
Early Experience with Primocane* Blackberry Production in Middle Tennessee

CUL2VATE IS A FAITH BASED, NON-PROFIT ORGANIZATION
WHOSE MISSION IS GROWING FOOD AND GROWING PEOPLE.



THE ORGANIZATION LEASES 8 ACRES OF CROPLAND LOCATED ON THE
TENNESSEE DEPARTMENT OF AGRICULTURE CAMPUS AT THE ELLINGTON
AG CENTER ON HOGAN ROAD IN NASHVILLE, TN. THREE ADDITIONAL
CULT2VATE GARDEN PARTNERS INCLUDE ONE LOCATION IN DAVIDSON
COUNTY AND TWO LOCATIONS IN WILLIAMSON COUNTY.

So...You Want to Grow Blackberries

Fixing to Get Ready: Purpose

Getting Ready: Preparation

Planting

Maintenance: Perspiration

Harvesting/Sales: Production

CHARLES COFFEY

CUL2VATE VOLUNTEER

ELLINGTON AGRICULTURAL CENTER, NASHVILLE, TN



Purpose

FAMILY/PERSONAL USE	10-20 PLANTS
SHARE WITH NEIGHBORS	30-50 PLANTS
GIVING GARDEN	75-200 PLANTS
COMMERCIAL	> 300 PLANTS [>0.25 ACRES]
CUL2VATE YIELD (2022)	5-7PINTS/PLANT



Preparation

A. SOME THINGS TO KNOW

BRAMBLEBERRY, CANEBERRY, AND BLACKBERRY

CROWN AND CANES

CANOPY: THE ABOVE GROUND PORTION OF A PLANT OR CROP

TWO YEAR LIFE CYCLE: PRIMOCANE [VEGETATIVE; YEAR 1] AND FLORICANE [REPRODUCTIVE; YEAR 2]

HABITUS: TRAILING, SEMI-ERECT, AND ERECT

THORN OR THORNLESS

FLORICANE OR PRIMOCANE* [UNIV OF ARKANSAS RESEARCH/DEVELOPMENT]

BUDDING, FLOWERING, FRUIT SET

DRUPELETS: INDIVIDUAL SPHERICAL FRUIT, MATURES, GREEN, THEN RED, AND FINALLY DEEP PURPLE/BLACK



Erect



Semi-erect



Trailing

Preparation

Concept of Floricane and Primocane

Remember: Blackberry Canes Have a Two-Year Life Cycle

Floricane is the 2nd Year Cane reproductive [berry producing]

Primocane is the 1st Year Cane vegetative [cane/canopy producing]

One is required to know cane identity at all times [Year 1 & Year 2]

Know: In 2004, the Univ of Arkansas "introduced" what is referred to as a Primocane* blackberry CULTIVAR with the primary addition:

Floricane is the 2nd Year Cane [berry producing]

Primocane* is the 1st Year Cane [vegetative AND berry producing]

Three harvest management options with Primocane* Cultivars

Summer & Fall Harvests, Summer Harvest, or Fall Harvest

harvest specialists



Preparation

B. Site Selection

Native to most of North America, so can over-winter; total life = 8-12 years

Soil Type: sandy or loamy soils with pH from 6.0 -6.8

Soil Sample: determine nutrients [deficiency or excessiveness]

Water Drainage: blackberries do best in well-drained soils [no wet-feet]

Sunlight: direct sunlight desirable [8 hrs/day], but limited partial shading acceptable

Wild blackberry Plants: do not choose site near wild blackberry plants [risk of disease/pests]

Plot Orientation: light interception should be more optimal for rows running North/South

Organic Matter/Mulch: improves aeration and drainage and increases water holding capacity





Preparation

C, Cultivar Selection

Single versus Multi-Cultivars

Growing Zone

Thorn/Thornless

Floricanne/Primocance*

Time of Fruiting Season [Harvesting Dates]

Fruit Size and Flavor [Function of Ripeness]

Heartiness/Shelf-life [Have Berries Will Travel]

Cost: Purchase from Reputable Vendor [Bare-root versus Seedling]

Beware, Order By Date: generally, Order in Fall for Early Spring Planting

Blackberry Varieties

Actual ripening times will vary depending upon location as well as local, seasonal weather conditions and many other factors.

