

# Considering Raspberries – Production Issues and Cultivar Considerations



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# What is your situation?

- What is your market?
  - Fresh vs. Processing
  - Local vs. Wholesale
  - Pre-picked vs. Pick-your-own
  - Summer vs. Fall
- What are your production conditions?
  - Open field vs. Protected Production
  - Raised beds vs. Flat
  - Heavy soil (poor drainage) vs. Light soil (good drainage)



# Raspberry Harvest Timing

Variety	June	July	August	September	October	November
Prelude	---X---			-----X---		
Double Gold	---X---			-----X-----		
Nova	---X---					
Black raspberry	--X---			--X--		
Encore		----X-----				
Polka			-----X-----			
Joan J			-----X-----			
Himbo Top			-----X-----			
Caroline			-----X-----			
Crimson Treasure			-----X-----			
Heritage				-----X-----		
Crimson Night				-----X-----		
Crimson Giant					-----X-----	



# High Tunnel Production

## Advantages

- Increased plant vigor
- Increased fruit size and yield
- Superior fruit quality
- Reduced botrytis mold
- Reduced pesticide use
  - Fungicide and herbicide
- Expanded season
  - Early and late

## Challenges

- Higher management requirements
- Excess vigor
- Increased powdery mildew and late leaf/fruit rust
- Increased mite pressure
- Difficult to control insect pests
- Increased double fruit and sunburn/white drupelet











# Standard Cultivars

- Prelude\*
- Nova
- Encore\*
- Bristol-black\*
- Jewel-black
- Mac Black-black
- Polka\*
- Himbo Top\*
- Joan J\*
- Caroline
- Heritage\*

\* Performs well in high tunnels



# Scenario #1: On Farm Sales, Pre-picked and PYO, Open Field, Summer Season

- Vigorous varieties, upright growth habit, size and light color not as important
  - Prelude-early
  - Nova-mid
  - Double Gold (blush color)-mid
  - Encore-late
  - Black raspberry
    - Bristol- early
    - Jewel- mid
    - Mac Black- late





# Prelude

- Earliest variety
  - Overlap w/ strawberry
- Small to medium
- Double cropping potential
  - Primocane fruit is larger
- Vigorous
- PRR resistant
- Open canopy





# Nova

- Medium size; moderate yield
- Cold hardy
- High vigor
- Good quality fruit
- Disease resistant
  - PRR
  - Powdery mildew
  - Leaf rust



# Double Gold

- Peach colored conic fruit
  - Freezes pink
  - Fairly soft
  - Outstanding flavor
- Very tall, upright plants
  - Suitable for double cropping
- Tolerant to phytophthora root rot





# Encore

- Large firm fruit; good flavor; late summer
- Susceptible to PRR
  - Raised beds recommended
- Cold damage from fluctuating temperatures
- Aphid resistant
  - Lowers mosaic virus incidence
- Powdery mildew resistant



# Bristol

- Small to medium size; glossy black
- Good flavor
- Earliest black variety available
- Susceptible to powdery mildew and verticillium wilt
- Resistant to *Phytophthora*





# Jewel

- High quality fruit
  - Tends to be lumpy in high tunnels
- High yields for black
  - 2/3 of red raspberry
- Susceptible to powdery mildew and verticillium wilt
- Resistant to phytophthora root rot





# Mac Black

- Late season
- Medium large berries
- Good cold hardiness
- 7-10 day later than Jewel
- Vigorous upright canes
- Susceptible to crown gall, verticillium wilt and powdery mildew
- Resistant to PRR



July 11, 2006



## Scenario #2: On Farm Sales/ Local Wholesale, Pre-picked, High Tunnels, Fall Season

- Large fruit size, firm fruit, extended season
  - Polka-early
  - Joan J-early to mid
  - Himbo Top-mid
  - Crimson Treasure-mid to late
  - Kwanza-trial for late



# Polka

- Vigorous upright canes
- Very good flavor
- Glossy, dark red fruit
  - Darkens after harvest
- Potato leaf hopper stunting can be a problem
- Open canopy for better spray penetration
- Powdery mildew resistant



# Joan J

- Very productive
- Very firm
  - Jammy texture
- Dark red fruit
- Large conic shape
- Spinefree
- Often too short for double crop
- Powdery mildew resistant





