Chapter VI

SUMMARY AND CONCLUSION

The present investigation entitled "Weed management in maize-based intercropping system" was conducted in split-plot design with three replication on sandy loam acidic soil during the Kharif season of 2004 and 2005 at Birsa Agricultural University farm, Ranchi to Study the effect of cropping system and weed management on growth, yield, weed growth nutrients uptake and monetary advantage of maize based intercropping system. The important findings of the experiment have been summarized hereunder:

6.1 EFFECT OF CROPPING SYSTEM

- Different cropping system could not affect the growth and yield attributes of the component crops.

- Intercropping of maize either with soybean or groundnut (1:2) markedly reduced the weed density, their dry weight and Weed seed rain compared with the sole cropping of either of the crops.

- Maize + soybean (1:2) intercropping system recorded to lowest value of weed index (3.9%).

- Pure stand of the component crops produced higher grain and straw yields than that of intercropping system.

- Intercropping of maize with groundnut (1:2) recorded higher maize equivalent yield and was statistically comparable with the maize equivalent yield obtained under maize + soybean (1:2) intercropping system. Sole cropping of groundnut gave higher maize equivalent yield than sole cropping of maize or soybean.
- Maize + Soybean (1:2) intercropping system increased the NPK uptake by crops compared with sole cropping of maize, soybean and groundnut.

- Maize + soybean (1:2) being statistically at par with maize + groundnut (1:2) intercropping system reduced the depletion of nutrients (NKP) by weeds and was significantly superior to the rest of the cropping systems.

- Intercropping system significantly influenced the interception of light by the crops. Maximum light was intercepted by maize + soybean (1:2) intercropping system and was significantly superior to their sole cropping.

- Intercropping systems also increased the land utilization by increasing the land equivalent ratio as compared with sole cropping.

- Maize+Soybean (1:2) intercropping system recorded higher value of competitive ratio and aggressivity than the maize + groundnut (1:2) intercropping system.

- Intercropping systems also increased the gross return, net return and benefit : cost ratio compared to sole cropping. Maize + groundnut (1:2) intercropping system being statistically at par with maize + soybean (1:2) intercropping system recorded the maximum value of these indices.

### 6.2 EFFECT OF WEED MANAGEMENT

- Weed management practices had positive influence on growth, yield attributes and yield of the component crops.

- Manual weeding at 15, 30 and 45 days after sowing and the effect of pre-emergence application of oxyfluorfen @ 0.2 kg a.i. ha⁻¹ proved
equally alike in increasing most of the growth parameters and yield attributes of crops.

- Weeding thrice at an interval of 15, 30 and 45 days after sowing and pre-emergence application of oxyfluorfen proved equally effective in increasing the grain and straw yields of component crops and both the measures showed their superiority over rest of the weed control treatments.

- Manual weeding thrice at 15, 30 and 45 days after sowing markedly reduced the weed density and dry weight of weeds while chemical weeding had positive influence on weed control efficiency.

- Manual weeding as well as pre-emergence application of oxyfluorfen @ 0.2 kg a.i. ha\(^{-1}\) increased maize equivalent yield. The least value of weed index (11.47%) was recorded due to weeding thrice at 15, 30 and 45 days after sowing being statistically at par with the weed index value (15.21%) recorded from the plots treated with oxyfluorfen @ 0.2 kg a.i. ha\(^{-1}\) as pre-emergence application.

- Manual weeding thrice at 15, 30 and 45 days after sowing recorded maximum land equivalent ratio (1.73) closely followed by pre-emergence application of oxyfluorfen @ 0.2 kg a.i. ha\(^{-1}\)

**CONCLUSION**

On the basis of results obtained, the following conclusions of significance and utility can be drawn.

Intercropping of maize either with soybean or groundnut in 1:2 row ratio suppressed weed density and weed dry weight more efficiently than their sole cropping. Maize + soybean intercropping system reduced the depletion of nutrients (NPK) by weeds. The yield attributes of the component crops did not differ significantly in intercropping systems compared with their sole
cropping. Yield reduction in component crops under intercropping system was
due to less number of crop rows as compared to their sole cropping. While
combined equivalent yield of component crops in intercropping system
increased. Maize + soybean (1:2) intercropping system minimized the
competition index, maximized the competitive ratio and aggressivity. Maize +
Soybean (1:2) intercropping system increased the nutrients (NPK) uptake by
crops. Raising maize either with soybean or groundnut increased the land
utilization, gross return, net return and benefit: cost (B:C) ratio. Maize +
groundnut (1:2) being at par with maize + soybean (1:2) intercropping system
recorded maximum value of these indices compared with pure stand.

Manual weeding thrice at 15, 30 and 45 days after sowing markedly
reduced the weed density and dry weight of weeds. Both the measures
manual weeding and pre-emergence application of oxyfluorfen @ 0.2 kg a.i.
ha\(^{-1}\) proved equally good in increasing growth parameters, yield attributes,
yield, nutrients (NPK) uptake and economic advantage.

Thus in last, we can say that though the performance of either manual
weeding at an interval of 15, 30 and 45 days after sowing or pre-emergence
application of oxyfluorfen @ 0.2 kg a.i. ha\(^{-1}\) in maize + soybean and maize +
groundnut intercropping system was equally effective but economic point of
view pre-emergence application of oxyfluorfen @ 0.2 kg a.i. ha\(^{-1}\) was found to
be the most suitable and remunerative under Ranchi condition.