

Leaf Spots, Crazy Roots and Cool Colors

New England Fruit & Veg Conference

19 December, 2024

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Field on 3 July, 2023
Seeded: 10 May

Bohan

Manolo

Pablo

Ruby Q



20 July 2023

Bohan

Manolo

Pablo

RQ

2 August

Bohan

Manolo

Pablo

RQ





Bohan



Leaf Spots

- ▶ Bacterial
 - Bacterial Leaf Spot
 - Early season
- ▶ Fungal
 - Cercospora
 - summer
 - Phoma
 - fall

Bacterial Leaf Spot



Figure 1. Symptoms of bacterial leaf spot on table beet cv. Ruby Queen. Left: Necrotic lesions with a gray to white center often occurring on the leaf margins. Right: Bacterial leaf spot lesions accompanied by leaf curling. *Photos: Sarah Pethybridge, Cornell*

Bacterial Leaf Spot

- Tan/ brown spots, black border
 - Starts at leaf edge
 - Leaf curling
- Cool, wet conditions
 - Early season
 - Seedlings, young plants
 - 6 – 8 true leaves



Figure 2. Symptoms of *Cercospora* leaf spot on table beet cv. Ruby Queen. Small spots with a gray center (left) but rapidly coalesce to encompass the leaf resulting in defoliation (right).
Photos: Sarah Pethybridge, Cornell

Cercospora Leaf Spot

- Small gray spots
 - Coalescing spots, leaf death
- Warm & humid
 - Canopy closure
 - Summer

Phoma Leaf Spot



Figure 3. Symptoms of Phoma leaf spot on table beet cv. Ruby Queen. Left: Large, single, tan-brown lesions. Right. Lesions often have black rings and are often cracked or torn in the center. *Photos: Sarah Pethybridge, Cornell*

Phoma Leaf Spot

- Tan lesions
 - Brown/ black concentric rings
 - Torn in center
- Late season, on older leaves
 - Cooling temps, dews/ leaf wetness

Phoma



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Fungicide resistance



Cercospora in Sugar Beets

Cercospora Fungicide resistance

▶ Ontario

- Group 1
- Group 11
- Group 3 (triazoles)
 - ▶ Michigan, N Dakota, Minnesota

Product	Active compound	Group	Resistance Risk
Senator 50 SC	thiophanate-methyl	FRAC 1	High
Proline 480 SC	prothioconazole	FRAC 3	Medium
Mettle 210 ME	tetraconazole	FRAC 3	Medium
Quadris Top	difenoconazole + azoxystrobin	FRAC 3,11	Medium, High*
Miravis Duo	difenoconazole + pydiflumetofen	FRAC 3,7	Medium, Medium-High*
Priaxor	pyraclostrobin + fluxapyroxad	FRAC 7,11	Medium-High, High*
Acapela	picoxystrobin	FRAC 11	High
Headline EC	pyraclostrobin	FRAC 11	High
Coppercide WP	copper hydroxide	FRAC M1	Low
Kocide 2000	copper hydroxide	FRAC M1	Low
Parasol WG	copper hydroxide	FRAC M1	Low
Cueva	copper octanoate	FRAC M1	Low
Manzate Pro-stick	mancozeb	FRAC M3	Low
Serenade OPTI	<i>Bacillus subtilis</i> strain QST 713	FRAC BM2	Unknown

Table 1: Fungicides registered for sugarbeets for Cercospora Leaf Spot in 2024. *For products with more than one active ingredient, resistance risk is provided individually for each ingredient.

Resistance Breeding

Cercospora resistance breeding



Susceptible check

Nice infection!



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resistant

susceptible

Table 1. Susceptibility of selected table beet cultivars to bacterial leaf spot (caused by the bacterium, *Pseudomonas syringae* pv. *aptata*), Cercospora leaf spot (caused by the fungus, *Cercospora beticola*), and Phoma leaf spot (caused by the fungus, *Phoma betae*) in small plot, replicated trials at Geneva, New York.

+ = least susceptible; ++ = moderately susceptible; +++ = highly susceptible (across both years).

Cultivar	Bacterial leaf spot	Cercospora leaf spot	Phoma leaf spot
Bohan	+	++	+++
Bresko	++	++	+
Irazu/Bazzu	+	+	+
Manolo	+	+++	+
Pablo	+++	++	+++
Red Cloud	+++	+++	++
Ruby Queen	+	++	+
Subeto	++	++	+



Irazu



Boro



Rhizomania

- ▶ Virus
 - Beet Necrotic Yellow Vein Virus
- ▶ Fungus
 - Polymyxa betae
 - Soil borne
 - Transmits the virus

“crazy roots”

