Arizona Russian Wheat Aphid Survey, 1991

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Abstract

Russian wheat aphid (RWA) were found for the first time in Mohave county, bringing to seven of the fifteen counties in the state that have now reported incidence of the pest. RWA presence in the southeastern part of the state came about a month later than was noted in 1990, and in most cases didn't reach threshold numbers until after heading. Hence, only 23% of the fields surveyed were sprayed. Economic damage was considered lighter than usual throughout the state.

Survey Activities: In 1991 the major survey emphasis was placed in the southeastern part of the state where the most damage has been reported in the past. Thirteen fields were surveyed weekly from March 12th to the end of May when most of the fields were beginning to dry. In the western part of the state fields were monitored on a more informal basis by the fourth and fifth authors. Again, no RWA were found in Yuma and LaPaz counties (the counties bordering California, in the southwestern part of the state) but they were found for the first time in the extreme northern part of Mohave county, next to the Utah border. This leaves eight of Arizona's fifteen counties that have not reported the presence of Russian wheat aphid, but only two of those remaining counties grow small grains that are affected by the pest. See Table 1 for a summary of the RWA finding in Arizona.

In the southeast where fields were carefully monitored, the infestation came much later than the year before with the first occurrence noted around the 23rd of April whereas they were first noted around the 28th of March in 1990 (1). Figure 1, 2 and 3 show the results of the surveys on wheat, barley and oat fields, respectively. Other aphid species were present in higher infestation rates than RWA in all fields and no RWA were found in three of the fields surveyed. Below 3600 feet elevation (all of Greenlee county and most of Graham county) no fields reached the 10% threshold infestation level and none were sprayed. The wheat fields on Haas and Hunsdon were about 4200 feet elevation and both approached or reached the 10% threshold level and were sprayed. One spraying controlled the aphids for the rest of the season. The Lovett wheat field in Hidalgo county (New Mexico) approached the 20% infestation level but was not sprayed. This site was the release site for exotic parasites and predators in the USDA-APHIS program. Information on this release is found in Table 2.

Predators were found in all sites. The number of predators found in 50 - 180° sweeps are noted in the figures with the dashed line and the species of predators are noted in the boxes

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under the predator notation. LB, NAB, OR and LACE represent Lady Beetles, Nabid, Orius and Lacewing, respectively. These notations are placed in order of the number of each predator species present, in other words, if the largest number of the predators observed were lady beetles, LB appeared first in the box.

References

1. Clark, Lee J. 1990. Russian wheat aphid survey in southeastern Arizona, 1990. Proceedings of the Fourth Russian Wheat Aphid Workshop. Montana State University, Bozeman, MT.

2. Flanders, R.V. and T.L. Burger. 1992. 1991 activities and accomplishments fothe USDA-APHIS cooperative biological control project against RWA. Proceedings of the Fifth Russian Wheat Aphid Workshop.

Table 1. Arizona counties, RWA host crop acres and presence of RWA in 1991.

County	Acres of small grains (1990)	Russian wheat aphid presence
Apache	1,300	None, no surveys taken
Cochise	1,800	Found in nearly all fields, many fields sprayed
Coconino	*	None, no surveys taken
Gila	*	None, no surveys taken
Graham	1,800	Found in most fields, appeared late, few treated
Greenlee	700	Found in most fields, appeared late, few treated
LaPaz	16,000	None
Maricopa	34,400	Present, no economical damage
Mojave	900	Caused severe damage to a few fields
Navajo	*	None, no survey taken
Pima	2,400	Present, no economical damage
Pinal	22,100	Present, little economical damage
Santa Cruz	*	None, no surveys taken
Yavapai	700	None, no surveys taken
Yuma	34,400	None

* Acreage was non-existent or could not be reported without reporting individual holdings.

Table 2. Russian Wheat Aphid Parasites and Predators released in 1991.

