

WHERE DOES THE GREEN PEACH APHID COME FROM?

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Although small in size, the green peach aphid really gets around and can infest potato fields located in almost every nook or cranny in the State of Washington -- or in the world, for that matter. This frail little fellow might more appropriately be called no-see-um but the name already applies to another small insect which may be more irritating for a time but is sooner forgotten. How often has a grower said, "I didn't know I had 'em," after finding that leaf roll had taken his crop following the unnoticed feeding of infected aphids? Every potato grower presumably knows a green peach aphid when he sees one but some growers rarely look for them and others believe that it takes a lot of aphids to spread the disease. But don't you believe it, because it ain't necessarily so.

Where does the green peach aphid come from? Some aphidologists believe it evolved on some kind of stone-fruit tree in central Asia where it customarily went to herbaceous plants in the spring and returned to the trees in the autumn and overwintered. This it does in many cooler parts of the temperate zone but where winters are warm, it ignores trees completely and lives the year round on many kinds of annual plants. In some intermediate areas, such as eastern Washington, not all of the aphids are of the same mind - some return to stone-fruit trees in the autumn but the lazier ones sit tight on hardy, herbaceous plants throughout the winter. This lack of single-mindedness is good for the aphid but bad for the potato grower because it provides a greater variety of satisfactory, overwintering hosts and greatly increases the number of locations where the pest can overwinter.

Throughout the spring and summer, no males are present and all winged and wingless aphids give birth to living young without mating. But those winged aphids that return to peach trees in the autumn give birth to true females. Small, winged males fly to the trees, mate with the females and then small, shiny black eggs are laid on the twigs. The eggs can survive the coldest winter and, unless the orchardists spray, the peach trees are an annual, spring source of many green peach aphids that eventually find their way to potato fields. Peach orchards extend along the eastern foothills of the Cascade Mountains from British Columbia south to Benton City, Washington.

The unadventurous aphids that attempt to overwinter as yellowish green, summer forms on hardy, herbaceous plants lead a rather precarious life. Relatively few of them may survive if the winter is severe but those that do are widely scattered throughout eastern Washington and increase in numbers rapidly in the spring.

In the spring, winged aphids may leave the trees or other plants

on which their forebears overwintered when the wind is less than 3 miles an hour and fly aimlessly about. Under such conditions, some reach potato fields and some do not. Once air-borne, they cannot control the direction of their flight if the wind increases in velocity and are carried along with it. At times, wind may blow from any direction in eastern Washington but prevailing winds are from the west, or northwest (Figure 1). Many winged aphids that are produced in peach orchards from Wenatchee to Benton City, and on weeds that flourish in vast areas on each side of the Columbia River, are involuntarily carried eastward by the wind and settle out in irrigated fields.

Overwintering sites and the many host plants of the green peach aphid in eastern Washington were studied intensively, starting in 1958, and in 1958 and 1959 the spring and summer migration patterns of the aphid were determined by placing yellow, water-trap pans at various locations in the area bounded by Ellensburg, Warden and Quincy. Also, during this period, and in following years, aphid counts were made in potato fields within this area and differences in seasonal population trends determined for the various locations. These data are still applicable to current conditions and show that infestations usually start first at Othello and later at Quincy, Moses Lake, Warden and Ellensburg, in that order (figure 2). Data for the Pasco area is incomplete but in some years, at least, infestations start on potatoes about a week earlier than at Othello.

The data presented in Figure 2 is of particular interest because it shows that larger populations of the green peach aphid may be expected along the western edge of the potato-growing areas than at Warden and Moses Lake. Changes in the location of peach culture south of Wenatchee and more thorough spraying of the remaining orchards in the spring seem responsible for a considerable reduction in aphid populations at Quincy in the spring. On the other hand, the planting of peach trees on the Royal Slope and southwest of Othello may gradually increase the size of the spring populations of aphids on potatoes in that area.

