

# Celery Cultivar Evaluation: *F. oxysporum* f. sp. *apii*, races 2 and 4.

## Acknowledgements:

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Renee Eriksen and Peter Henry (USDA), Lynn Epstein (UCD), Alex Putman (UCR), Chris Greer and Oleg Daugovish (UCCE)

# 2022 Field trials

- Continued at the same infested field sites (as in previous years)
- Race 2 (S. Maria, 39 sections) and race 4 (Camarillo, 42 selections)
- Took soil samples for pathogen density from each of 4 replicates (at planting and at harvest)
- Measured soil temperature at 2 depths
- Assessed Fusarium infection rate and agronomic traits

# Fusarium infection ratings 0 - 5



0 = No browning

1 = Browning visible, particularly in feeder roots

2 = Browning visible, particularly in primary roots

3 = Browning visible, particularly around the crown

4 = Browning in and/or around the crown

5 = Extensive browning in crown



Agronomic characteristics: Petiole length, greenness and cracking. Stalk weight, bolting, pithiness, ribbiness and suckering

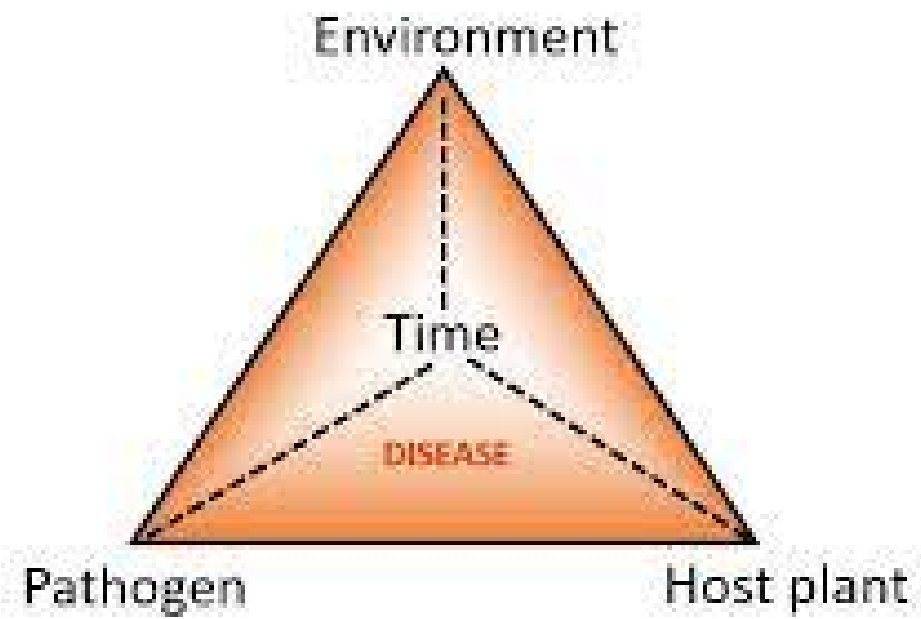


Pithiness of 4.



Ribbiness of 4.







