dry fodder yield followed by isoproturon @ 0.75 kg/ha + 75% NPK (RDF) + 25% FYM.

(ix) Nitrogen uptake by crop was maximum in hand weeding by kthurpi at 30 DAS combination with 75% NPK (RDF) + 25% FYM.

(x) Plant population, height of plant, number of functional leaves, leaf area index and number of branches/plant of mustard crop was significantly influenced by all treatments and was found maximum in hand weeding by kthurpi at 30 DAS and isoproturon @ 0.75 kg/ha combination with 75% NPK (RDF) + 25% FYM.

(xi) Yield parameters of mustard viz. number of silique/plant, weight of silique/plant, Average weight of per silique, number of seed per silique, weight of seed per silique, weight of seeds/plant, oil content (%) and test weight of seeds was higher in hand weeding
by khurpi at 30 DAS + 75% NPK (RDF) + 25% FYM followed by isoproturon @ 0.75 ka/ha + 75% NPK (RDF) + 25 % FYM.

(xii) Seed yield and stover yield was higher in hand weeding by khurpi at 30 DAS + 75% NPK (RDF) + 25% FYM followed by isoproturon @ 0.75 kg/ha + 75% NPK (RDF) + 25% FYM and hand weeding by khurpi at 30 DAS and isoproturon @ 0.75 kg/ha combination with 50% NPK (RDF) + 50% FYM, respectively.

(xiii) Harvest index (HI) was found in hand weeding at 30 DAS + 75% NPK + 25% (RDF) FYM followed by hand weeding by khurpi at 30 DAS + 50% NPK + 50% FYM and isoproturon @ 0.75 kg/ha + 75% NPK (RDF) + 25% FYM, respectively.

(xiv) Hand weeding by khurpi at 30 DAS + 75% NPK (RDF) + 25% FYM was reduced the weed population after 30 days after sowing (DAS) upto harvest of crop followed by isoproturon @ 0.75 kg/ha + 75% (RDF) + 25% FYM in sorghum and mustard.

(xv) Minimum dry weight of weed/m² was found hand weeding by khurpi at 30 DAS + 75% NPK (RDF) + 25% FYM followed by isoproturon @ 0.75 kg/ha + 75% NPK (RDF) + 25% FYM in sorghum and mustard.

(xvi) Weed control efficiency and weed index was found in hand weeding by khurpi at 30 DAS + 75% NPK (RDF) + 25% FYM in sorghum and mustard.

(xvii) Minimum nutrient uptake by weeds was obtained in hand weeding by khurpi at 30 DAS and isoproturon @75 kg/ha combination with 75% NPK (RDF) + 25% FYM in both crops.
(xviii) Maximum soil organic carbon and available nitrogen, phosphorus, potassium and soil moisture in fodder sorghum and mustard crops were obtained with weeder cum mulcher + 50% NPK (RDF) + 50% FYM followed by hand weeding by khurpi at 30 DAS + 50% NPK (RDF) + 50% FYM and weeder cum mulcher + 75% NPK (RDF) + 25% FYM.

(xix) Maximum net profit and gross income (Rs. 23120.71 and 47050.50/ha) was due to hand weeding by khurpi at 30 DAS + 75% NPK (RDF) + 25% FYM. This was closely followed by isoproturon @ 0.75 kg/ha + 75% NPK (RDF) + 25% FYM (Rs.23009.86/ha and 46496.00/ha) and isoproturon @ 0.75 kg/ha + 50% NPK (RDF) + 50% FYM.
CONCLUSION

On the basis of results obtained and presented the following conclusion are drawn:

- Plant population was significantly influenced in fodder sorghum and mustard in the test and was found maximum in hand weeding by khurpi at 30 DAS + 75% NPK (RDF) + 25% FYM.
- Hand weeding by khurpi at 30 DAS with 75% NPK (RDF) + 25% FYM exhibited better growth and biomass production over other weed control practices and 100% NPK (RDF), 50% NPK (RDF) + 50% FYM during both the years of experimentation (2005-06 and 2006-07).
- Maximum green fodder and seed yield (q/ha) was found in hand weeding by khurpi at 30 DAS + 75% NPK (RDF) + 25% FYM that followed by isoproturon @ 0.75 kg/ha + 75% NPK through fertilizer + 25% through FYM and hand weeding by khurpi at 30 DAS + 50% NPK through fertilizer + 50% FYM.
- Minimum weed intensity/m², weed dry weight/m² and maximum weed control efficiency was observed in hand weeding by khurpi at 30 DAS followed by isoproturon @ 0.75 Kg/ha with 75% NPK (RDF) + 25% FYM in both treatments.
- Maximum nutrient uptake was found in hand weeding by khurpi at 30 DAS + 75% NPK (RDF) + 25% FYM in fodder sorghum and mustard crops.
- Maximum soil fertility i.e. organic carbon, available nitrogen, phosphorus and potassium were observed in weeder cum mulcher at 30 DAS + 50% NPK (RDF) + 50 FYM followed by hand weeding by khurpi at 30 DAS + 50% NPK (RDF) + 50% FYM.
- Net profit was more due to application of hand weeding by khurpi at 30 DAS + 75% NPK + 25% FYM (Rs. 23120.71/ha) followed by isoproturon @ 0.75 kg/ha + 75% NPK (RDF) + 25% FYM (Rs. 23009.86/ha).