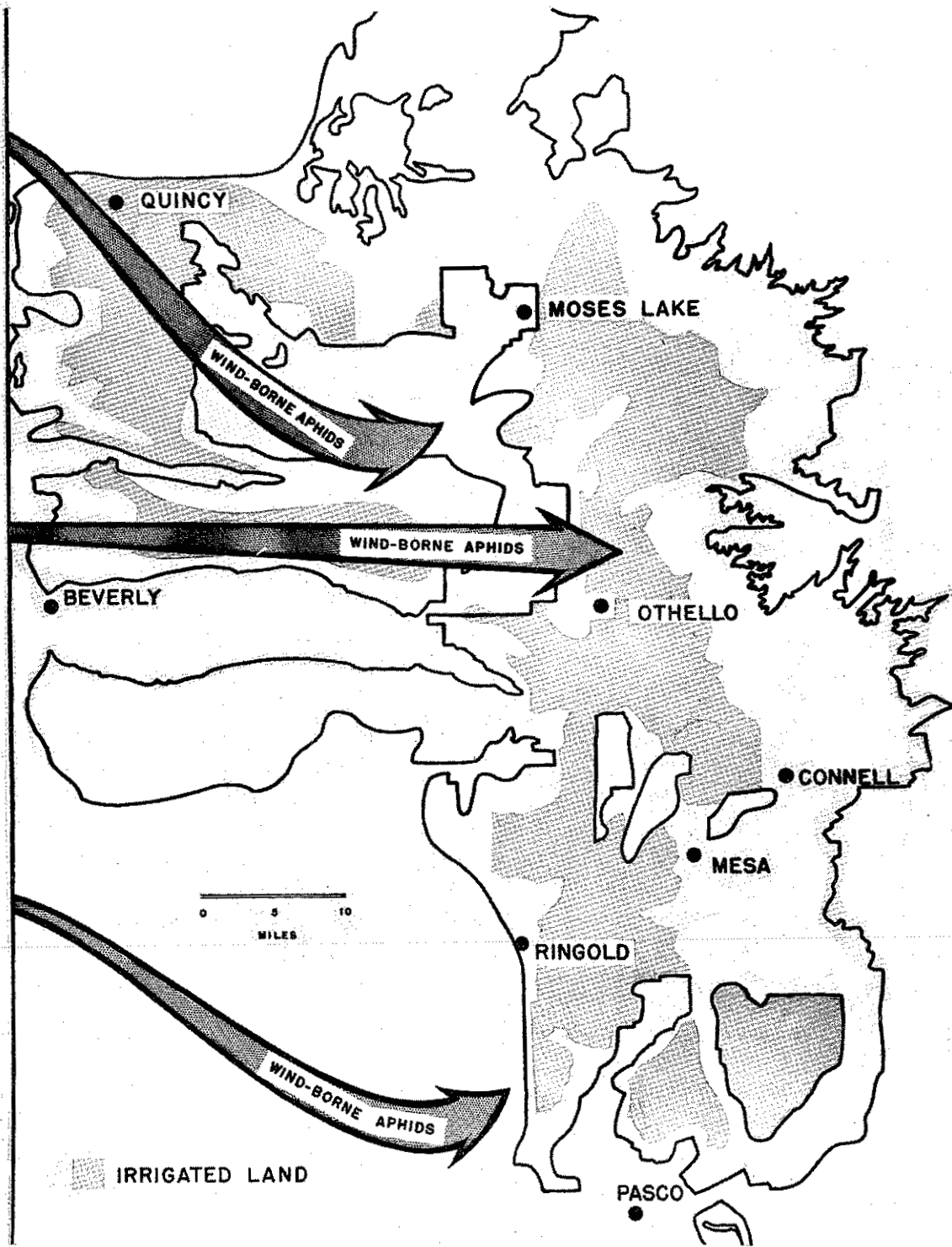


Figure 1. Direction of prevailing winds that carry many winged green peach aphids from peach orchards east of the Columbia River and from other overwintering sites into the potato growing areas of the Columbia Basin.

