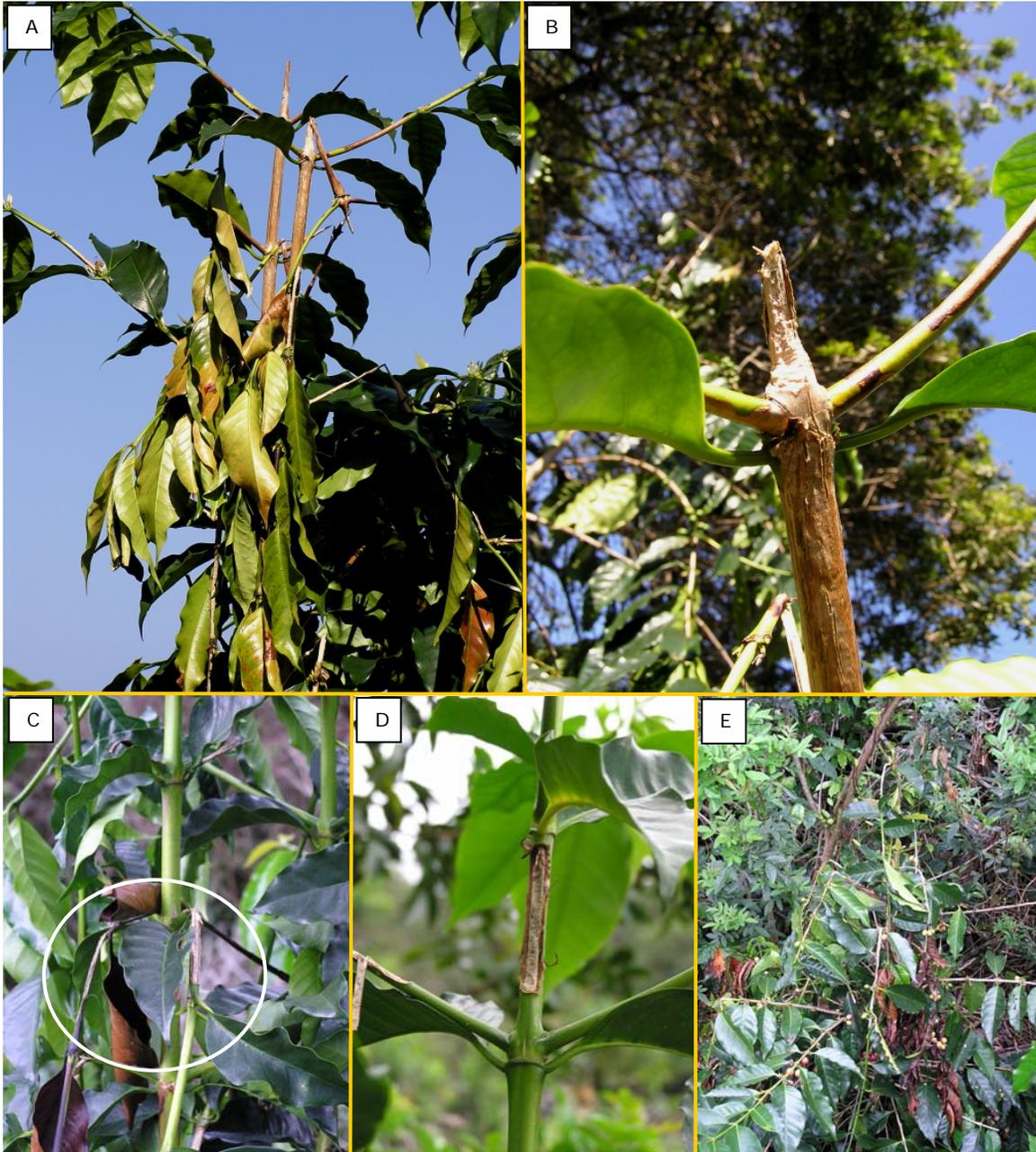


Coffee Pests: Rats!

Rat damage to Kona coffee plants (by Scot C. Nelson)

Rats consume the young cambium and pith of Kona coffee branches and stems, and can sever them by gnawing through. Rat injury is associated with coffee grown adjacent to forested areas.



- A** Recently severed coffee verticals from rat chewing; one of them still hangs from the plant.
- B** Rats hollowed out the stem and left teeth marks on the woody tissue of stems in A.
- C** Rats also feed on lateral branches of coffee (white circle).
- D** Rats may feed on the green stem tissue of coffee verticals.
- E** Several hanging and dead verticals on a coffee plant which was planted next to a forest.

Integrated Pest Management Data for Rats (by Scot C. Nelson)

The pith and cambium of young coffee verticals contains both water and nutrients for the rat, and are relatively high in plant sugars. Rats may prefer to descend upon coffee verticals from the relative safety of overhanging tree branches which contact the coffee plant. There are at least two rat species which attack coffee in Hawaii, the roof rat and the Polynesian rat.

Rats	The rat is very prolific. The young rat is sexually mature at 4 months and reproductive potential is continuous until death. Rat behavior is influenced by thirst, hunger, sex, maternal instinct, and curiosity. Rats cannot go without water for more than 48 hours or without food for more than four days. Thirsty or hungry rats become desperate and are therefore easier to control because they are less wary. Rats are nocturnal and tend to become habitual. They have a keen sense of smell and hearing, and a fair sense of sight with ability to see in the dark.
Roof rat (<i>Rattus rattus</i>)	A medium to large rat, body 5 to 7 inches long. Tail slender and always longer than head and body combined. Body color varies from grey to jet black; underside grey, grey-white, or white. Nose sharply pointed, large eyes, large, thin ears; in female, five pairs of nipples; <u>expert climber</u> and wire scaler; frequents cane fields, macadamia nut, <u>coffee</u> , papaya, and banana groves; nests in attics of buildings, trees, banana bunches, and abandoned burrows of Norway rats.
Polynesian rat (<i>Rattus exulans</i>)	Comparatively small in size, weighs 2 to 3 ounces, and measures 4 to 5 inches long. The tail is as long as or slightly longer than head and body combined; bristles along the tail give the appearance of faint, narrow rings. The body color is cinnamon-brown to cinnamon-buff to grey with stiff black guard hairs on back and sides; the underside is light buff or grey. The nose is roundly pointed, ears rather short, eyes medium size, hind feet dark on underside. Females have four pairs of nipples. A field rat, rarely found near buildings in Hawaii. It nests in burrows, gulches, rock piles, rock walls, wastelands, fields, and embankments. It causes great damage to sugarcane, pineapple, macadamia nuts, coconuts, <u>coffee</u> , and other fruit and vegetable crops.
Hosts	Rats are omnivorous. Among agricultural plants and commodities they have a wide host range, including fruits, nuts and plant tissues. Rats are also predators.
Damage	Rats can damage can kill or severely injure coffee verticals.
Management	
cultural	Remove access to food, water, or shelter, or limit rat accessibility; traps; trim overhanging trees away from coffee plants; cats and dogs.
chemical (Hawaii)	Rodenticides are the most effective means of controlling large and small rodent populations. Strict safety precautions should be used in the preparation, broadcast, or placement and disposal of poison baits for rodents.

Literature cited

Brennan, Barry M. Rodents and rodent control in Hawaii. 1980. Research Extension Series 002. University of Hawaii at Manoa, College of tropical Agriculture and Human Resources, 630 US ISSN 0271-9916, <http://pestworld.stjohn.hawaii.edu/studypackets/rodents.html>