# Himbo Top

- Bright red fruit
- Good productivity
- Can be soft w/ high temperatures
  - Large cavity
- Long, weepy fruiting laterals
  - Requires extra trellising
  - Extra tying helpful
- Long production season
  - Possible double crop





# Crimson Treasure

- Large, firm, bright red, conic fruit
  - 3 to 6 g
- Good flavor and shelf life
- High yield
  - 13-15 t/ha (11.5-13k lb/ac)
- Long harvest period
- Upright, self supporting canes
  - Relatively short-4.5-5.5 ft.
  - Highly branched



Available from NAP, Indiana Berry, PhyllaTech (2023)

# Kwanza

- Late season primocane
  - 3 weeks post Polka
- Developed for tunnels/  
greenhouse/substrate
- Large, firm fruit
  - tender skin
- Good flavor
- Light orange/red color
  - non-darkening in storage



# Scenario #3: On farm sales; fresh and processing; fall season; open field

- High vigor, early to mid season, root rot tolerance, darker color
  - Caroline-dark and a bit soft; very high vigor, PRR resistant
  - Joan J- high yielding, darker fruit, high vigor
  - Heritage-strong plant, PRR resistant, rust susceptible

# Newer Raspberry Cultivars

- Imara\*
- Kweli\*
- Kwanza\*
- Crimson Night\*
- Crimson Treasure\*
- Double Gold\*
- Niwot

\* Performs well in high tunnels



# Advanced Berry Breeding Cultivars

- Developed in Netherlands
- Primarily targeted for substrate culture
  - Unknown root rot tolerance
  - Unknown cold tolerance
- Developed for wholesale markets
  - Tunnels/greenhouses/substrate
- Marketed exclusively in U.S. by Nourse Farms
  - \$1 per plant royalty if < 5000 plants
  - Annual royalty and fee on a per linear row foot of production for > 5000 plants