# Mortality at Camarillo, 3 WAP, race 4



**'Bachata' in Block 4**



**'Bachata' in Block 1**



# Mortality at Camarillo, 3 WAP, race 4



**'RZ 4001' in Block 4**



**'RZ 4001' in Block 1**



# Mortality at Camarillo, 3 WAP, race 4



**'Challenger'**



**'Command'**



# Mortality at Camarillo, 3 WAP, race 4



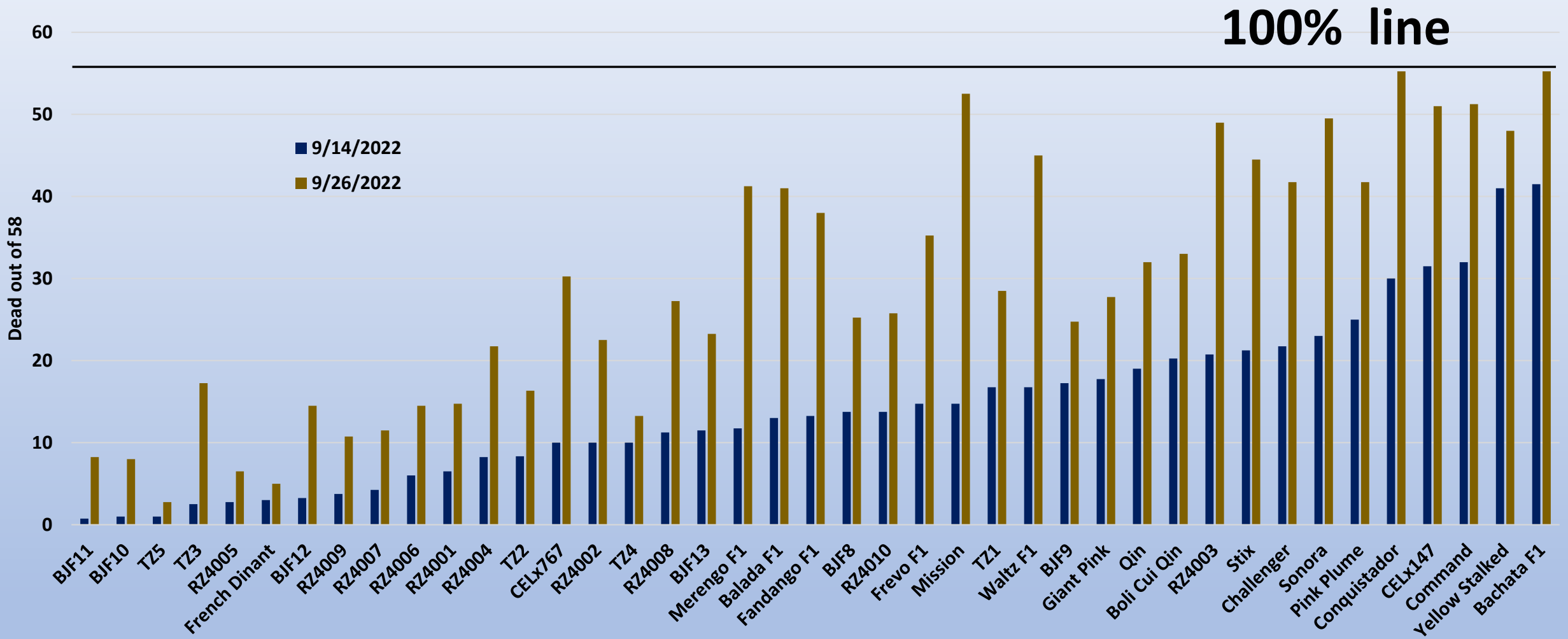
**'RZ 4006'**



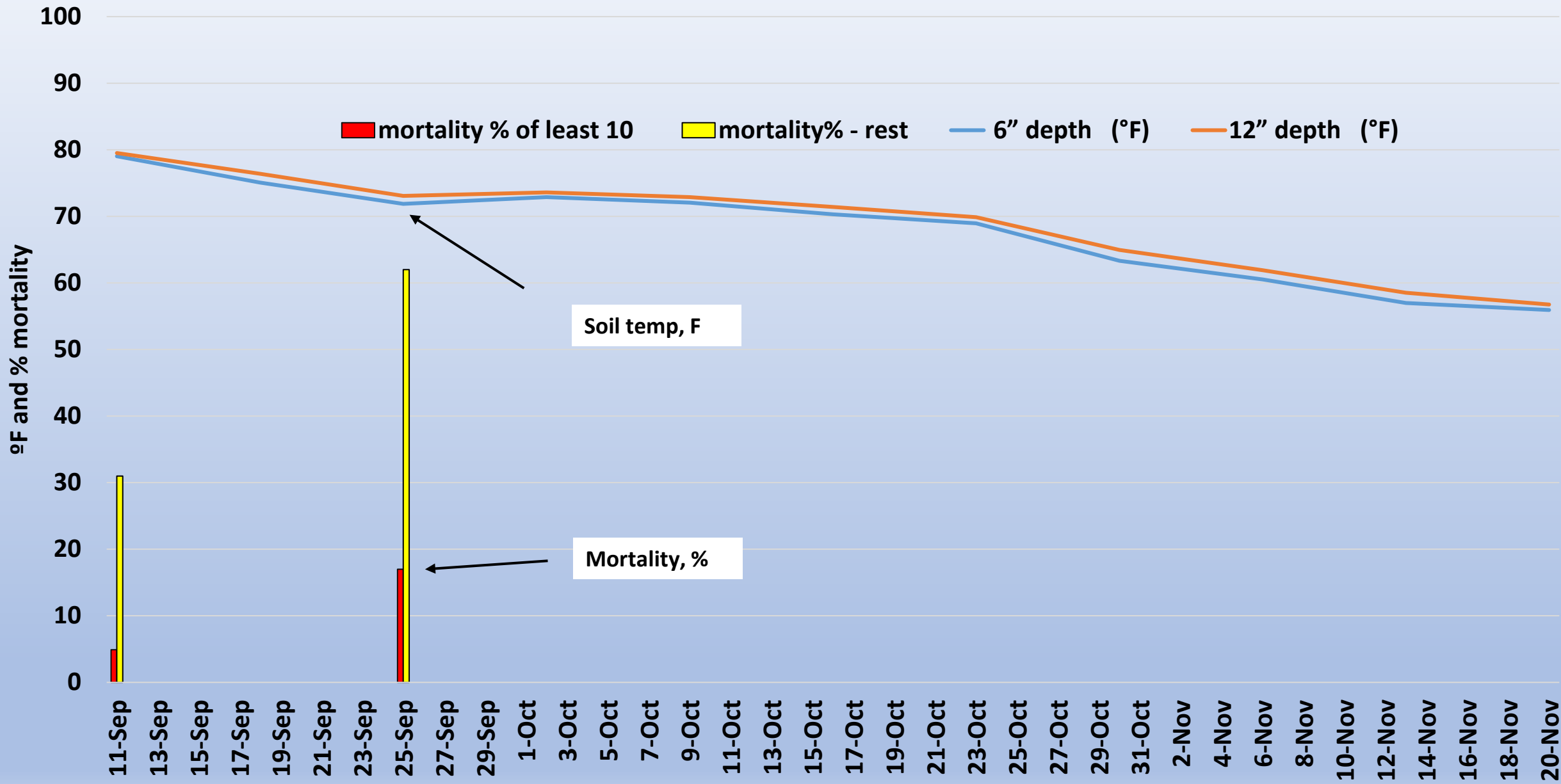
**'TZ 4'**



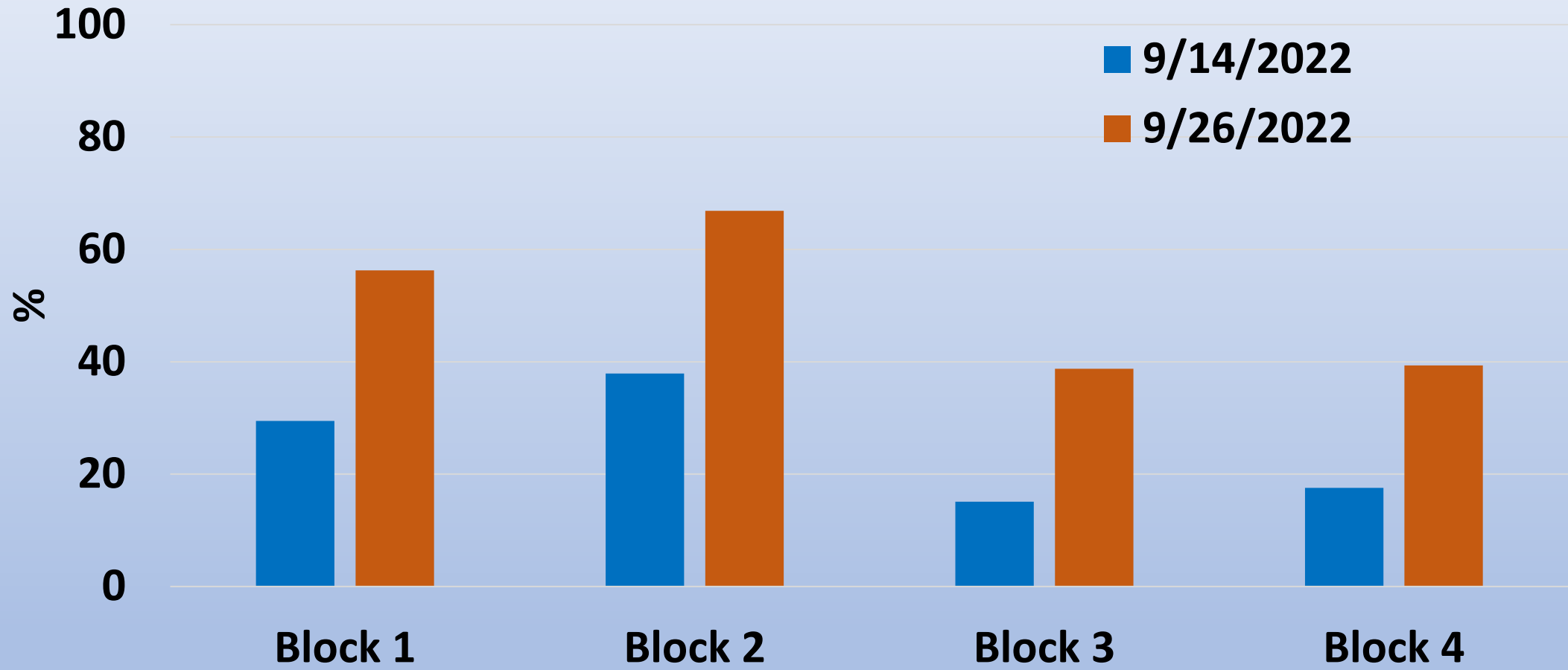
# Mortality of plants





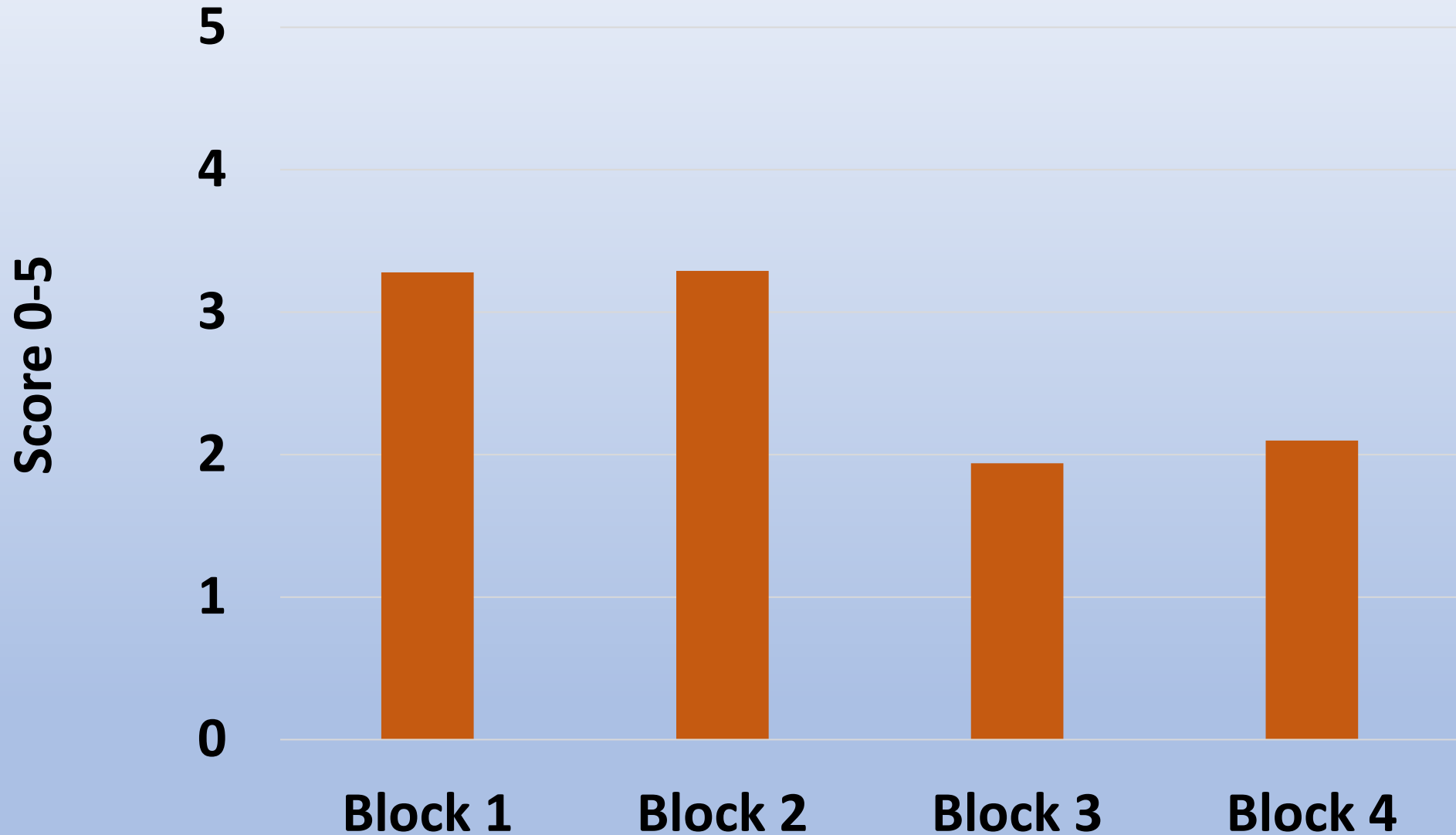