Species	Source	Release date				Totals
		5/1	5/8	5/15	5/22	
Coccinellids						
Hippodamia variegata	Canada, Quebec	1138				1138
	Mix (Frn, Trk, Can)	507				507
	USSR, Kirghiz	1590	500	265		2355
	USSR, Moldavia	1310	500	165		1975
	Morocco, Marrakech	979	432	240		1651
	Chili, Santiago	915	239	254		1408
Propylea quatuordecimpunctata	Canada, Quebec	500				500
	Mix (Frn, Trk, Can)	535				535
	USSR, Untd Rep	1567	560	238		2365
Scymnus frontalis	Turkey, Beypazari	1145	564	250		1959
Semiadalia undecimnotata	USSR, Ukraine		546	250		796
Hymenoptera						
Aphidius colemani	Pakistan, Parachinar	1000	600	3750	2000	7350
Aphidius matricariae	Iran, Ehglid	400	250	1550	250	2450
	USSR, Moldavia	1000	500	7000	2500	11000
Diaeretiella rapae	Morocco, Marrakech	1000	600	350	250	2200
	Syria, Qatara	1050	500	600	500	2650
	USSR, Kirghiz	1000	600	450	3000	5050
Aphelinus asychis	Canada	1300	500	700	250	2750
Aphelinus varipes	Pakistan, Parachinar	0	100	100	250	450
	Uzbekistan, Tashkent	0	0	100	250	350
	Totals	16936	6991	16262	9250	49439

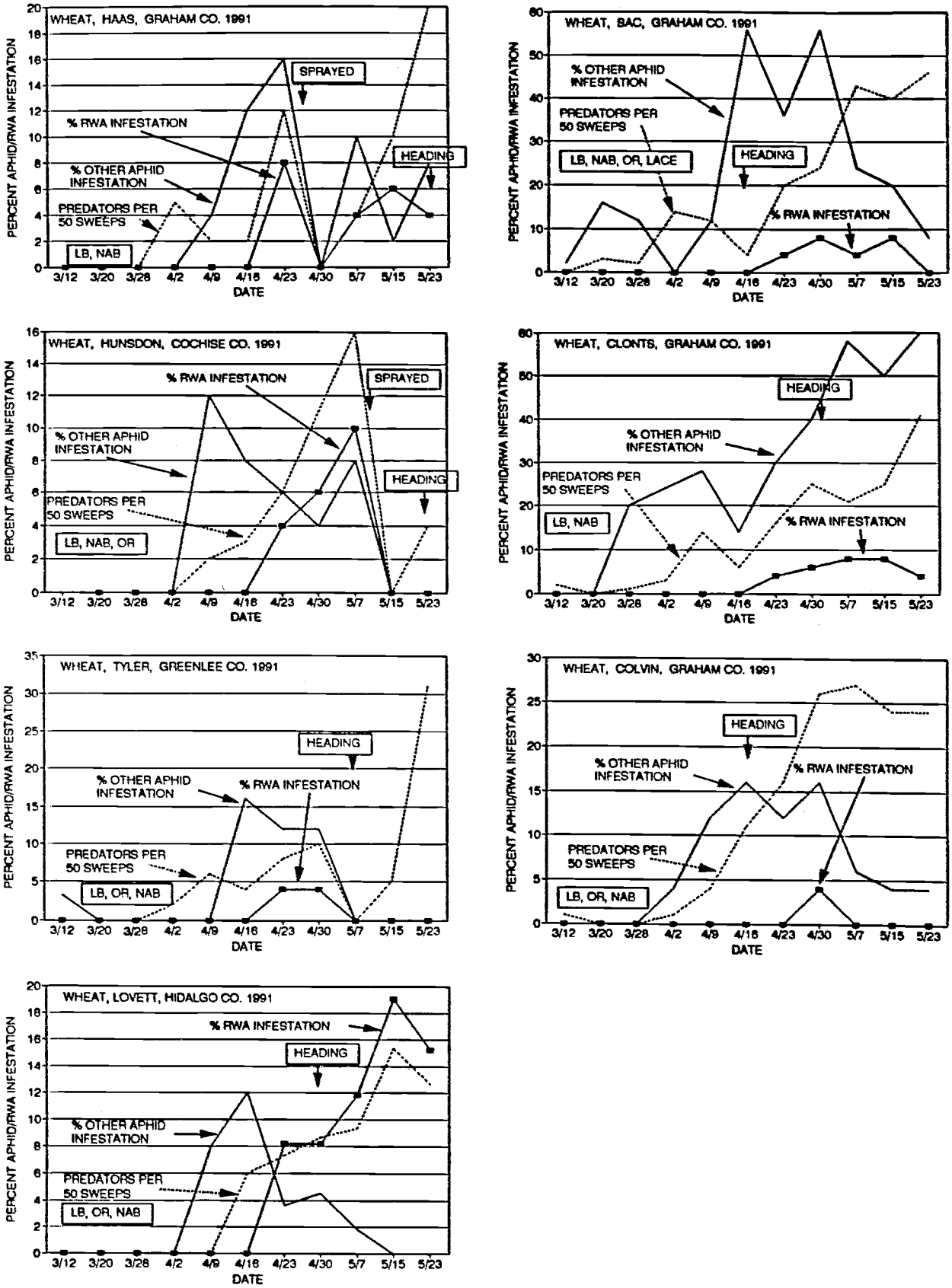

Figure 1. Graphs of insect surveys made in wheat fields in southeastern Arizona, 1991.

