Over-the-Row Harvesters: Current technologies and effects on blueberry quality

Fumiomi Takeda[1] , Changying Li[2], and Gerard Krewer [3]

[1] Appalachian Fruit Research Station, USDA-ARS, Kearneysville, WV

[2] College of Engineering, University of Georgia, Athens, GA

[3] Department of Horticulture, University of Georgia, Tifton, GA
(currently at Krewer Consulting, Woodbine, GA)

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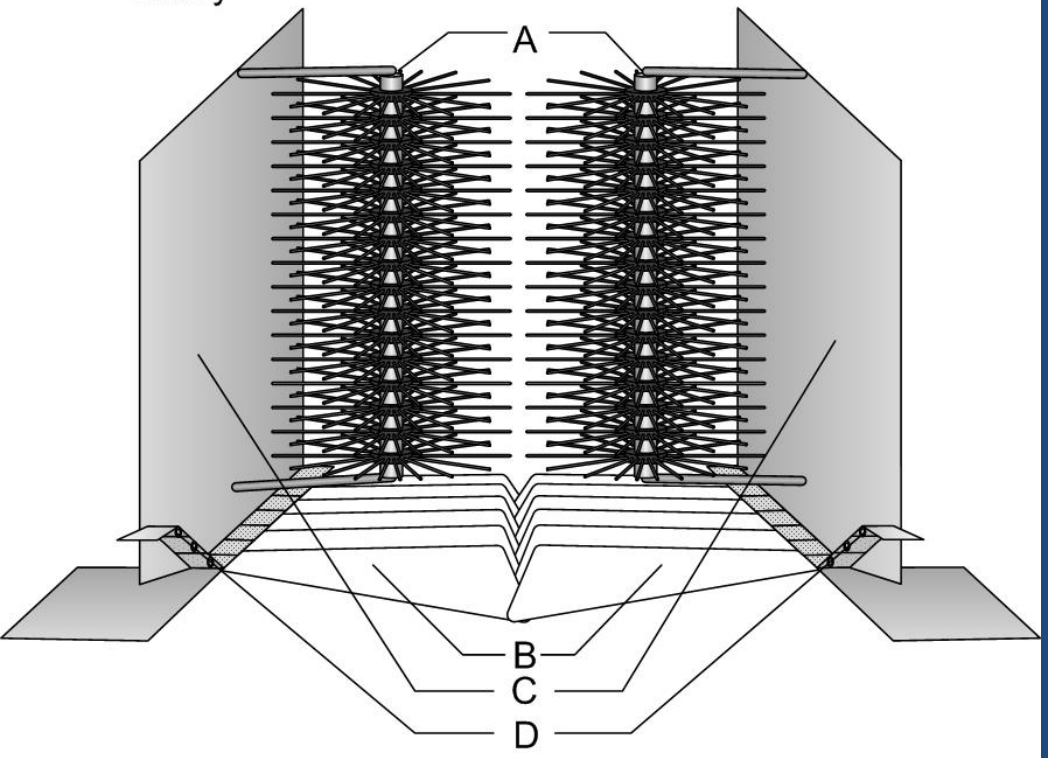
Manufacturers

