SUMMARY AND CONCLUSION
Chapter 6

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Five field experiments were conducted on ginger crop in the research farm of Central Plantation Crops Research Institute at Kahikuchi, Gauhati, Assam, India. The experiments were repeated for two consecutive years for confirmation of the results. All the experiments were laid out in randomised block design with appropriate number of replications to facilitate the statistical analysis of data. Some of the salient findings of the experiments are summarised below:

1. In the first experiment, fifteen cultivars (thirteen indigenous and two exotic) were included to study their growth and yield performances for comparison and evaluation of crop value. It was observed that cultivar Nadia produced the highest yield (24,857 kg/ha) of fresh ginger closely followed by cultivar China (22,732 kg/ha). The other three promising local cultivars were Jugijan (19,196 kg/ha), Jorhat hard (18,964 kg/ha) and Tura (18,285 kg/ha). The fresh ginger yield of cultivar Nadia recorded 55 per cent more than the aggregate average yield of the fifteen cultivars. In terms of dry ginger yield, again cultivar Nadia topped the list followed by Tura, Jugijan, China and Jorhat hard.
2. In the second experiment the ginger cultivar Nadia was planted at ten day intervals beginning from 13 March to 22 May. The highest fresh ginger yield of 20,415 kg per hectare was harvested from the plots planted on 12 April. This was followed by the yield of 18,236 kg per hectare from those planted on 22 April. The lowest yield of ginger (7,370 kg/ha) was obtained from the samples planted on 22 May. It was further revealed that the yield from 12 April planting was 176.96 per cent more than the lowest yield and 50 per cent more than the aggregate average yield of all the planting dates.

3. The third experiment was designed to study the effect of inter-row and intra-row spacings together with the depth of planting of rhizome bits on cultivar Nadia. It was observed that the highest fresh ginger yield (20,020 kg/ha) was recorded from the spacing 25 x 20 cm with a planting depth of 10 cm and this was followed by spacing 20 x 25 cm together with 10 cm depth of planting giving a yield of 18,411 kg per hectare. The third highest ginger yield of 15,413 kg per hectare was harvested from the spacing 25 x 25 cm with 10 cm depth of planting. The lowest yield of 7,327 kg per hectare was obtained from the narrowest spacing of 20 x 10 cm with the planting depth of 5 cm. The percentage of increase of the highest yield was found to be 219.40 per cent over the lowest yield and 63 per cent more than the aggregate average yield of all the eighteen treatment combinations.

4. The fourth experiment was conducted on cultivar Nadia to study the influence of four sizes of rhizome seed bits (by weight) used for
planting. The yield of fresh ginger increased with the higher weights of ginger seed bits, the highest yield being 26.125 kg per hectare in the heaviest seed rhizome of 35g followed by the yield of 24.267 kg per hectare in the 25g rhizome bits. The lowest yield (4.178 kg/ha) in this respect was obtained from the 5g rhizome bit. The percentage of increase in the yield of ginger obtained from 25g bit was 480.83 per cent more than the lowest yield; but it was only 30 per cent more than the aggregate average yield of the four rhizome bit treatments.

5. The fifth experiment was conducted keeping Nadia as the cultivar, to assess the effect of different mulching materials and their role on the ginger crop. The highest yield of fresh ginger (24.103 kg/ha) in this experiment was recorded from the green leaf mulch. This was followed by the dry paddy straw mulch with a yield of 18.999 kg per hectare. The plots (no mulch treatment) without mulch gave the lowest yield of 5.639 kg per hectare. The yield obtained from the green leaf mulch was 327.43 per cent more than the lowest yield obtained from no mulch treatment and it was 50 per cent more than the aggregate average yield of all the four mulching treatments.

6. Lastly, the studies on inter-relationships among morphological characters and yield of 15 ginger cultivars, the use of response curve to find out the optimum crop-duration or planting date and optimum size of seed-rhizome for planting and the economics of cultivation of ginger were taken up based on the experimental findings of the five experiments under investigation.
From the study of some of the first order and second order partial correlation coefficients in 15 ginger cultivars, it was seen that among the growth characters tested, the shoot height and the leaves per clump were the two important yield contributing components of ginger crop.

From the response curve drawn using quadratic equation it was seen that the optimum crop duration to reap maximum ginger harvest was 267 days which corresponded to the planting date of 15 April.

By using response curve through the use of quadratic equation it was recorded that the highest yield of fresh ginger was expected to be harvested from the rhizome bit weighing 29.8g.

The cost of cultivation for each experiment was worked out and the suitable combination from the economic point of view was established.

An amount of Rs. 20,172 could be recovered as net return per hectare on a fresh ginger yield of 24,857 kg per hectare by using the cultivar Nadia under all the superior cultural practices identified in the present series of experiment.

The highest cost-benefit ratio of 2.57 was also associated with the cultivar Nadia. The second cost-benefit ratio of 2.49 was obtained from green leaf mulch. The date of planting 12 April gave the third best cost-benefit ratio of 2.11. This was followed by the spacing 25 x 20 cm and planting the seed bits at 10 cm depth, which showed a cost-benefit ratio of 2.07. The lowest cost-benefit ratio of 1.53 was associated with the planting of seed-rhizome weighing 35g. Thus all
the superior cultural factors and the right cultivar of ginger are capable of giving cost-benefit ratios ranging from 1.53 to as high as 2.57. This indicated that all these factors could profitably be used with good economic net returns in the cultivation of ginger under the present location of the experiments.

CONCLUSION

i) The best cultivar is Nadia and the second best is China with respect to the yield of fresh ginger. As regards dry ginger yield, Nadia again topped the list followed by Tura, Jugijan and China.

ii) 12 April planting gives the highest yield of fresh ginger and net return.

iii) The best spacing is 25 cm between rows, 20 cm between plants with a planting depth of 10 cm (i.e. 25 x 20 x 10 cm).

iv) The best size of rhizome is 25g per seed bit. However, 15g rhizome bit is also economically very profitable with the highest cost-benefit ratio.

v) Mulching is most essential for ginger cultivation, green leaf mulch gives the highest yield as well as the net return per hectare. However, dry paddy straw and dry arecanut leaf can also be used profitably.

vi) An amount of Rs.20 000 per hectare per annum can be obtained as net profit from ginger cultivation.