JULY	AUGUST	SEPTEMBER	OCTOBER
	Natchez		
	Ouachita		
		Illini Hardy	
		Triple Crown	
		Chester	



Planting

A. Row Design

Distance between plants [3 – 5 feet, depending on habitus type]

Width of mulch row surrounding each plant [+/- 2.5 feet]

Width between plant rows [11-12 feet]

Prepare 12in deep and 12in diameter hole and backfill with growing media/topsoil/water

Avoid fertilizer burn by fertilizing only after plants are established

Plant bare-root or seedling to a depth that allows crown at soil surface; pack soil firmly around roots

– plants may fail to flourish if roots are too deep or too shallow

Planting

B. Approximate Costs/Vendors

Bare-root and Seedling [bare-root more of a risk to thrive]

Bare-root will be less expensive than seedlings \$3-6

Price of seedlings dependent on size and age

\$4-8 plug plant [dependent on number ordered]

\$25-30 gallon size

Vendors: Johnny Seeds, Stark Bros Orchard, Nourse Farms, Indiana Berry Company



Planting

C. Rationale for Trellising

Support to allow cane growth and keep canes and subsequent fruit off the ground

Improves sunlight exposure, air movement, and spray penetration throughout the canopy

Will allow for easier plant management

Can train mature canes to the exterior, thus allowing primocanes [new canes] sufficient growth space at the interior

Easier harvest results in cleaner picking, lessening the number of pests that result from the presence of overripe/rotting fruit

Allows easier removal of floricanes

Trellising is preferred at/near the time of original planting





Planting

D. Trellising Methods

1. T-Trellis

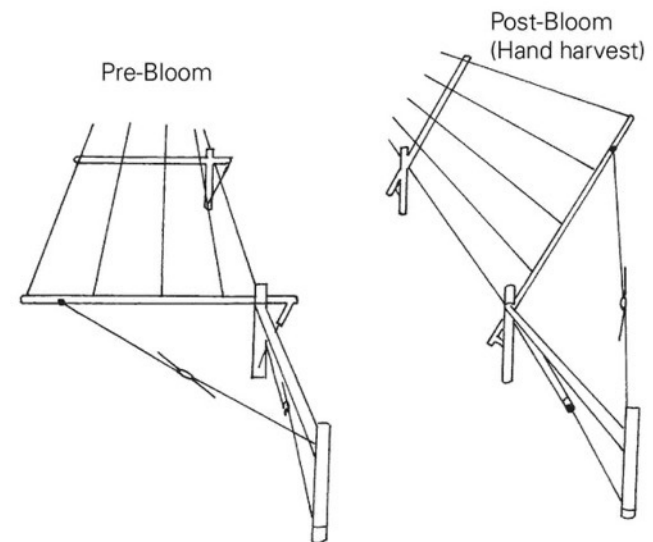
- + Opens canopy for higher yields and improved air circulation
- Wire height cannot be adjusted once cross arms are in place

Planting

D. Trellising Methods

2. RCA [Rotating Cross Arm]

- + easier harvest, fruit all on one side
- + less sunscald on fruit
- + can be covered in winter to protect canes
- expensive and more difficult to assemble
- harder to learn how to train and prune canes



