



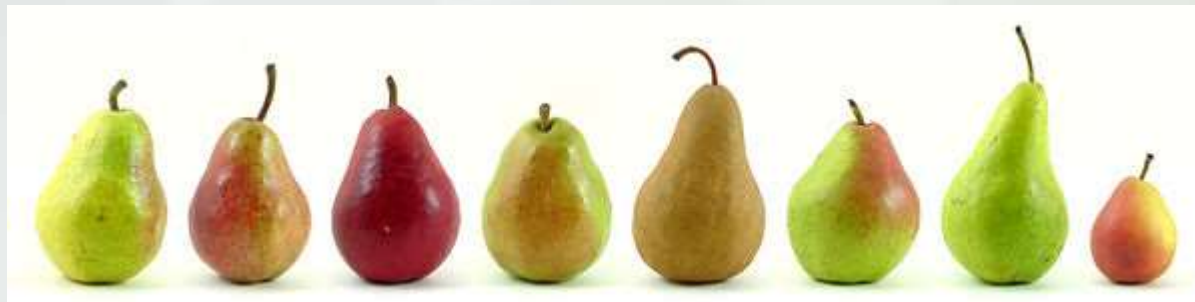
# Performance of New Fire Blight Resistant Pears

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# Michigan pear industry

Estimated 800 acres

Bartlett	83%
Bosc	6%
Clapp	1%
D'Anjou	1%
Other	9%

## Uses of pears

- Fresh for local, roadside, & farmers market
- Home canning uses
- Processing for babyfood.
- Limited use in wine and brandy

## Processing qualities for puree

taste (pear flavor): strong pear  
brix/ titratable acidity  
puree color  
texture: amount of stone cells  
consistency: watery to very thick



# Fire blight is the most important problem of Michigan pear industry

Estimated 800 acres

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Bosc	6%
Clapp	1%
D'Anjou	1%
Other	9%



Bartlett



Bosc

## European Pear Varieties with good to excellent fire blight resistance

Variety	Harvest
Harrow Delight	-14
Moonglow	-12
Harrow Gold	-10
Sunrise	-12
Harvest Queen	-7
Warren	0
Harrow Crisp	+3
Gem	+5
Magness	+7

Variety	Harvest
Seckel	+8
Blake's Pride	+10
Shenandoah	+10
Harrow Sweet	+14
Potomac	+18
Harovin Sundown	+21
Comice	+30
Kieffer	+30

Harvest = days before (-) or after (+) Bartlett

## Sources of new European pear varieties with fire blight resistance

- Ontario breeding program – Frank Kappel, Richard Layne, Harvey Quamme, David Hunter
- West Virginia USDA breeding program – Richard Bell

## Releases from Ontario breeding program

Harrow Delight, Harrow Gold, Harvest Queen, Harrow Crisp, Harrow Sweet, Harovin Sundown

Others not released: HW621, HW622, HW617, HW611, HW615, HW624, HW619



David Hunter

## Harrow Delight



*Credit: Ken Slingerland*

-14 Bartlett

Medium size, fruit is greenish-yellow with a red blush, tendency to drop, smooth texture flesh, good flavor for early pear, juicy, productive, short shelf life, resistant to fire blight, pollen-compatible with Bartlett, Bosc, Anjou, and Harvest Queen



# Harrow Gold (HW 616) Properties



- Attractive yellow fruit with smooth skin, good size for season (Bartlett size), juicy, shorter storage than Bartlett, does not pollinate Bartlett some years, good precocity, moderate fire blight resistance



-14 Bartlett

# Harrow Crisp (HW610)



- Fruit size slightly larger than Bartlett, Bartlett shape, sometimes russet on stem end. Amount of blush varies year to year
- Firm, crisp, flavor varies in sweetness from fair to very sweet.
- Productive
- Excellent fire blight resistance



+7 Bartlett

# Harrow Sweet



- Bartlett shape mostly, sometimes somewhat Bosc or Anjou shaped
- Most years very sweet, good flavor. Texture like Bartlett, few stone cells
- Some years skin has red/brown almost russet, and has sometimes has light red/brown blush.
- Very productive, thinning usually necessary to maintain Bartlett size fruit. Much better storage longer shelf life than Bartlett
- Mostly fire blight tolerant.

