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Dissipation studies on certain insecticides on lucerne

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Abstract Among the important fodder crops grown globally, Lucerne (Medicago sativa L.) is considered as one of the major fodder crops with a production of around 436 M. tons, grown for meeting the feed requirement of cattle and contains 15% of crude protein and 72% dry matter and is popularly called as "Queen of fodders" or "Green gold". With its high digestible fiber and high protein content nearly 5 times higher than sorghum, it deserves more attention than any other fodder crop (Ingawale et al, 2005). In India, lucerne cultivation is primarily concentrated in the states of Gujarat, Haryana, Punjab, Madhya Pradesh, Uttar Pradesh and Maharashtra in an area of 1000 hectares(Patel et al, 2003). In Andhra Pradesh, Tamil nadu and Karnataka, the variety Co – 1(P) is being commonly cultivated with an annual green fodder yield of about 60-80 tonns/ha whereas in the states like Gujarat, Rajasthan and Madhya Pradesh the varieties Anand-1 and 2 are being cultivated with an annual green fodder yield of about 80-95 tonns/ha respectively. Despite its potential, the actual yield are not being realized due to several constraints in the cultivation of Lucerne. The insect pest damage is one among them responsible for lowering the productivity. Aphids i.e. Pea aphid, Acyrthosiphon pisum Harris, Blue alfalfa aphid Acyrthosiphon kondoi Shinjii, Spotted alfalfa aphid Therioaphis trifolli F. , Cowpea aphid Aphis craccivora Koch., Jassids Empoasca spp, gram pod borer Helicoverpa armigera, leaf eating caterpillar Spodoptera litura, alfalfa weevil Hypera postica are the common pests causing heavy damage to Lucerne.The aphids Acyrthosiphon pisum Harris, Acyrthosiphon kondoi shinjii and Therioaphis trifolli F. are responsible for causing both qualitative and quantitative losses in Lucerne and contribute to almost 30% damage and yield loss in Lucerne .In order to tackle these pests, chemical control methods are one of the main control strategies in IPM. Indiscriminate use of pesticides not only causes severe ecological consequences like destruction of natural enemy fauna, effect on non target organisms but also directly affect in the form of residues. Hence there is a need to review the efficacy of different insecticides continuously and also to establish the dissipation pattern of relatively safer insecticides to fit in the pest management strategy. Experiments were conducted during 2011-12 to study the dissipation pattern of three effective treatments viz., spirotetramat 240 SC at 120 g a.i. ha-1, thiacloprid 240 SC at 120 g a.i. ha-1 and imidacloprid 240 SC at 200 g a.i. ha-1 among the various insecticides tested by collecting lucerne samples at 0, 1, 3, 5, 7, 10 and 15 days after spraying and analyzed at AINP on Pesticide Residues, E.E.I. premises, Rajendranagar, Hyderabad.The residues recorded for spirotetramat at 120 g a.i. ha-1 were found to be 0.6, 0.39, 0.20, 0.17 mg kg-1 at 0, 1, 3, 5 and recorded BDL at 7 and 10 days. The half life value (RL50) and waiting period (Ttol) were 1.65 and 5.13 days, respectively. Thiacloprid at 120 g a.i. ha-1 recorded residues of 1.75, 0.73, 0.47, 0.07, 0.02 mg kg-1 at 0, 1, 3, 5, 7 and reached BDL at 10 days. The half life value was worked out to be 1.4 days and the waiting period was 3.69 days. Imidacloprid at 200 g a.i. ha-1 recorded

residues of 0.47, 0.32, 0.05, 0.03 mg kg-1 at 0, 1, 3, 5 and reached BDL at 7 and 10 days. The half life value was worked out to be 1.4 days and the waiting period was 3.69 days. Hence, it can be concluded that usage of pesticides should be restricted and care should be taken before feeding the cattle with such fodder.

Keywords lucerne;residues;dissipation pattern;waiting periods