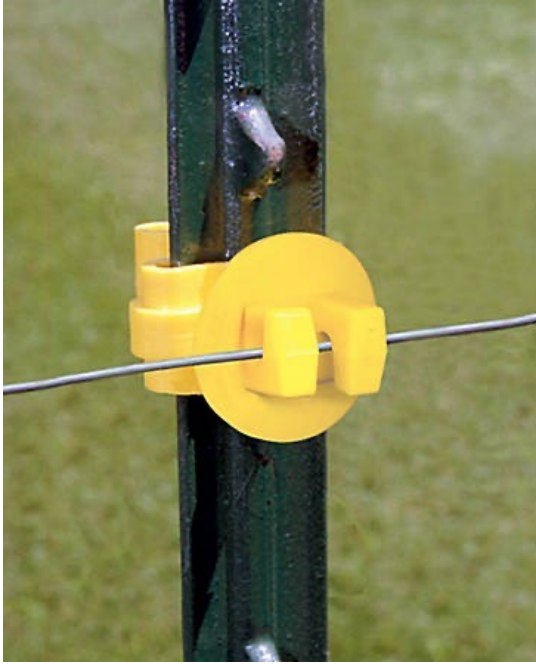
Planting

D. Trellising Methods

3. Multi-purpose V-Trellis

- + economical, easy to assemble/disassemble
- + adjustable to accommodate cultivar's vigor
- + allows more light penetration and air circulation
- + facilitated use with tractor and 3-point hitch





Planting

- E. Assembly Details Using Multi-Purpose Trellis Method
 - Metal t-posts [7 feet or 8 feet length]
 - 20 feet apart
 - Standard electrical fence plastic insulators
 - Standard 17-gauge galvanized electric fence wire
 - Use 'tomato' clips to attach/support canes to horizontal wires
 - Easy Installation
 - Adjustable with growth of cultivar
 - Approximate Costs: \$1.50 per linear foot (2022)





Multi-purpose V-Trellis Assembly Device

Other Uses:

Pest Protection Covering Support

Row Covering Support to Extend Grow Periods

Cut Flower Netting Support



Maintenance

A. Fertilization Avoid fertilizer burn on planting date; recommend 0.5 cups 10-10-10 fertilizer per plant [30-60 days following planting]

For Floricane cultivars apply 0.5 – 1.0 cup of 10-10-10 fertilizer per plant at bloom break

For Primocane* cultivars:

apply 0.25-0.50 cup of 10-10-10 fertilizer per plant at floricate bloom break

and 0.25-0.50 cup of 10-10-10 fertilizer per plant at primocane bloom break

“notes from David Lockwood, 2022 Pick-TN Conference”



Maintenance

B. Irrigation

1" – 2" rainfall or equivalent per week throughout the growing season

Drip irrigation preferred to spray-irrigation methods

Avoid over-watering

Rain permeable landscape mat and/or mulch preferable to white/black plastic



Maintenance



C. Weed Control

Maintain clean row beds that are frequently weeded

For mulch only weed control

Since roots are shallow; do not cultivate more than 1-inch deep

Beware the source of the mulch; weed seeds and pests contained within may be an issue

Horse Bedding [Pine Shavings/Plant Fibers] 8 cubic feet bag covers 10' x 5' x 2"

With landscape mat use, weeds may occur within the plant aperture in the matting

'Set the edge' of your mulch/grass or landscape mat/grass interface

Maintain well-manicured grassy areas between rows [limit broad-leaf weeds]



Maintenance

D. Pruning for Floricane Cultivars

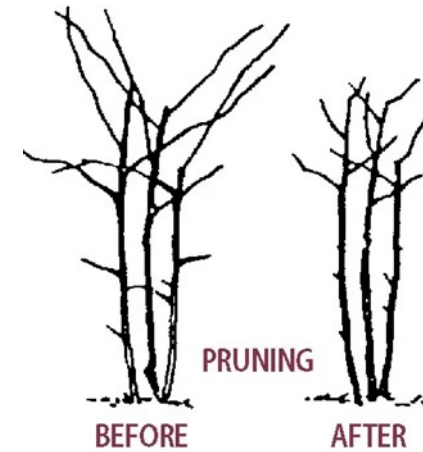
Tip first-year canes when they reach 4 -5 feet in the Summer

Laterals on the first-year canes should be cut to approximately 12 - 18" in late Autumn