+14 Bartlett

# Harrow Sweet Pear

*- more details*

If the Harrow Sweet trees are grown in a orchard with fire blight, and the trees are pushed with nitrogen, fire blight can become a problem.

Harrow Sweet fruit appear to be prone to russeting by Ziram.

One year we have seen internal breakdown of fruit after 2 months storage at ~ 36 to 42 F.



*natural infection of  
Harrow Sweet*

# Harovin Sundown (HW614)



*Photo credit: David Hunter*

Fruit with yellow green skin with orange-red blush, generally larger than Bartlett, good flavor, sweet, juicy, long storage life, sometimes with secondary bloom, needs cold storage to ripen properly, excellent fire blight resistance.

Can be pollinated by Bartlett, but is not a good pollen source for Bartlett, generally better productivity than Bartlett

+ 21 Bartlett

# West Virginia USDA breeding program – Richard Bell



*Source: Good Fruit Grower*

## Named varieties

Sunrise, Shenandoah, Potomac, Blake's Pride, Gem

## Others

66125-035, 67218-083, 69426-038, 76115-010, 76128-009

## New test selections

USDA069, USDA160, USDA166, USDA038

Sunrise  
(66170-047)



Large fruit for season, Bartlett shape with thicker neck, attractive, very clean glossy finish, adequate to good fresh eating quality, mild acidity, fine texture, poor in pear sauce processing tests, light cropper, multi-pick, good storage for early pear, excellent fire blight resistance.

## Gem (71655-014)



D'Anjou shape, stout stem, glossy finish, often has red/orange blush on yellow/green background. Fruit size 3.3" x 2.8"

Skin is prone to marking

Sweet, mild, crisp cream white flesh, will eventually develop melting flesh characteristics, hangs well, stores well. Good fire blight resistance.



+ 5 Bartlett



# Gem

Has cropped better as the trees get older.



## Blake's Pride (66131-021)



large fruit, deep calyx, light tan russet, bumpy surface, not real attractive

Bartlett-like flavor, juicy flesh, medium storage life, willowy tree, Variable cropping year to year, excellent fire blight resistance

+ 14 Bartlett



## Shenandoah (78304-057)

Large fruit size, moderate to good productivity, somewhat bumpy skin, puckered calyx, slight blush, dull finish with russet, medium quality, somewhat acidic, good storage, low vigor tree in Michigan tests, fair in pear sauce tests, fire blight resistant



*Photo credit: USDA, West Virginia*

+ 21 Bartlett

# New Selections from USDA West Virginia - Richard Bell Breeder

**USDA038**

<b>Shape</b>	Ovate-pyriform; regular contour	No picture available
<b>Skin Color</b>	Yellow when ripe; 25% red blush	
<b>Size</b>	3.4" x 2.8"; variable	
<b>Appearance</b>	Attractive; moderate tan lenticel russet	
<b>Texture</b>	Medium-fine; buttery	
<b>Grit</b>	Sparse; moderately small to small	
<b>Flavor</b>	Good; sweet to subacid; lightly aromatic	
<b>Scald</b>	No scald observed	
<b>Breakdown</b>	Some observed in fruit harvested after Aug 26	
<b>Harvest Date</b>	August 19	
<b>Storage Life</b>	At least 3 months	

# New Selections from USDA West Virginia - Richard Bell Breeder

## USDA166

<b>Shape</b>	Round-pyriform
<b>Skin Color</b>	Yellow; 5-40% pink or red blush
<b>Size</b>	3.7" x 3.1"
<b>Appearance</b>	Good; usually little russet; regular contour
<b>Texture</b>	Fine to very fine; fine-grained or buttery
<b>Grit</b>	Sparse; small to very small
<b>Flavor</b>	Sweet to subacid; Bartlett-type
<b>Scald</b>	Rare
<b>Breakdown</b>	Observed in late-harvested fruit only
<b>Harvest Date</b>	August 20
<b>Storage Life</b>	Only tested up to 3 months



