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SHORT NOTE

Effect of sunshine exposure and different colour polythene bags on pulse beetle, *Callosobruchus chinensis* (Linn.)

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The scope of utilising the solar energy for disinfesting the stored products has great potential in storage oest management. Use of solar power through sophisticated means has been reported but there are not many studies on exploiting solar energy by simpler techniques (Anonymous, 1979). The present experiment was conducted with the objective to find out the combined effect of sunshine and the colour of storage bags against *Callosobruchus chinensis* Linn, the most serious pest of stored pulses. cowpea seeds of variety

Table 1. Effect of sunshine exposure and colour of polythene bags on *C. chinensis* in cowpea

Polythene bag colour	Sunshine exposure hours	Mortality (%)	Germination (%)
Black	3	50.33(45.18)	83.00(65.65)
	5	65.67(54.13)	82.67(65.40)
	7	94.00(75.82)	77.67(61.80)
Brown	3	40.67(39.62)	83.33(65.90)
	5	52.33(46.33)	83.00(65.65)
	7	70.66(57.20)	84.00(66.42)
Blue	3	43.00(40.98)	84.67(66.95)
	5	57.33(49.21)	84.33(66.68)
	7	76.67(61.12)	78.00(62.02)
Red	3	44.67(41.94)	84.33(66.68)
	5	59.33(50.38)	84.00(66.42)
	7	72.67(58.48)	83.67(66.14)
Yellow	3	41.33(40.00)	84.67(66.95)
	5	51.67(45.96)	84.33(66.68)
	7	64.00(53.13)	84.00(66.42)
Green	3	38.33(38.25)	84.33(66.68)
	5	51.67(45.96)	84.00(66.42)
	7	70.33(56.99)	83.67(66.14)
Colourless (transparent)	3	34.00(35.67)	85.33(67.47)
	5	46.33(42.89)	85.00(67.21)
	7	60.11(50.83)	84.67(66.95)
Unexposed	-	--	86.67(68.59)
S. Em. $\pm$		1.55	1.98
CD (p=0.05)		4.59	5.89

Figures in the parentheses are arc sine $\sqrt{\text{percentage}}$ values

'RC-101' (200 g) were filled in different coloured polythene bags (black, blue, red, yellow, green, and brown) of 12 x 18 cm^2 size. The transparent (colourless) bags were used as check. Each treatment was replicated thrice. In each bag, 100 newly emerged beetles were released. The sealed bags containing cowpea seeds with beetles were exposed to solar heat from 9.00 AM to 4.00 PM on the roof of the building in the month of August. The mortality of the beetles was recorded at 3, 5 and 7 hours of exposure period. The per cent mortality was calculated. The data on per cent mortality were transformed into angular values (arc sine $\sqrt{\text{percentage}}$) and subjected to analysis of variance.

The data on mortality of adult beetles presented in Table 1 revealed 94.00 per cent mortality in black coloured polythene bag at 7 h exposure period, which was significantly superior to other treatments. This was followed by the blue polythene bag (76.67 %), red polythene bag (72.67%), brown polythene bag (70.66 %) and green polythene bag (70.33 %) with 7 h exposure. Minimum adult mortality was recorded in colourless (transparent) polythene bags (34.00 %), green polythene bag (38.33 %) and yellow polythene bag (41.33 %) with 3 h of exposure which were found statistically at par each other. The mortality exhibited by black polythene bag was maximum as the black colour absorbs maximum solar radiation and as a result the insidious temperature of the bag might increase. Low mortality in colourless (transparent) bag might be due to the fact that the temperature was relatively less. Yadav (1977) used different solar drying beds for heating the grain bulk and found that the absorption by beds raised the temperature from 50 to 55 ^{0}C which was sufficient to cause mortality even to the hardest pest species like *Rhyzopertha dominica* and *C. chinensis*. Similar inferences were drawn by Dermott and Evans (1978), Begum *et al*. (1991) and Singh and Sharma (2003). In the present investigation, the descending order of mortality was recorded in black, blue, red, brown, yellow, green and colourless (transparent) polythene bags. It can be summarised that storing cowpea seeds in black coloured polythene bags and exposing to sun for 7h can effectively check pulse beetle infestation. This treatment also not showed any adverse effect on seed germination.

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