# Mortality (avg over all cultivars)



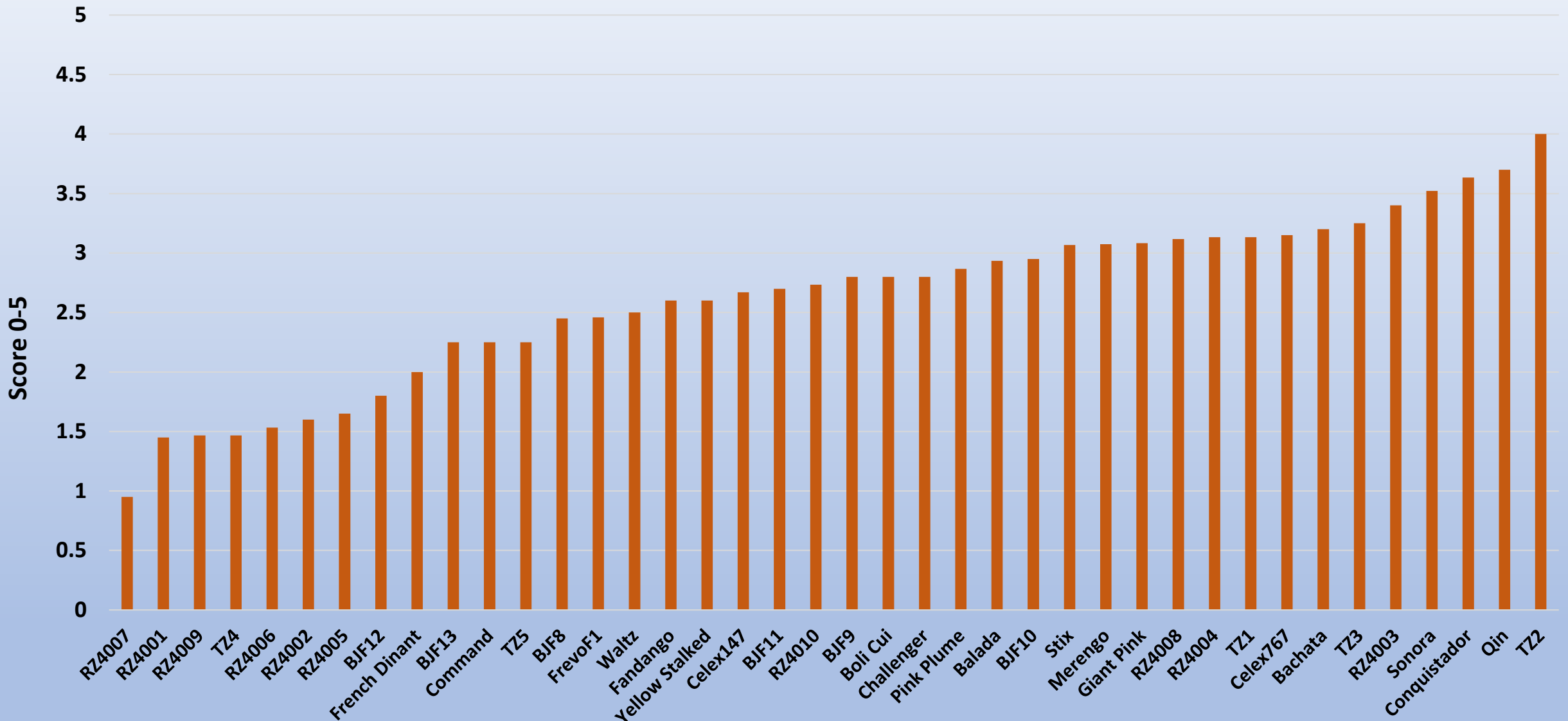


# Fusarium infection score (avg over all cultivars)



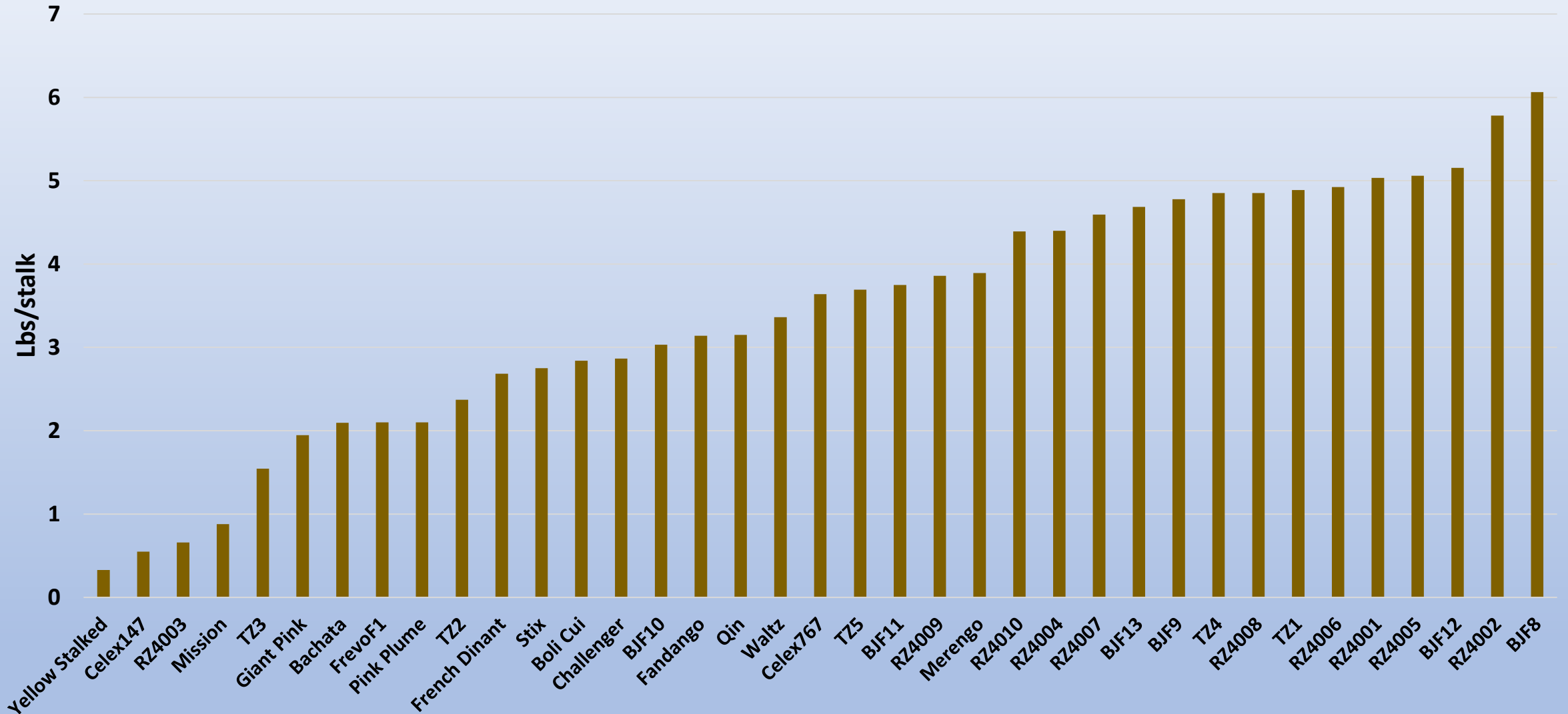


# Fusarium infection score (for the ones survived till harvest)





# Stalk weight , avg. (for the ones survived till harvest)





# Petiole length, avg. (for the ones survived till harvest)



	<b>Survivorship (least mortality)</b>	<b>Fusarium score (lowest)</b>	<b>Stalk weight (heaviest)</b>	<b>Petiole length (longest)</b>
1	TZ 5	RZ 4007	BJF 8	RZ 4005
2	RZ 4005	RZ 4001	RZ 4002	RZ 4001
3	French Dinant	RZ 4009	BJF 12	RZ 4010
4	BJF 10	TZ 4	RZ 4005	French Dinant
5	BJF 11	RZ 4006	RZ 4001	RZ 4002
6	RZ 4009	RZ 4002	RZ 4006	RZ 4007
7	RZ 4007	RZ 4005	TZ 1	BJF 12
8	RZ 4001	BJF 12	RZ 4008	BJF 10
9	TZ 2	French Dinant	TZ 4	RZ 4004
10	TZ 3	BJF 13	BJF 9	TZ 4
		TZ 5		



