Report to the Oregon Processed Vegetable Commission
1986

Title: Testing carrot breeding lines for resistance to the Motley Dwarf Virus Complex

Project Leader: J. R. Baggett, Horticulture

Project Status: continuing, indefinite

Project Funding: $1,000

Objectives:

1. Test carrot breeding lines developed in the U.S. Department of Agriculture carrot breeding program for resistance to the motley dwarf virus complex.

Report of Progress:

Seven breeding lines of carrots were received from Dr. C. E. Peterson, U.S. Department of Agriculture carrot breeder, with whom we cooperate in developing carrots resistant to Motley Dwarf Virus Complex. Large plots (40-50 feet) of each line were seeded April 10, 1986, along with 7 commercial varieties. Good stands were obtained for all but one line. The virus complex, consisting of Motley Dwarf and carrot Red leaf viruses, was apparent with medium severity by August. All plants were apparently infected, but with a wide range of severity among varieties. In late October, the varieties and lines were scored for severity of virus effect using a scale of 1 (slight effect) to 5 (severe stunting and discoloration). Five commercial varieties scored 2 because they were vigorous, but had quite noticeable virus symptoms (red and yellow discolorations and mottles). One U.S.D.A. line, #601, was clearly the least affected, having good vigor and dark green leaves with very slight virus symptoms.

All plants of U.S.D.A. line 601 were dug and sorted for root condition and shape. The line tended strongly to have large nantes shaped roots with good color. Forty of the best shaped and colored roots were selected and shipped to Dr. Peterson for seed production.

Summary:

A uniform moderate incidence of the Motley Dwarf Virus disease permitted identification of one outstanding resistant carrot line among 7 U.S.D.A. breeding lines tested. Roots were selected and sent to the breeder for seed production. Such promising material could eventually result in the development and release of productive resistant varieties for western Oregon. The line chosen for selections this year is especially interesting because of the cylindrical nantes shape and good size.

Signatures:

Redacted for Privacy

Project Leader _____

Redacted for Privacy

Department Head _____

JRB/td

CARROT VARIETY OBSERVATIONS, CORVALLIS, OREGON, 1986[1]

Line	Source	Virus[2] susc.	Notes
601	USDA	1	vigorous, healthy, selections made in this line[3]
602	USDA	3	
603	USDA	3-4	
604	USDA	4	
605	USDA	5	Very poor stand
606	USDA	2-4	variable, possibly segregating, mostly 3 or higher
607	USDA	3-4	vigorous but strongly covered with virus
Royal Chantenay	Northrup King	2	
Spartan Bonus	Burpee	2	
Pioneer	Harris Moran	3	bad for bolters, poor stand
Red Core Chantenay	Asgrow	2	as vigorous as USDA 601 but not as healthy
Scarlet Nantes	Arco	3-4	
Danvers	Peto	2	
Oregon 14	OSU	2	vigor equal to USDA 601, bad for bolters

[1] Direct seeded April 10 in 3' rows.

[2] Motley dwarf susceptibility score, 1-5 scale, 5 = most susceptible.

[3] Selected and sent 40 roots of large Nantes type, apparently virus resistant and of good color, to Dr. C.E. Peterson for seed production.