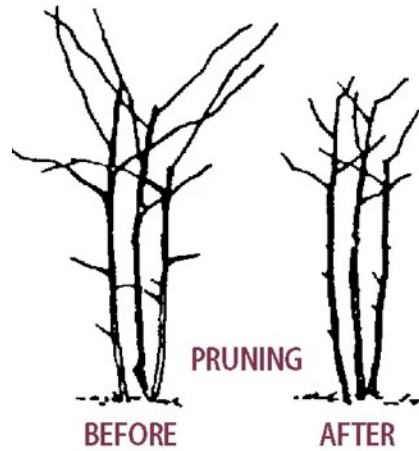
After harvest, cut [remove] canes that fruited at the base of the plant

Cut [remove] any weak, damaged, or diseased canes at the base

Suggest 4-6 healthy/vigorous primary canes to remain per plant



Maintenance



E. Pruning Primocane* Cultivars

Tip primocanes* when they reach 4-5 feet in Spring/Summer

Remove floricanes that fruited in Summer at the base of the plant

Continue to tip primocanes* as needed into late Summer

Cut any weak, damaged, or diseased canes at the base in late Fall [following primocane*/2nd harvest]

Laterals should be cut to approximately 12 - 18" in late Fall

Suggest 4-6 healthy/vigorous primary canes to remain per plant

[Tipping can be referred both as "hard" and "soft" tipping]

Primocane*-bearing caneberries can be managed for a **Summer harvest**, a **Fall harvest**, or **both a Summer & Fall harvest**.

"The decision regarding which way to manage them is based on the type of the caneberry and the goals of the grower." Lockwood



Maintenance

F. Pruning [canes at the base]

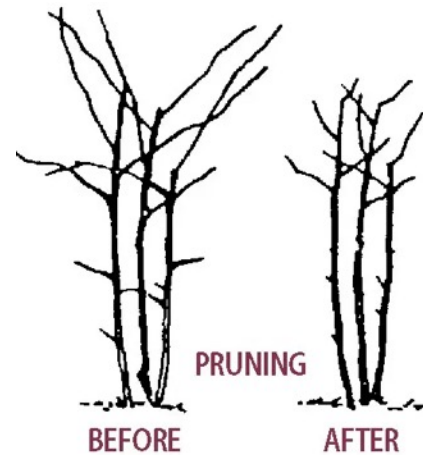
1. Cut any weak [small], damaged, or diseased canes
2. Remove suckers on canes [at base]
3. Remove suckers on canes [up to 18-24" above base]



Maintenance

G. Pruning Primary and Laterals

1. Cut primary canes to 6-8" above upper horizontal wire and "clip" as necessary
2. Cut laterals, from vertical canes, leaving 12-18"



Maintenance

H. Results of Pruning



Before

[Remove pruning debris]



After



Maintenance

I. Trellising Adjustments

Attach canes to horizontal wires for support with "tomato clips"

requires constant monitoring as new vertical cane growth continues

Trellis wire width and height may need adjustment

- growth season dependent
- cultivar dependent
- width and height of canopy
- following floriculture removal and primocane pruning

Trellis wire tension should be checked periodically to avoid "sagging"

- consider use of 14-gauge wire for upper trellis line to increase support

Conclusion: less than optimal primocane and floriculture pruning may result in excessive canopy and reduced berry yield



MAINTENANCE



J. DISEASE & PEST CONTROL

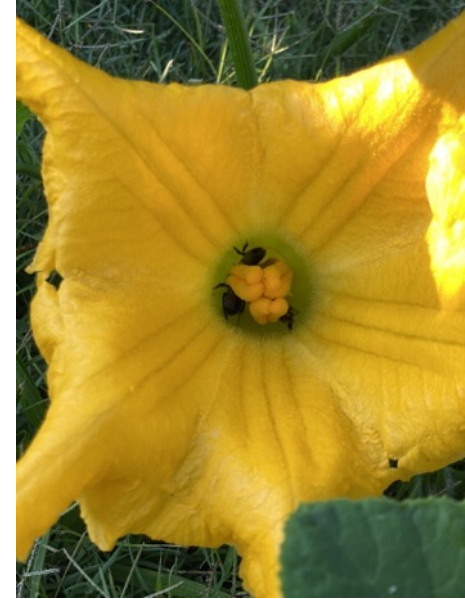
Online Resource: 2021 Southeast Regional Caneberries Integrated Management Guide