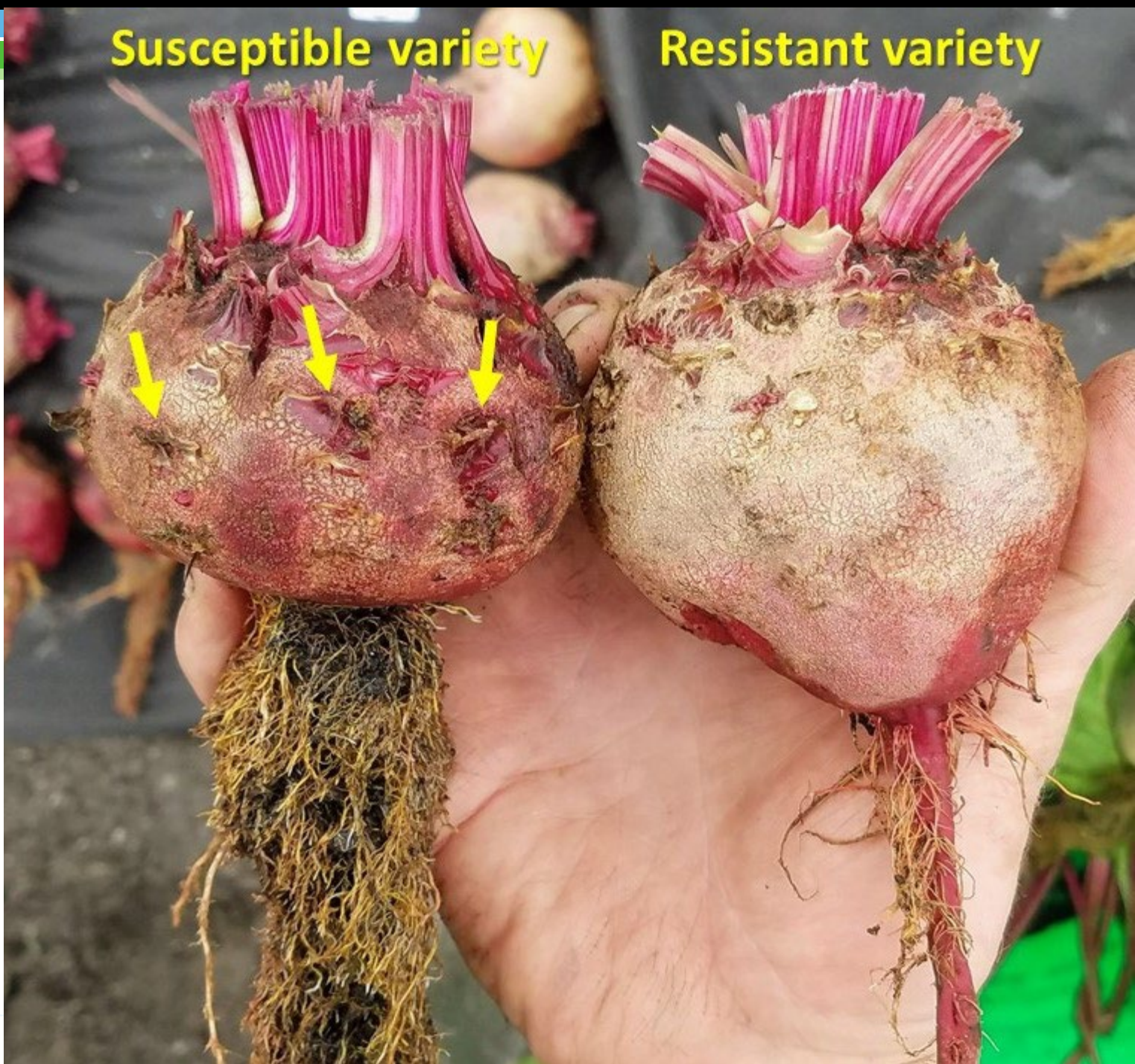


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Susceptible variety

Resistant variety





Red Ace (Sakata)



Boro (Bejo)

Th



Rhizomania



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Necrotic Yellow Vein



“hot spot”

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Rhizomania Control

- ▶ Virus
 - Fungicides, Copper won't work
 - Resistant varieties
 - ▶ BAZZU, IRAZU

Variety review

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BOHAN

For difficult ground

Vigorous

Tall tops, strong roots



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BAZZU

Rhizomania resistant

Mid-early

Smooth bulbs

Healthy tops



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IRAZU

Rhizomania resistant

Mid-season

Very healthy tops

AMARELLY

Hybrid yellow beet

Perfect interior

Smooth, round

No cracking

No hollow heart

Healthy tops



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AMARELLY F1

BOLDOR OP

That's bejo qua



Elly Stam

Breeder

AMARELLY =

Amarillo x Elly



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AVALANCHE

Very clean tops

Very sweet



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ANELLO OP

Chioggia type

Good heat tolerance



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Organic Beet Seed production (Germany)



▶ Thank You!

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