- Oxbo International
- Littau
- BEI

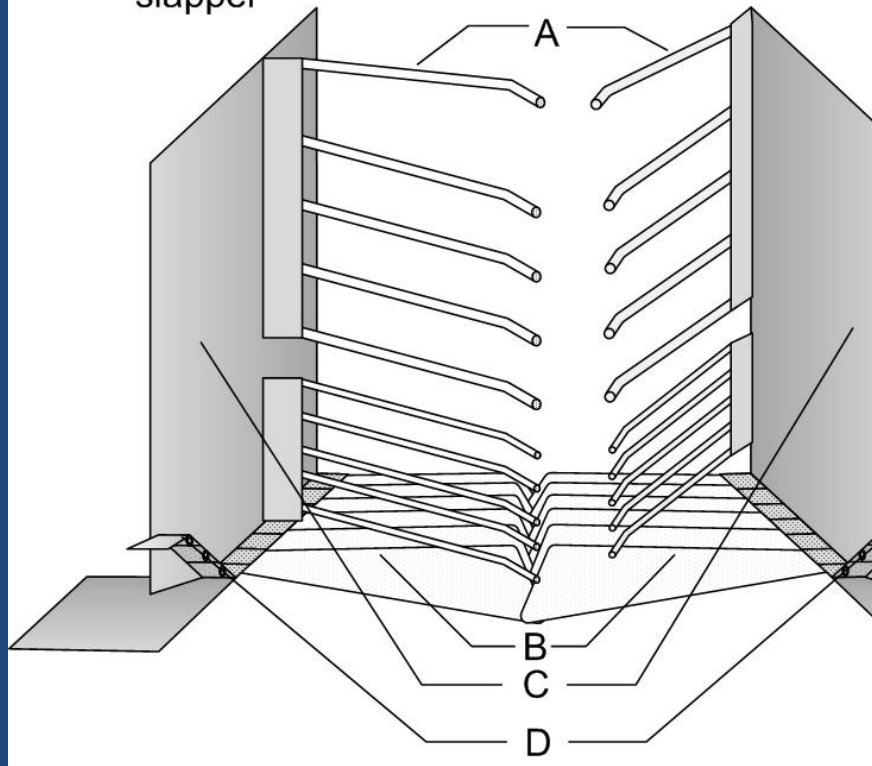
Little Blue Tall

BEI Model 1500 Self-propelled blueberry harvester

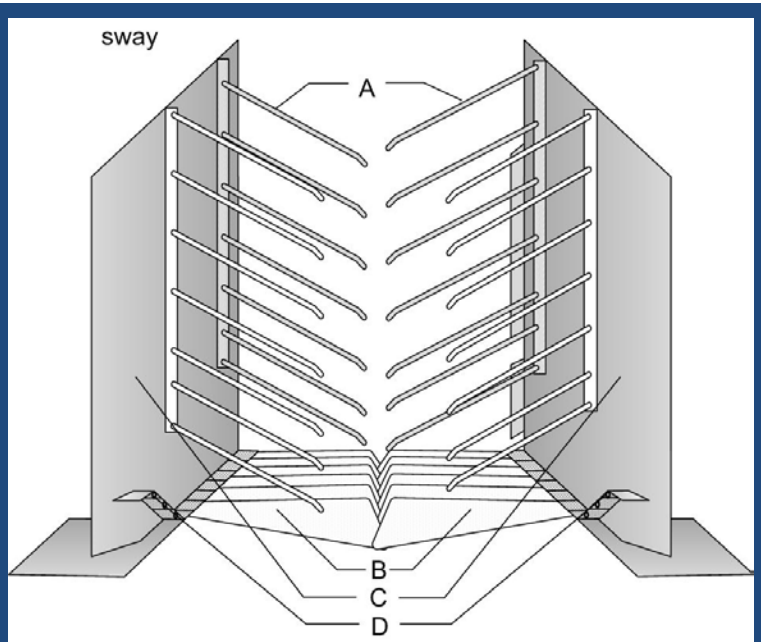
rotary



slapper



sway



Pluses and Minuses

Fresh market blueberry