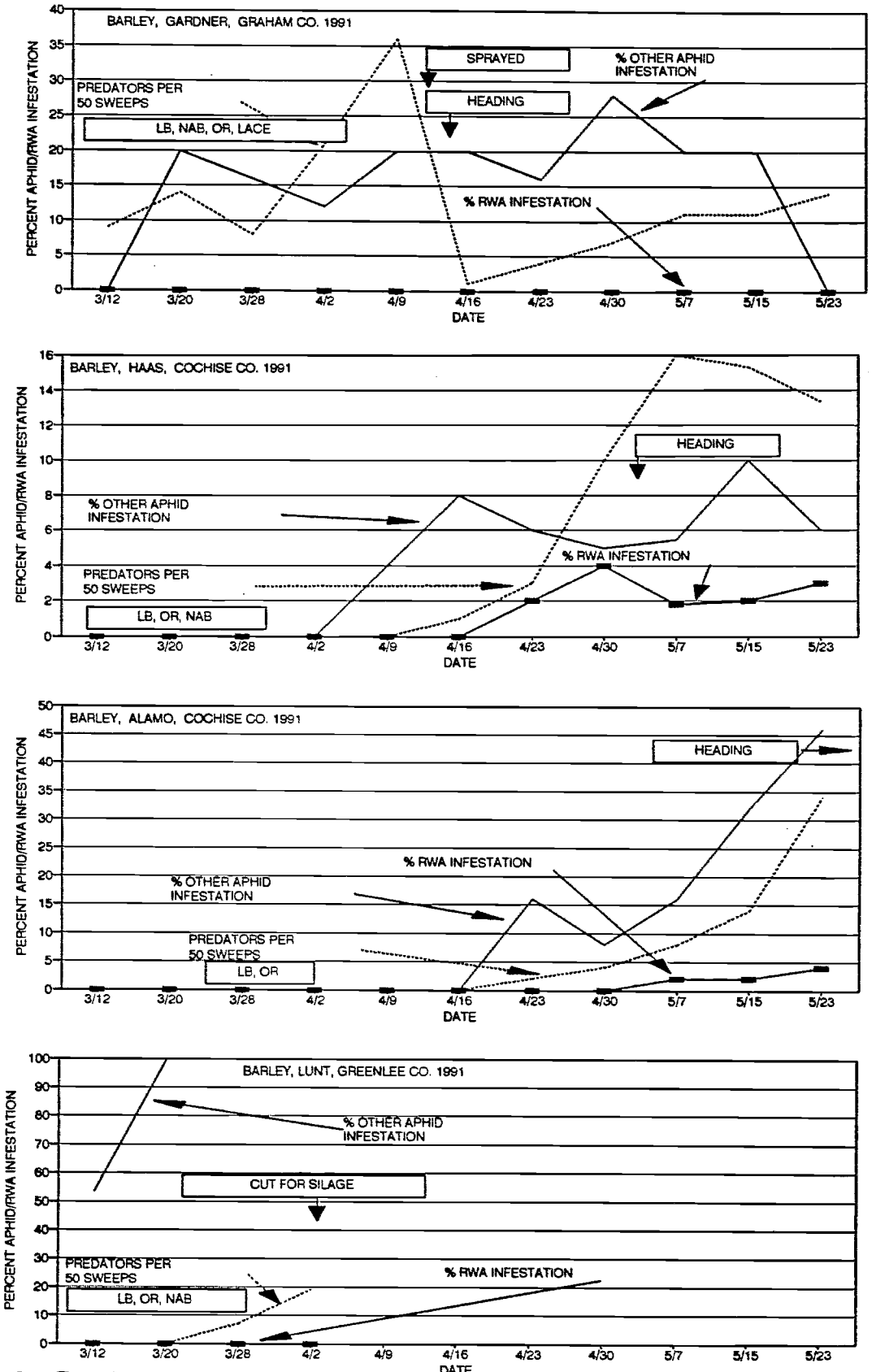

Figure 2. Graphs of insect surveys made in barley fields in southeastern Arizona, 1991.