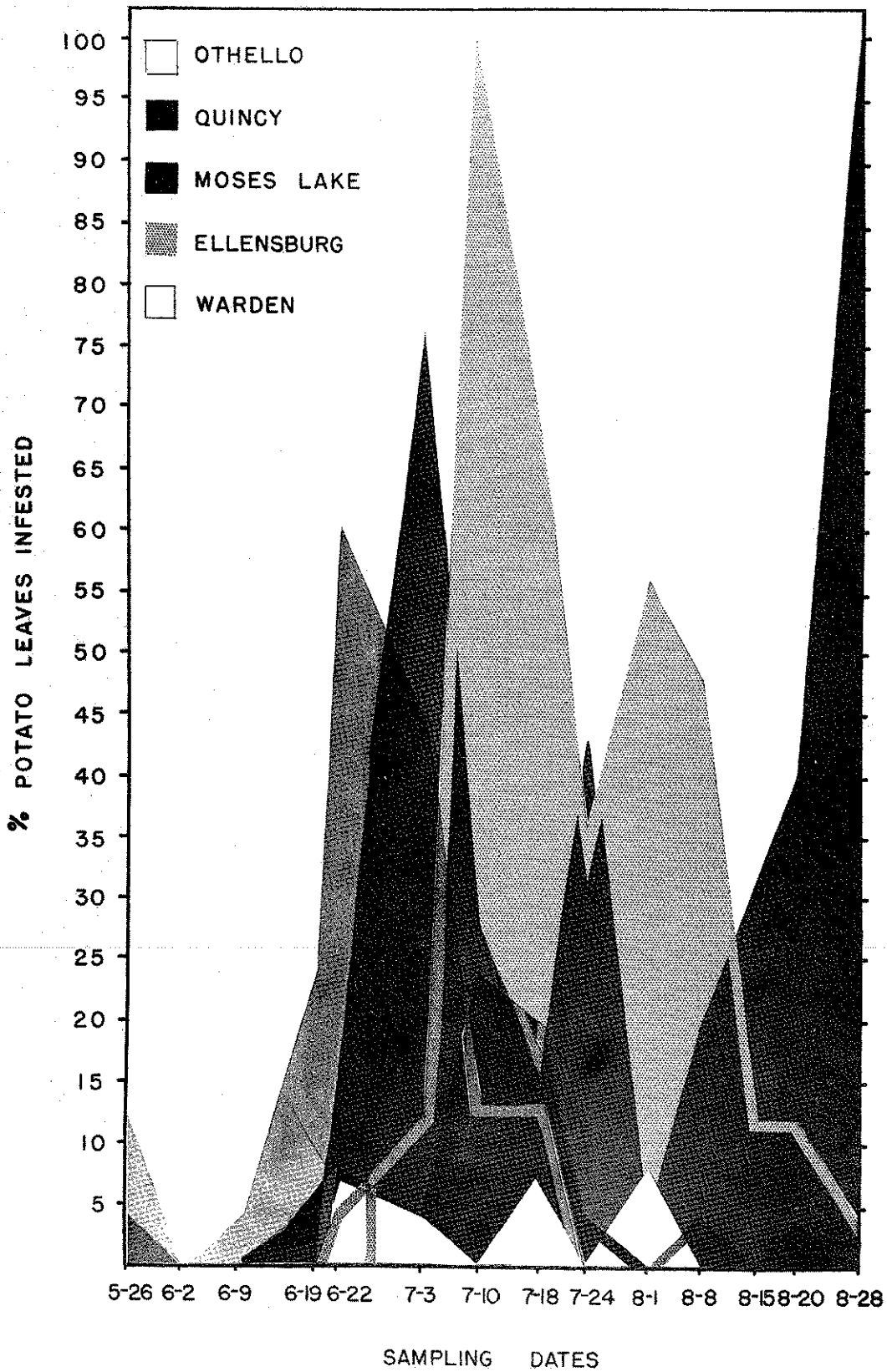


Figure 2. The seasonal increase of green peach aphid infestation on potatoes at various locations during the 1958 season.