- Hand-harvesting - >500 work hours/acre, harvest cost > 70¢/lb
- One O-T-R harvester can do the work of >60 people and cut harvest cost by 85%.
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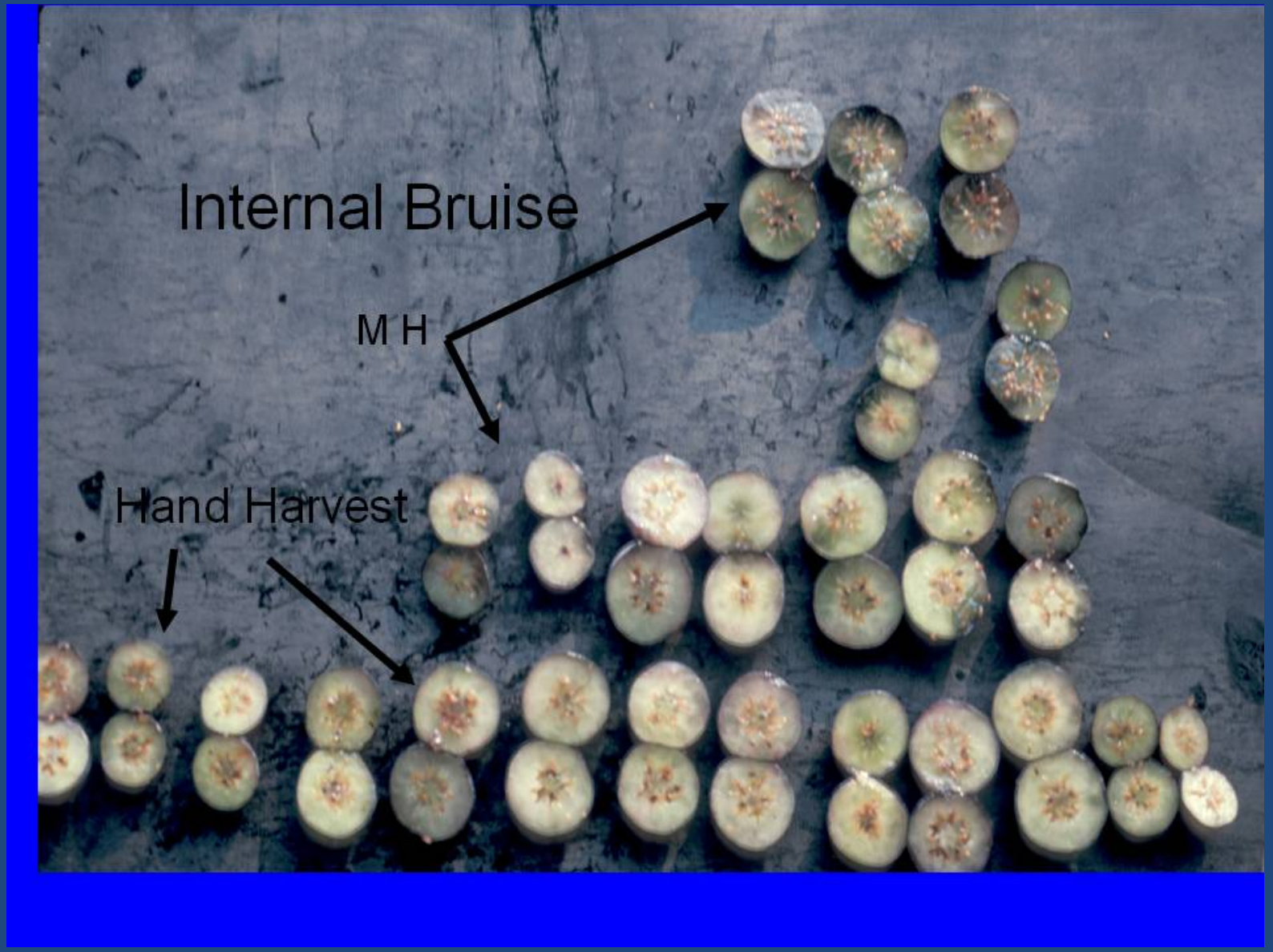
HAND-HARVESTED

