

CHAPTER-IV

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SUMMARY AND CONCLUSION

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Safflower has been recognised as a crop of economic importance since many centuries as it is a source of oil, food fodder and dye. The safflower stand in middle position in cultivation among other oil seed crops. The area, production and yield of safflower is increased during the last decade, safflower is generally grown in rainfed area as being fairly drought resistant crop. But the physiology of this crop is not studied well. In the present investigation the significant results are obtained which are summarised under the effect of aphid infestation study in safflower local variety.

Pests are more dangerous than the diseases and causes considerable losses and damage to safflower. According to Jagtap et al (1985) safflower aphid Uroleucon Carthami H.R.L. is the most notorious pest causing loss in yield about 20-25% in Andhra Pradesh, and 35% in Madhya Pradesh and complete loss in yield if no measures were taken in case of late sowing crop in November in Maharashtra Aphids are important sucking pest. Recently Ghule et al (1987) showed that sowing time affects aphid attack and yield. Rathore (1983) reported that late sowing safflower damaged more due to aphid attack. Jagtap et al (1986) observed that aphid - 'Uroleucon Carthami' H.R.L. preferred to plant parts of main stem and branches for their feeding and breeding. Aphids are present in colonies on the lower surface of the leaves and sucks the cell sap through stylet.

Aphids can be controlled by spraying crop with 0.03% Dimethoate, 0.03% Endrin 0.04% Manazaan, 0.01% fenitron, 0.05% Malathion, 0.05% monocrotophon and 0.07% Endosulphon. However recently pawar et al (1987) have shown that 0.01% cypermethrin was the most effective treatment for the control of safflower aphid. In the present investigation an attempt has been made to study the effect of aphid infestation on the safflower local variety (Carthamus tinctorius L.) The significant findings are recorded under the effect of Methyl parathion on the safflower local variety (Carthamus tinctorius L.)

(A) Before Spray Insecticide :-

- 1) Leaf area , a photosynthetic area is decreased in aphid infested plant Height of the plant is also decreased due to aphid infestation. ~~xxxxxx~~ Because of aphid infestation plant become stunted.
- 2) Biomass is also decreased because aphids sucks cell sap from the leaves and stem, leaf moisture also decreased from them.
- 3) The organic constituents like chlorophyll contents is also decreased in aphid infested plant. Chl. 'a' is decreased. and Chl. 'b' is increased than Chl. 'a' high chlorophyll content shows the high capacity of photosynthesis. The chlorophyll 'a': b' ratio is decreased.
- 4) Polyphenols :- Polyphenols are decreased in aphid



infected plant carbohydrates are ~~de~~ increased in this plants due to aphid infestation. Decreased polyphenol content indicates that the plant susceptible and the plant is easily attacked by pest.

5) Nitrogen is in sufficient percentage in plant. In plant Average sample may contain 4.5 percent but in cleaner sample may contain as much as 7 percent.

6) Mineral content is also important in plants. The sodium is increased and potassium content is decreased. The ratio of the sodium and potassium is also increased. The calcium content and magnesium is also increased.

7) The Iron and copper is decreased, slightly in aphid infested plant. The Zinc level is also decreased. The manganese level is also slightly increased. The chlorides are also decreased in aphid infested plant.

(B) After insecticide spray:-

- 1) Leaf area is increased in insecticide sprayed plant. Height of the plant, is increased in 0.05% (recommended dose) methyl parathion sprayed plant.
- 2) Biomass is also increased but in normal dose it is more, leaf moisture is also increased.
- 3) Organic constituents like chlorophyll is increased in plant. Chl.'a' is more than Chl.'b' is decreased at high

levels of methyl parathion (0.1%). The Cnl. a:b ratio is decreased in this plant.

4) Polyphenols are increased in normal dose increasing polyphenols indicates that resistant pest attack. In low level and in high level it is increased i.e. ~~max~~ in all concentrations polyphenols are increased but not over control.

5) Carbohydrates are increased in normal dose. Starch is increased in normal dose and sugars are slightly increased in normal dose.

6) Nitrogen content is maximum in normal dose (0.05%) and maximum Nitrogen increases the height, in high conc. and low conc. Nitrogen percentage is increased.

7) The inorganic constituents in the leaves of safflower variety show different behaviours under methyl parathion sprayed plant. The sodium content increased in 0.5% methyl parathion sprayed plant and potassium is also increased in 0.05% and 0.1% sprayed plant but 0.025% it is decreased. The ratio of potassium to sodium is also increased.

8) The calcium content increases over control in this plant. Magnesium content is reduced in safflower. Iron content is increased in them. But more in 0.05% methyl parathion sprayed plant.

9) Copper content is slightly changed, Zinc content is also

increased but more in 0.1% methyl parathion sprayed plant.

10) Manganese content is slightly increased chlorides content is also increased. But in 0.1% methyl parathion sprayed plant it is more than the control.

In conclusion it can be said that safflower variety show considerable changes in the physical properties, organic constituents and inorganic constituents, due to aphid infestation and after the insecticide like methyl parathion sprayed on the plant. It indicates that methyl parathion is most effective pesticide for the control of aphids present on the safflower. But the widely used organophosphorus insecticide like methyl parathion is unfavourable at higher concentration as a foliar spray, and useful at lower concentration as far the physiological parameters are concerned. The above recommended dose is affects the plant metabolism and causes pollution. Hence the organophosphorus insecticide is used in recommended dose or at low concentration.