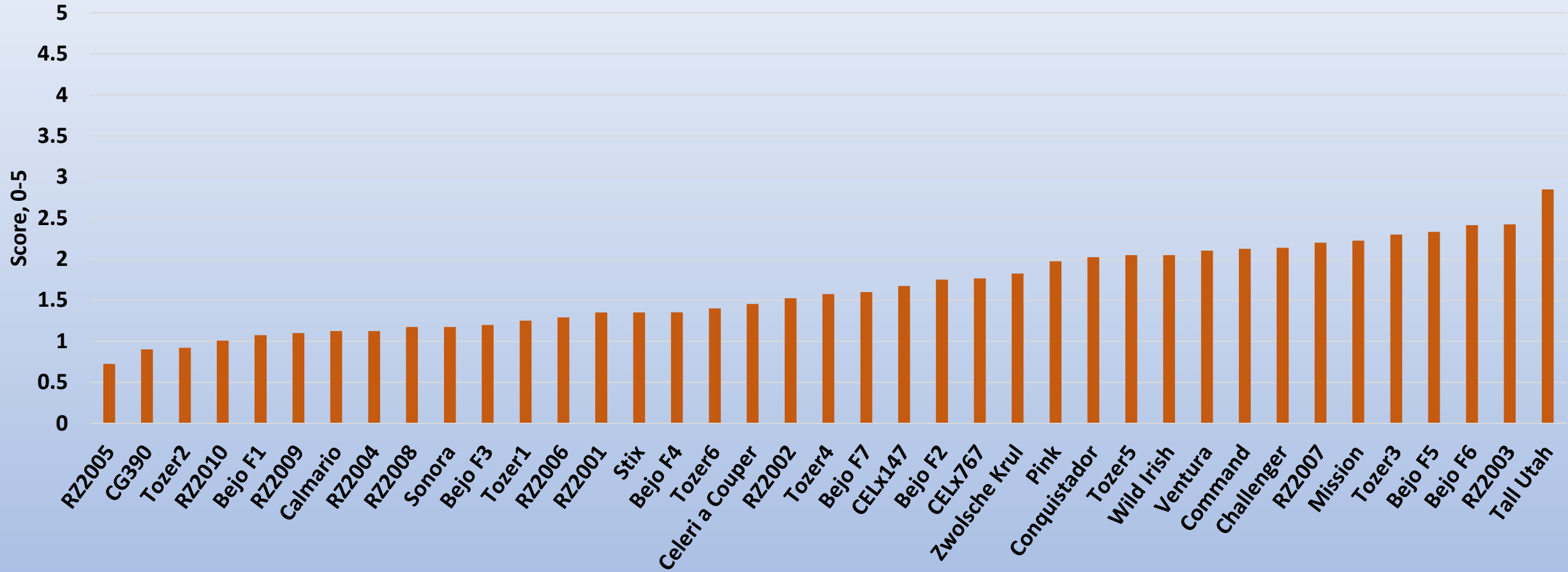


**Santa Maria,  
*F. ox. apii*  
race 2**



# Fusarium infection score

Santa Maria,  
*F. ox. apii*  
race 2





**Santa Maria,  
*F. ox. apii*  
race 2**



**Tall Utah  
52-70R  
Improved**





**Santa Maria,  
*F. ox. apii*  
race 2**

**Challenger**





**Santa Maria,  
*F. ox. apii*  
race 2**





**Santa Maria,  
*F. ox. apii*  
race 2**

**RZ2002**





**Santa Maria,  
*F. ox. apii*  
race 2**





**Santa Maria,  
*F. ox. apii*  
race 2**





**Santa Maria,  
*F. ox. apii*  
race 2**





Celeri a  
Couper

Stix





**Santa Maria,  
*F. ox. apii*  
race 2**



# Germplasm with resistance

- Valuable parent material
- Do not 'control' the pathogen in soil
- New races of Fusarium:  
susceptibility of previously resistant cultivars

**Slow to mutate?** F.ox. apii doesn't have a regular sexual cycle, and apparently never has complete meiosis.





**Remove infested soil before leaving**



**Repeat the race 4 trial :**

- **Same location but in winter-spring**
- **Record soil Temp**
- **Quantify pathogen level in soil**
- **Compare to summer-fall trial**