TABLE OF CONTENTS

Southeastern Region University Small Fruits IPM Contacts	1
Pesticide Stewardship and Safety	2
Integrated Management Guide (Insect and Disease Control)	
<i>Pre-transplant and transplant operations</i>	<i>7</i>
<i>Dormant (prior to budbreak)</i>	<i>10</i>
<i>Delayed dormant (swollen buds) to green tip.....</i>	<i>11</i>
<i>Shoots 6 inches long and before blooms open</i>	<i>14</i>
<i>Pre-bloom (when flower buds show white)</i>	<i>20</i>
<i>Early bloom (5-10%)</i>	<i>23</i>
<i>Full bloom</i>	<i>27</i>
<i>Petal fall</i>	<i>28</i>
<i>Cover sprays</i>	<i>30</i>
<i>Pre-harvest (14 days before anticipated harvest)</i>	<i>34</i>
<i>Harvest</i>	<i>38</i>
<i>After harvest (after fruit has been harvested)</i>	<i>39</i>
Fungicide Efficacy Comparison	42
Insecticide Efficacy Comparison	43
Seasonal 'at a glance' Fungicide Spray Schedule	45
Fungicide Mode of Action	46
Seasonal 'at a glance' Insecticide Spray Schedule	47
Weed Management.....	48
Suggested Herbicide Programs.....	53
Weed Response to Blackberry and Raspberry Herbicides	54
Postemergence Control of Bermudagrass and Johnsongrass	55
Yellow Nutsedge Control.....	56
Managing Wild Blackberry in Non-Cropland Areas Near Commercial Sites.....	57
Blackberry Dormex Use (Georgia Label)	58
Wildlife Damage Prevention	59

MAINTENANCE

...AND DON'T FORGET ABOUT THE POLLINATORS



K. SUGGESTED PRIMOCANE* CULTIVAR TIMELINES for Dual Harvest Management

SPRING	SUMMER	FALL	WINTER
WEEDING	HARVEST #1	HARVEST #2	TRELLIS MANAGEMENT/REPAIR
TRELLIS MANAGEMENT	FLORICANE REMOVAL	PRUNING	MULCH MANAGEMENT
TIPPING	TIPPING	TRELLIS MANAGEMENT	IRRIGATION SYSTEM CHECKS
FERTILIZATION #1	FERTILIZATION #2	WEEDING	YIELD REVIEW & PROJECTIONS
PEST/DISEASE WATCH	WEEDING	PEST/DISEASE WATCH	SALES REVIEW & PROJECTIONS
	PEST/DISEASE WATCH		

HARVESTING/SALES



A. Recommendations

Use GAP Precautions and wash hands before harvesting and do not keep berries that have dropped on the ground

Harvest in sales containers to avoid handling multiple times which reduces shelf-life [keep containers from ground contact]

- suggest use plastic clam shells with holes for aeration

- do not overfill to avoid bruising/crushing

- are stackable for ease of handling

Do not allow more than 30 minutes from harvest to first cooling and then refrigerate [40 -45 degrees Fahrenheit]

Refrigerated transportation only, otherwise berries will decay much faster

Harvest in the cooler hours to avoid intense noon-time heat

If rows are orientated East/West direction; in the early mornings harvest the east side first to take advantage of shading on west side

The darker, fuller, and more glistening the drupelets = juicier and sweeter the berry

Dropped and/or decayed berries on the ground may attract unwanted pests, hence keep harvesting area clean

HARVESTING/SALES

Trends?