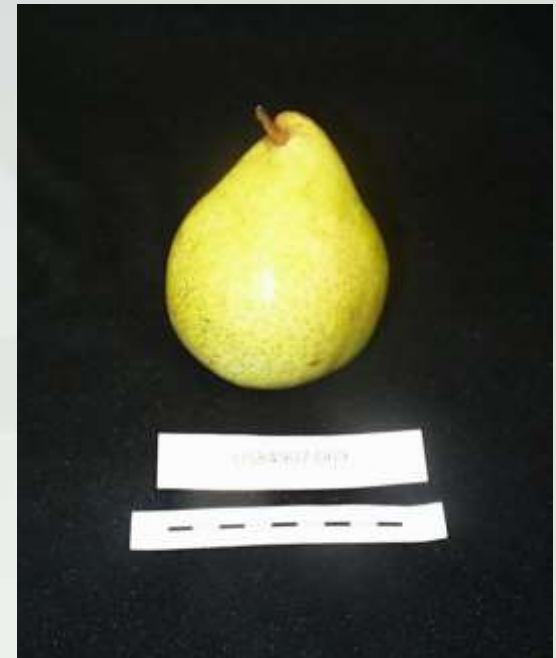
Very resistant to fire blight (9 on 1 -10 USDA scale)

# New Selections from USDA West Virginia - Richard Bell Breeder

## USDA069

<b>Size</b>	3.6" x 3.1"
<b>Appearance</b>	Good; Sparse, smooth, tan russet
<b>Texture</b>	Moderately fine; juicy
<b>Grit</b>	Sparse; small
<b>Flavor</b>	Good; subacid; Bartlett-type
<b>Scald</b>	None observed
<b>Harvest Date</b>	August 21
<b>Storage Life</b>	At least 3 months (-1°C, air)

Very resistant to fire blight (9 on 1 -10 USDA scale)



# New Selections from USDA West Virginia - Richard Bell Breeder

**USDA160**

<b>Shape</b>	Round-pyriform
<b>Skin Color</b>	Yellow; occasional red blush
<b>Size</b>	3.5" x 3.0"
<b>Appearance</b>	Very good; light tan lenticel russet
<b>Texture</b>	Very fine; buttery
<b>Grit</b>	Very sparse; very small
<b>Flavor</b>	Very good; subacid; aromatic; Bartlett-type
<b>Scald</b>	None observed
<b>Breakdown</b>	Very little observed after 3 months storage
<b>Harvest Date</b>	August 30
<b>Storage Life</b>	At least 3 months

No picture  
available

Very resistant to fire blight (9 on 1 -10 USDA scale)

## European Pear Varieties with good to excellent fire blight resistance

Variety	Harvest	Fruit size for season (wt)	Dessert quality	Shelf life	Yield for season
Harrow Delight	-14	+++	+++	++	++++
Moonglow	-12	++++	+++	++	++++
Sunrise	-12	++	+++	+++	++++
Harrow Gold	-10	++++	+++	++	++++
Harvest Queen	-7	+++	++++	+++	+++
Warren	0	+++	++++ (soft)	++	++
Harrow Crisp	+3	+++	+++V	+++	+++
Gem	+5	++++	++++	++++	+++
Magness	+7	+++	++++	++++	++

Harvest = days before (-) or after (+) Bartlett



## European Pear Varieties with good to excellent fire blight resistance

Variety	Harvest	Fruit size for season (wt)	Dessert quality	Shelf life	Yield for season
Seckel	+8	+	++++	++	++++
Blake's Pride	+10	++++	+++	+++	+++v
Shenandoah	+10	+++++	+++	++++	++++
Harrow Sweet	+14	+++	++++	++++	++++
Potomac	+18	+++	+++	+++	+++
Harovin Sundown	+21	+++++	+++	++++	++++
Kieffer*	+30	++	+	++++	++++

\* = *canning type*

Harvest = days before (-) or after (+) Bartlett



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