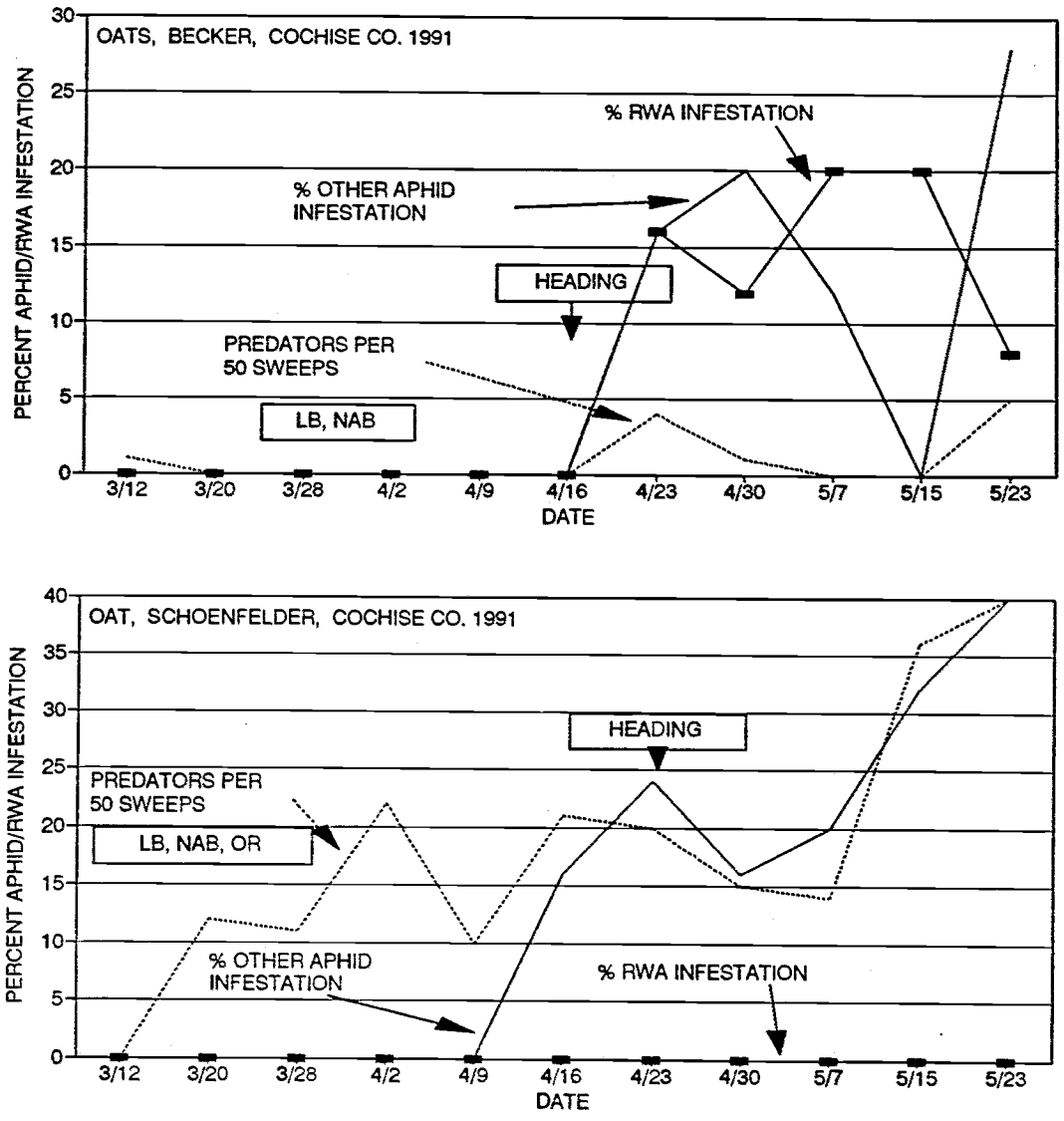

Figure 3. Graphs of insect surveys made in oat fields in southeastern Arizona, 1991.