B. Yields

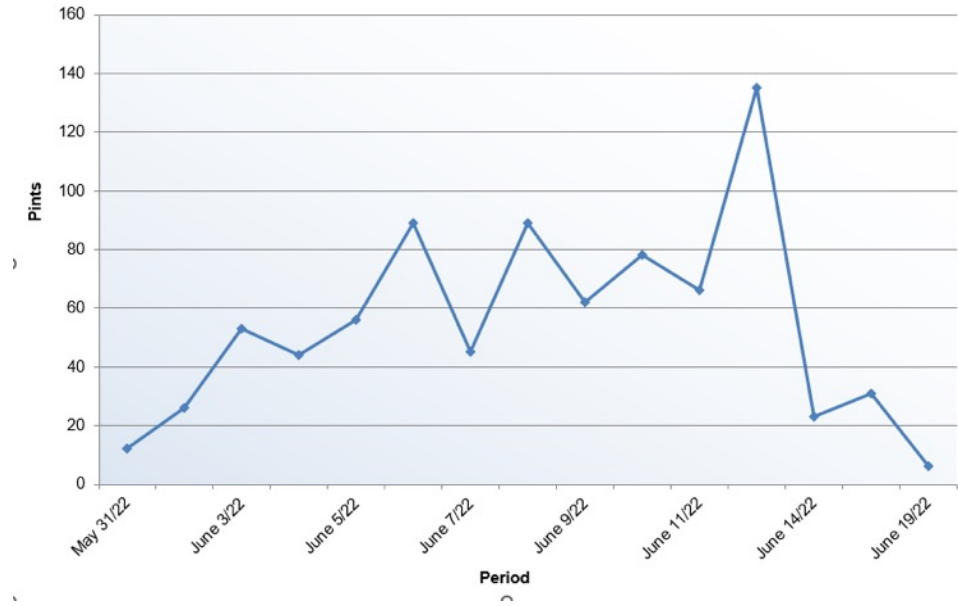
Prime Ark Freedom [110 plants – 6 years old]

815 pints 20-day harvest 7.4 pints/plant

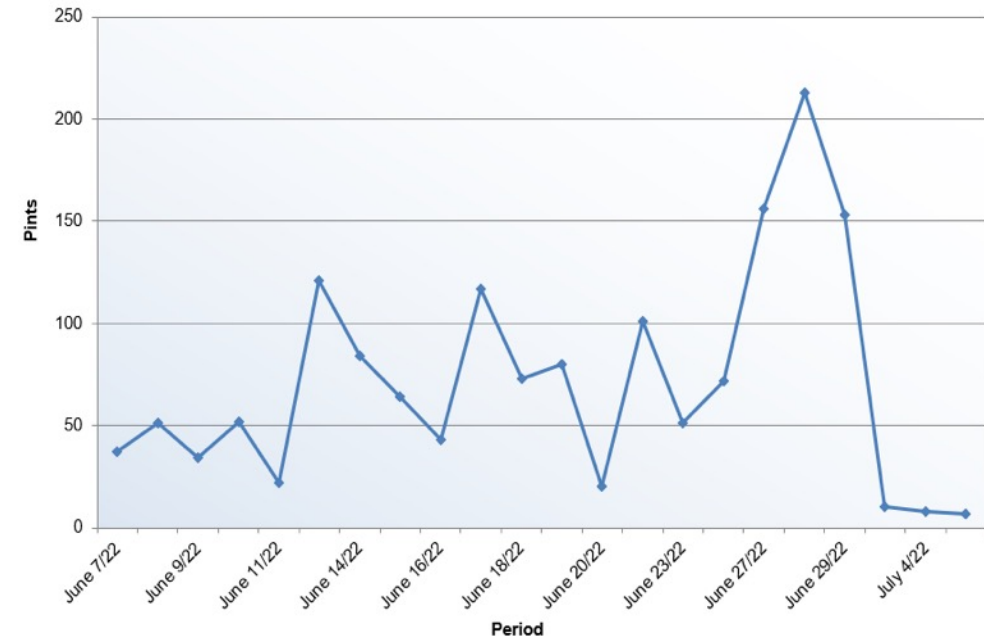
Prime Ark Traveler [320 plants – 1 year old]