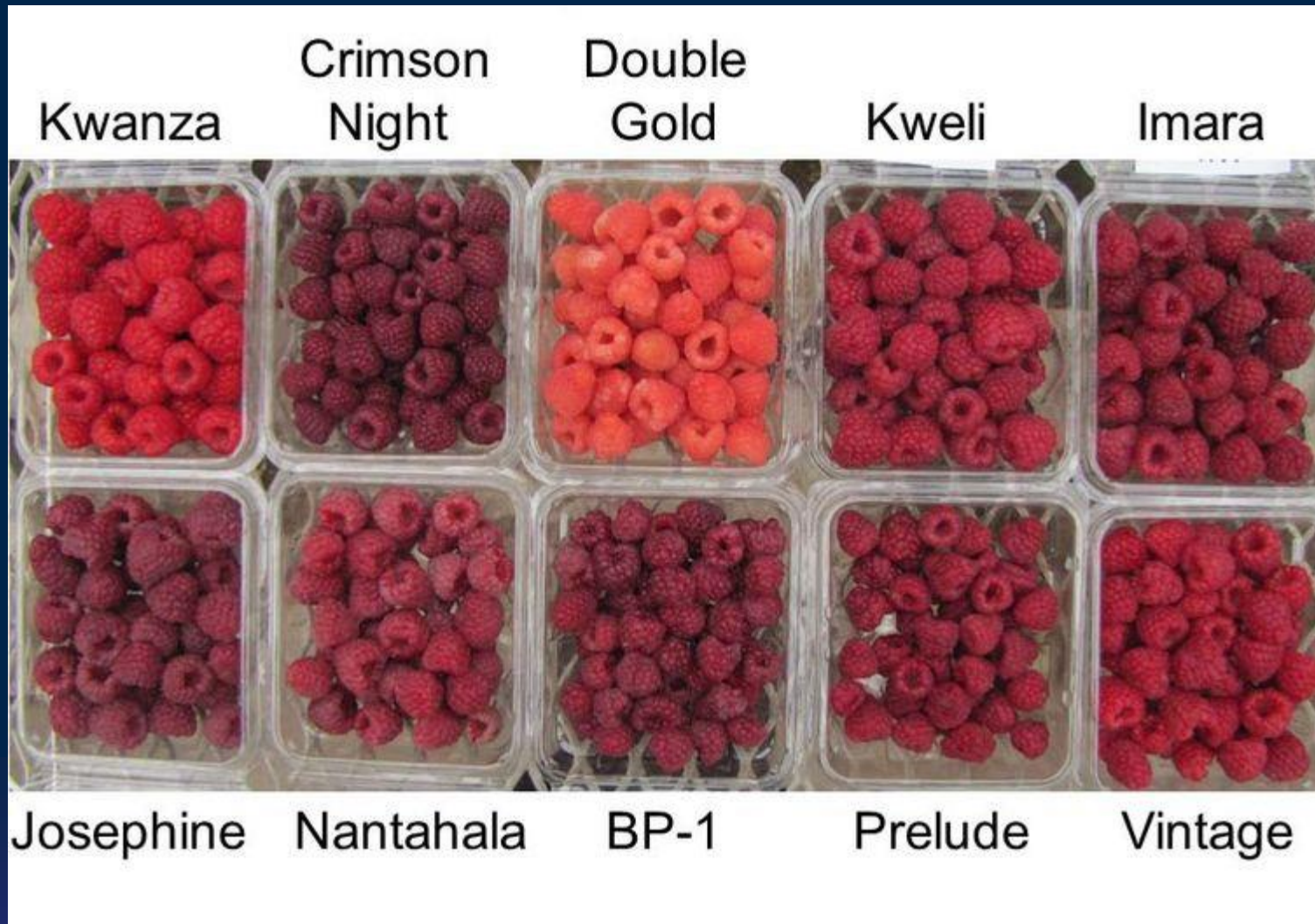


Photo credit: Dr. Eric Hansen, MSU, SWMREC, 2016  
[https://www.canr.msu.edu/news/fall\\_fruiting\\_raspberry\\_varieties\\_for\\_2017](https://www.canr.msu.edu/news/fall_fruiting_raspberry_varieties_for_2017)

# Imara

- Mid-season primocane
  - 10 days post Polka
- Large, dark red fruit
  - Darkens in storage or in high temperatures
  - Similar in color to Polka
- Good flavor
  - Not as good as Polka
- High lateral production
  - Thinning recommended
  - High yield due to laterals nearly the entire cane length



# Kweli

- Mid-season primocane
  - Few days post Polka
- Large, round fruit
- Good flavor
- Darker red color
- High cane # production
  - Thinning recommended
- Yellow rust susceptible





# Crimson Treasure





# Double Gold



# Crimson Night

- Mid to late primocane fruit
- Dark red conic fruit
- Very sweet distinctive flavor
- Makes dark red jam
- Excellent frozen quality
- Resistant to PM; susc. to PRR





# Crimson Night



# Niwot

- 10%-20% of crop in the fall
- Susceptible to powdery mildew
- Medium sized fruit
  - Similar to Bristol in summer
  - Good black raspberry flavor
- Double/split fruit a real problem in the fall
- Mid-season summer crop
  - Overlap with Bristol and Jewel
- Good vigor, tall weepy plants





# Niwot





# Additional Variety Evaluations

## Primocane

- Anne-weepy, soft, best true yellow for flavor
- Nantahala-powdery mildew susc. in NY conditions

## Florican

- Killarney-small, dark fruit, weepy canes esp. in tunnels
- Latham-small, soft fruit, PRR resistant
- Tulameen -cold and PRR susceptible
  - Excellent flavor
- Royalty (purple) –great for processing, aphid and PRR resistant



# Additional Information

- [www.fruit.cornell.edu](http://www.fruit.cornell.edu)
  - Berry page
  - High Tunnel Raspberry and Blackberry production guide
  - Raspberry and Blackberry Production Guide for the Northeast, Midwest, and Eastern Canada- NRAES-35
  - Pest Management Guidelines for Berry Crops
- Penn State High Tunnel Production Manual
  - [plasticulture.cas.psu.edu/manual.htm](http://plasticulture.cas.psu.edu/manual.htm)
- [www.hightunnels.org](http://www.hightunnels.org)

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  - Pest Management Guidelines for Berry Crops
- [cals.cornell.edu/cornell-agritech/products-we-research/berries](http://cals.cornell.edu/cornell-agritech/products-we-research/berries)

