

Biology/Phenology

Apple Varieties and Resistance to Apple Aphid

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At the National Virus-free Fruit Tree Collection (IR2), IAREC, Prosser, WA, Bill Howell maintains a block of different varieties and strains of apples. On 17 July, we evaluated aphid populations in this block of 331 different trees.

For each tree we randomly selected 5 shoots, measured shoot length, determined if shoot growth was terminated and recorded the number of aphids on the most infested leaf.

Results

The mean shoot length, the percent shoots terminated and mean number of aphids per most infested leaf for varieties which had no terminated shoots and those where all the shoot growth was terminated are given in Table 1. In general, few aphids were found on terminated shoots. As expected, trees with 80 to 100% terminated shoots had fewer aphids than trees with 0 to 60% terminated shoots. Of interest are trees with 0 to 20% termination and low aphid populations. The data clearly show shoot termination does not always account for the low aphid populations and those trees may be somewhat resistant to aphids.

Conclusion

It may be possible to breed for aphid resistance in apple trees using some of the varieties we evaluated. However, further evaluation of aphid populations on these and other varieties is needed.

Table 1. Pear Acres variety block, aphid number/shoot length and termination relationship, 17 July 1995.

	IR number		Name	Shoot length	Termination	Aphids
	1	3	Cortland	28	0%	4
	8	1	Delawine	27	0%	20
	270	1	Jonared	24	0%	24
	4	1	Delcon	26	0%	36
	29	1	Wealthy (Double Red)	330	0%	51
	18	1	Jonared	24	0%	53
	37	1	Russian R12740-7A	19	0%	54
	262	1	Strathmore	23	0%	60
	352	1	Red Dietrick	14	0%	61
	338	1	Anna	19	0%	63
	22	1	Monroe	24	0%	65
	389	1	Granny Smith	27	0%	76
	2	1	Crandell	21	0%	83
	219	1	Stayman	27	0%	87
	179	1	Jay Darling	27	0%	93
	290	1	Jonathon	27	0%	94
	261	1	Radiant	24	0%	95
	193	1	Anonovka Shafran	26	0%	95
	105	2	Ottawa 524	30	0%	96
	39	1	MM.102	23	0%	98
	387	1	Gravenstein	21	0%	99
	251	1	Regent	29	0%	103
	334	1	Minjon	19	0%	105
	167	1	MM.109	20	0%	105
	327	1	Rosu De Cluj	18	0%	105
	396	1	Hazen	19	0%	105
	229	1	Amanishiki	28	0%	105
	232	1	Hawaii	24	0%	107
	319	1	Malus Sargentii	13	100%	0
	136	1	EM Vill Clark Dwarf	3	100%	0
	360	1	Sargent Crab	10	100%	0
	383	1	White Angel	16	100%	0
	187	1	EM IV	7	100%	0
	383	1	White Angel	16	100%	0
	320	1	Pink Spire	18	100%	0
	395	1	Sargent Crab	10	100%	1
	324	1	Jacque's	14	100%	1
	398	1	Profusion Crab	12	100%	3
	397	1	Mary Potter	13	100%	3
	373	1	Adams	16	100%	4