

PREVENTION OF RED PALM WEEVIL (*RHYNCHOPHORUS FERRUGINEUS* OLIVER) INFESTATION IN DATE PALMS.

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ABSTRACT

Cutting off-shoots during Takreeb from date palms in four villages of Wilayat Buraimi revealed that 88-96% infestation of red palm weevil occurred where the off-shoots were cut. Experiments were conducted in October-December 1999 and February-April 2000, by cutting the off-shoots close to trunk base, treating the cut surface with insecticides and also by deep cutting to remove the growing point and filling with mud alone and mud + insecticides. The combined data of both the experiments showed that the infestation of red palm weevil was 31.39, 11.39, 0.91 and 0 per cent in the above treatments, respectively.

INTRODUCTION

Red palm weevil, *Rhynchophorus ferrugineus* is a serious pest of date palm in Northern Oman, particularly in Buraimi, Mahdah and Musandam area. The same insect was reported to cause damage in other Gulf countries including Saudi Arabia, UAE, Iraq etc. The damage caused by this pest results in presence of tunnels on the trunk and base of leaf petiole; oozing out of thick yellow to brown fluid from the tunnels; extrusion of fibers from the holes; a typical fermented odor from the fluid and chewed up frass. Most often the attack by the weevil is discernible only when the palm has been extensively damaged. In case of severe infestation the plant succumbs to death. The female of red palm weevil lays the eggs mostly in cracks, crevices and wounds caused on plant parts by making a hole on the tissue with its snout.

Very little information are available on the agricultural control practices of RPW which is a very safe to environment and have a good control effect.

Appearance of off-shoots from the trunk of date palm is a common phenomena. Usually such off-shoots are seen more in orchards where the plants are neglected and are under nutritional stress when compared to an

orchard where they are well cared. These off-shoots are seen often in young palms of age 6-10 years or in palms which are older but have retarded growth and small height of about 1 - 1.5 m. These off-shoots being unwanted growth are usually removed by cutting at trunk surface. In doing so wounds are created. Usually the off-shoots are cut while doing "Takreeb", that is cutting off the dried portion of the leaf base at trunk surface. Takreeb is a regular agricultural practice done during October-December. This coincides with the peak adult emergence as evident by pheromone trap data collected by Department of Agriculture, Buraimi and Department of Plant Protection, Al-Ain.

MATERIALS AND METHODS

To know the impact of cutting the off-shoots on the infestation of RPW, survey was conducted in four villages, viz., Saara, Buraimi, Al-Uqdah and Hammasah of wilayat Buraimi. Twenty five infested palms were selected from each of these villages showing symptoms of RPW infestation where the off-shoots were cut.

In an attempt to develop a method to prevent the infestation of RPW on the cut surface of off-shoots, experiments were conducted during October-December 1999 and February-April 2000. The off - shoots of 33 palms including 13 palms as control were cut from the base very close to the trunk creating wounds. Twenty palms were treated by applying dimethoate to the wounds with a paint brush. In another 90 palms off-shoots were cut by completely removing the growing point. From these, the cut portion of 40 palms were covered with mud alone; 30 with mud + dimethoate; 10 with mud + Anthio and 10 with mud + Applaud. The palms were observed for a period of 2-3 months post-treatment to know the effectiveness of various applications in preventing the infestation.

RESULTS AND DISCUSSION

The results of the survey conducted to know the impact of cutting the off-shoots in four villages Wilayat Buraimi revealed that out of 25 infested palms (Table 1) seen in each of villages Saara, Buraimi, Al-Uqdah and Hammasah 22 (88.0%), 23 (92.0%), 22 (88.0%) and 24 (96.0%) palms were showing symptoms of RPW infestation where the off-shoots were cut. Out of a total of 100 infested palms observed during the survey in the Wilayat Buraimi, 91 palms (91.0%) were found infested at the sites where off-shoots were cut. The symptoms were mostly wilting of new tillers, extrusion of tissues and brown oozing. Only in 9 palms out of 100, the infestation was found on other than the cut surface. The

symptoms were extrusion of tissues and brown oozing. It is evident that cutting of off-shoots results in the exposure of soft cut surface and the sap oozing out attracts RPW adults to feed on and lay eggs.

In an attempt to develop a method to prevent the infestation of RPW on the cut surface of off-shoots, experiments were conducted on young plants with off-shoots coming from the trunk. The off-shoots in 33 palms including control were cut from the base very close to the trunk thus creating wounds and from them 20 were treated with dimethoate leaving 13 as control without any insecticidal treatment. The results (Table 2) indicate that cutting the off-shoots at the trunk surface is leading to new growth of the same off-shoot suggesting that growing point of the off-shoot is not killed. Further it leads to high infestation of 31.39% in untreated control and 11.39% in dimethoate treated palms. Abraham et al. (1998) reported that several wounds are caused on the palm as a result of the periodic removal of leaf petioles and offshoots. These freshly exposed plant tissues attract weevils for egg laying. Hence immediate dressing or treatment of such injuries with suitable insecticides is important to prevent pest entry.

The experiments had 90 palms with deep cutting treatments by removing the growing points. Out of which in 40 palms where the cuts were filled only with mud, the off-shoots re-growth of was reduced to 26.48% as compared to control (cutting at trunk surface) with 70.07%. The off-shoots re-growth of in treatments (deep cutting + dimethoate + mud cover); (deep cutting + Anthio + mud cover) and (deep cutting + Applaud + mud cover) resulted in 5.85, 4.76 and 22.45 per cent respectively. The infestation level in the deep cutting treatments ranged from 0.00 to 0.91% compared with control (cutting at trunk surface), where it was 31.39%.

Similar kinds of recommendations have been made in the past by treating the cut surfaces with pesticides and filling with sand. Mathen and Kurian (1966) recommended filling leaf axils of young coconut palms with 5 percent BHC/chlordane along with sand as a preventive measure for red palm weevil. Abraham (1971) found that red palm weevil entry through wounds can be prevented by treating such wounds with BHC or coal tar + BHC. However, taking into consideration the dry conditions of the Middle East, tar can be substituted with soil and entry of the pest through wounds on date palm can be prevented by applying a slurry of soil and insecticides (1 kg soil + 10 gm carbaryl 85%) with the help of a brush, immediately after the injury is caused.

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Table 1. Red palm weevil infestation on cut surface of tillers and on other sites.

Area	Total No. of infested palms observed	Palms infested due to cut-surface of tillers	Percent infestation	Palms infested on other sites than cut surface of tillers	Percent infestation
Saara	25	22	88.00	3	12.00
Buraimi	25	23	92.00	2	8.00
Al-Uqdah	25	22	88.00	3	12.00
Hammasah	25	24	96.00	1	4.00
Total	100	91	91.00	9	9.00

Table 2. Effect of treating cut surface of trunk, deep cutting of off-shoots and mud cover on infestation of RPW during 1999-2000.

No.	Treatment	No. of palms in the treatment	Total No. of off-shoots in plants before cutting	No. of off-shoots coming after the treatment	% off-shoots coming in the treated palms	Infested off-shoots after treatment	% off-shoots infestation in relation to initial No. of off-shoots
1	Control (cutting at trunk surface)	13	86	68	70.07	27	31.39
2	Surface cutting + dimethoate (No mud cover)	20	171	158	92.39	18	11.39
3	Deep cutting + mud cover only	40	219	58	26.48	2	0.91
4	Deep cutting + dimethoate + mud cover	30	188	11	5.85	0	0
5	Deep cutting + Anthio + mud cover	10	63	3	4.76	0	0
6	Deep cutting + Applaud + mud cover	10	49	11	22.45	0	0