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ON THE EFFECT OF APPLICATION OF SOME PESTICIDES ON GRAIN SETTING IN RICE

Pesticides (insecticides and fungicides) are widely used to control pests and diseases of rice even during its flowering stage. That certain pesticide chemicals can induce sterility in rice pollen grains has already been reported. (Visalakshi and Nair, 1969; Choi *et. al.*, 1974). The present paper reports results of studies conducted on the effect of field application of some pesticides on grain setting in rice at the time of flowering.

Two sets of experiments were undertaken, the first using certain contact insecticides and fungicides and second using some systemic insecticides. The details of pesticides used in the two trials are given in Table 1 and 2. Seedling of Jaya variety of rice, used in these experiments were raised in flower pots at the rate of 3 seedlings per pot. The contact insecticides and fungicides except BHC were applied as sprays on three different occasions during the time of anthesis viz. 10 a.m., 11 a.m., and 12 noon. BHC was applied as dust from muslin bags. The pesticide treatments were repeated at the same three occasions on three consecutive days. On the first day at 10 a.m. (first occasion) all the flowers in which anthesis had taken place were removed. The unopened flowers remaining on the panicles after the pesticide application on the 3rd day at each occasion were also removed. There were two controls in this experiment; in one the plants were untreated and in the other they were sprayed with water. In the case of systemic insecticides they were applied as granules on the 40th day after transplanting each at 1 kg. a.i./ha. In both the experiments each treatment was replicated thrice. Results were assessed in terms of percentage of grains set in seven earheads taken at random from each pot.

Results are given in Table 1 and 2. It is seen that among the contact insecticides and fungicides under trial BHC, quinalphos and hinosan have reduced the grain setting significantly the percentage of grain setting being 56.7, 55.4 and 45.1 respectively. The effect of time of application of the pesticides on grain set is significant; pesticide application at 12 noon has given significantly more suppression in grain set than the application at 10 a.m. and 11 a.m.

Among the three systemic insecticides applied as granules, mephospholan and carbofuran have suppressed the grain set significantly, while suppression of grain set caused by phorate is not significant.

Table 1

Mean percentage of grains set in rice when treated with different pesticides at different intervals during flowering.

Pesticide and Concentration (% a.i.)	Percent grain set at different occasions. (ang. trans).			Mean in angles	%
	10 am.	11 am.	12 noon		
BHC 10 D	50.82	47.15	48.51	48.83	56.7
Carbaryl 0.25 S (Sevin)	51.27	58.33	52.79	54.13	68.7
Formothion (Anthio) 0.05 E	52.89	57.88	60.60	57.12	70.5
Quinalphose (Ekalux) 0.05 E	59.42	54.78	31.08	48.43	55.4
Hinosan O.C4 E	43.81	48.48	34.22	42.17	45.1
Aureofungin 50 ppm	49.72	56.25	45.31	50.43	59.4
Control (Water alone)	52.82	51.27	54.21	52.77	63.4
Control (Untreated)	61.44	53.33	57.17	57.35	70.9
Mean (in angles)	52.77	53.44	47.99		
Mean (per cent)	63.4	64.5	55.2		

CD Pesticide treatments 7.681 (Sig. at : CD Time of application 4.704 (Sig. at 5%)

Note: Names of proprietary products of the insecticides are given in brackets : E = Emulsion. S = Suspension. D = Dust.

Table 2

Mean per cent of grain set in rice treated with systemic insecticide granules

Insecticide	Mean per cent of grain set
Mephosfolan (Cytrolane)	46.6 (43.08)
Carbofuran (Furadan)	58.09 (50.15)
Phorate (Thimet)	63.6 (52.88)
Control (No treatment)	77.9 (61.95)

C.D — 11.68 (Sig. at 5%) Values in parenthesis are angles.

സംഗ്രഹം

പുവിടത്തു സമയത്തു നെൽച്ചെടികളിൽ കമിര-കീടനാശിനികൾ ഉപയോഗിച്ചാൽ വിളവിനെ അതു എത്രമാത്രം ബാധിക്കുമെന്നു തിട്ടപ്പെടുത്താൻ നടത്തിയ പരീക്ഷണങ്ങളിൽ നിന്നും കാലത്തു പത്തു മണിക്കൂർ പന്ത്രണ്ടുമണിക്കുമിടയ്ക്കു മരുന്നുകൾ തളിക്കുന്നതു ദോഷകരമാണെന്നു തെളിഞ്ഞു. വിവിധ കീടനാശിനികൾ ഉപയോഗിച്ചതിൽ, ബി. എച്ച്. സി. ക്യൂനോൾഫോസു എന്നിവയും കമിര നാശിനികളിൽ ഹീനോസാനു രൂപത്തിലുള്ള സിസ്തമിക് കീടനാശിനികളിൽ മേഫോസുഫോലാൻ, കാർബോഫ്യൂറാൻ എന്നിവയുമാണു വിളവിനെ പ്രതികൂലമായി ബാധിക്കുന്നതെന്നു സാധിച്ചു.

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College of Agriculture,
Vellayani.

A. VISALAKSHI.
L. REMA DEVI.
M. R. G K. NAIR.

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