MACHINE-HARVESTED

Ground loss



Bruised fruit softens rapidly and has shorter shelf-life

Recent Research

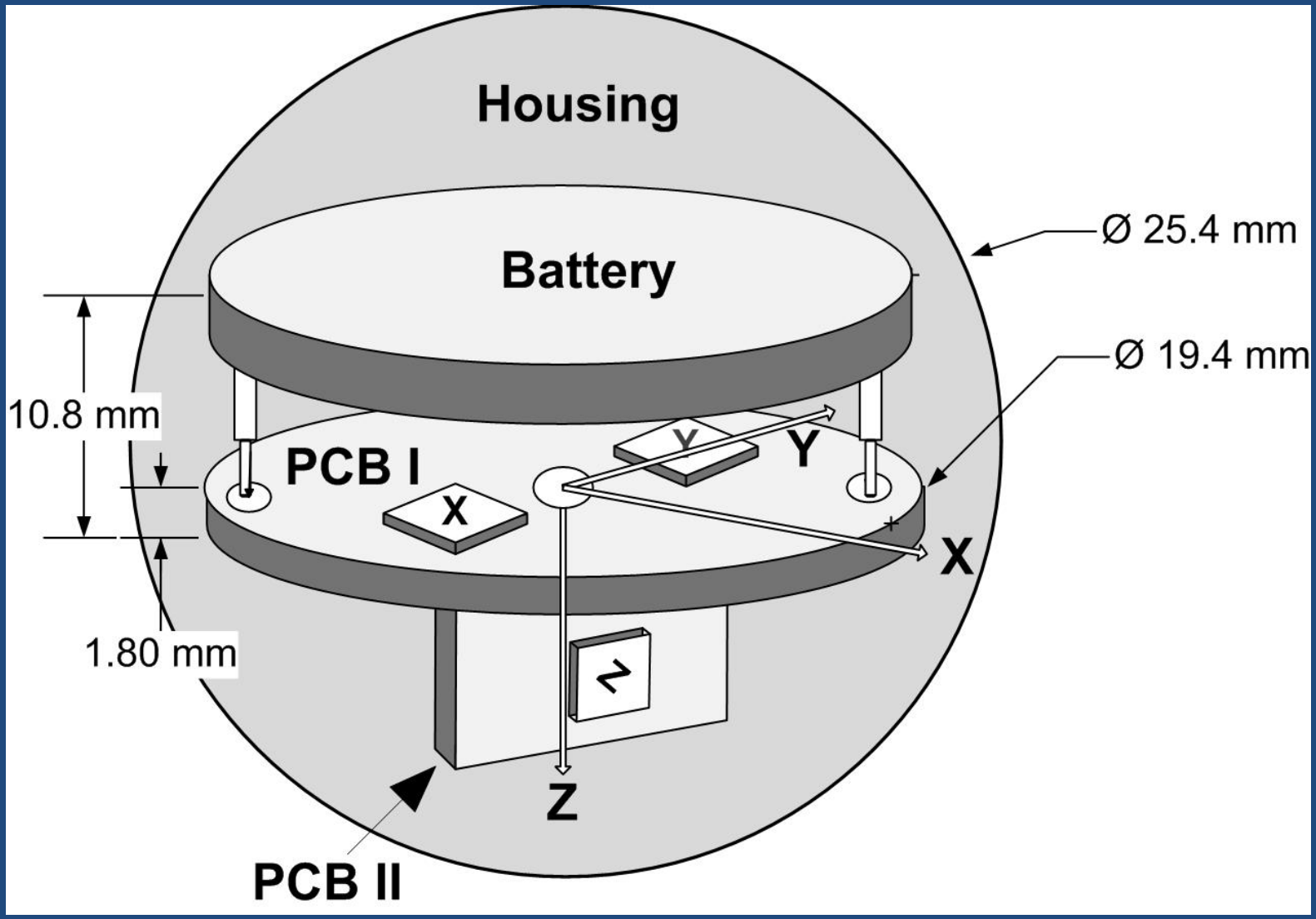
Fruit Bruise Assessment

After 7 days at 36 °F

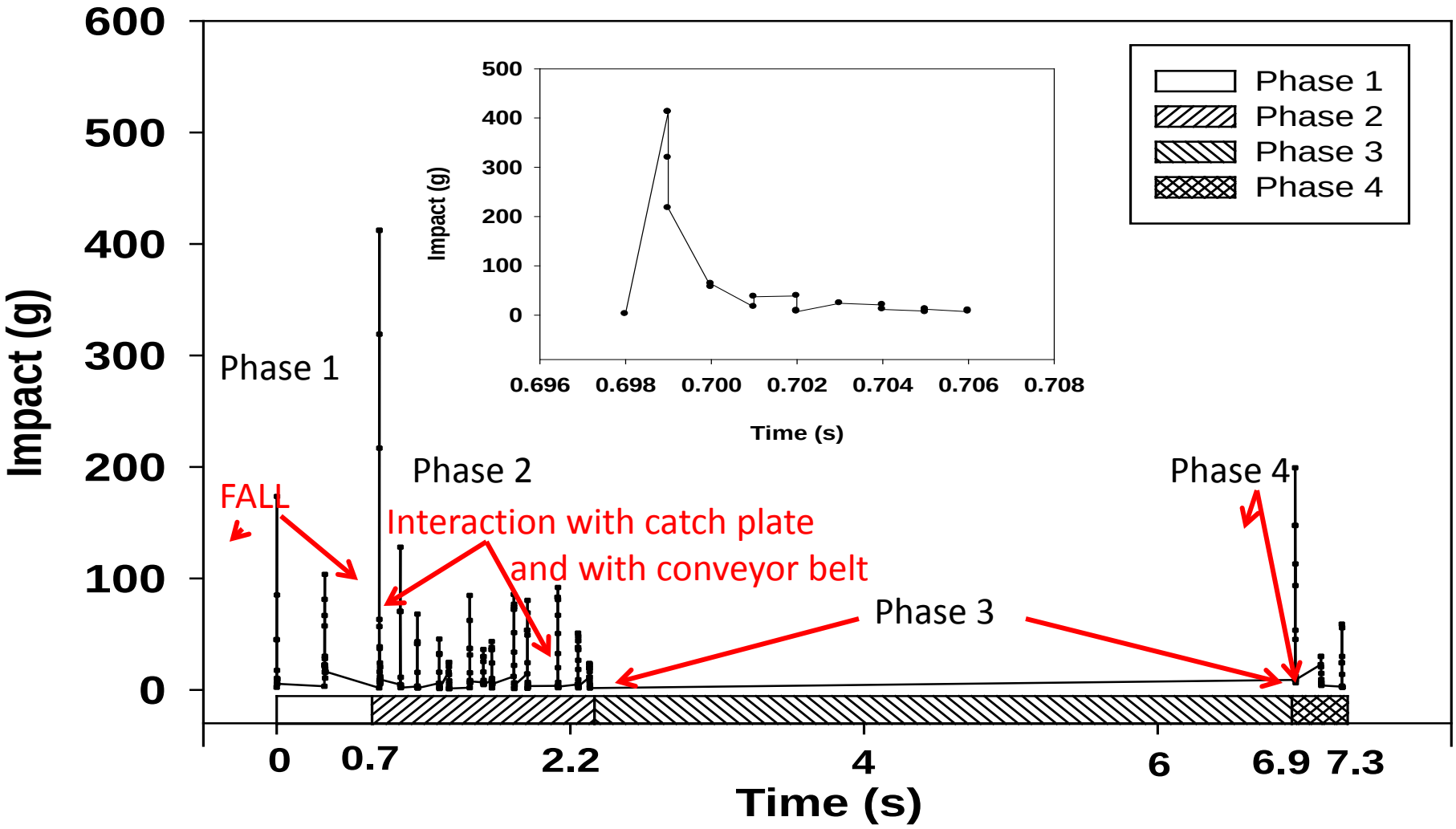
Dropped 40 inches

BIRD Sensor:

BIRD sensor: Internal Assembly



Real Time Impacts



Relating engineering data to fruit quality and horticultural assessment (Variety x Height x Surface)

% Fruit with >25% of cut surface bruised

Surface and height (in)	Bird impact (g)	Scintilla	Sweetcrisp	FL 05-528
Hard - 24	557	44	22	19
Hard - 48	834	76	68	31
Soft - 24	199	21	22	1
Soft - 48	360	26	25	5

Bruise =
Drop height
Surface
Variety
Harvest Method

Conclusions:

- For fresh-market packaging, important to consider internal damage, in addition to meeting US No 1 standards
- Bruised fruit deteriorates and softens faster in storage
- Rotary harvester causes less bruise damage than sway and slapper harvester
- Reducing drop height can improve fruit quality
- Padding surfaces can reduce bruise damage
- More research is needed to reduce ground loss
    - For now, installation cost outweighs economic return

Conclusions:

- Firm-textured (crispy flesh) SH blueberry will enable advancement in mechanical harvest
- On-going research supported by USHBC:
- - Improve BIRD sensor and develop better real-time data acquisition system for packing house and harvest operation and identify points that can cause fruit bruising.

Thank you for your attention!

Are there any questions?

Fumi Takeda
USDA-ARS
fumi.takeda@ars.usda.gov