1672 pints 33-day harvest 5.2 pints/plant

2022 Blackberry Yields: Prime Ark Freedom 815 pints



2022 Blackberry Yields: Prime Ark Traveler 1672 pints



Harvesting/Sales

C. Start-Up Costs [2022 Dollars] for 0.30 Acres of Prime Ark Traveler Blackberries

320 Blackberry "Plugs" @ \$7.00 each = \$2247

1280 linear feet of trellis @ \$1.50 per foot = \$1920

'Extrapolated' Sales

1672 pints at \$5.00 per pint = \$8360

Assume hired out all of harvest labor [10 pints/hr; need 167 hours of labor x \$15/hr*]

Approximate Labor Costs = \$2505

Approximate Net Profit from 1st Year Production = \$1672

CAVEAT: Does not include Irrigation, Fertilizer, Mulch, or Spray Costs

*consider pay scale as price per pint harvested



HARVESTING/SALES

D. Yields

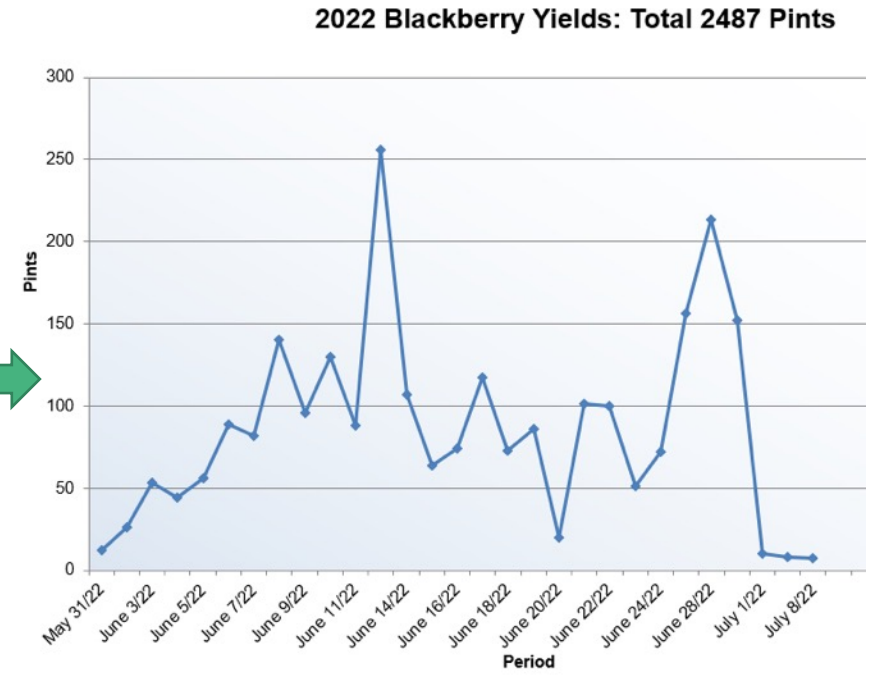
Prime Ark Freedom [110 plants]

815 pints 20-day harvest 7.4 pints/plant

Prime Ark Traveler [320 plants]

1672 pints 33-day harvest 5.2 pints/plant

Predictions? →



HARVESTING/SALES

E. POOR PRUNING & TRELLISING TECHNIQUES

- DIFFICULT HARVESTING
- REDUCED YIELDS/SALES



HARVESTING/SALES

F. POTENTIAL SOLUTIONS FOR LABOR CONCERNS

U-PICK

ESTABLISH BOUNDARIES

PROJECTED HARVEST DATES

SPONSORED CHARITY EVENTS

ESTABLISH DOLLAR VALUE

PROJECTED HARVEST DATES





Harvesting/Sales

G. Sales & Value-Added Opportunities*

Fresh Berries

Jams and Jellies

Frozen Berries

Desserts/Pies & Cobbler

*requires Commercial Kitchen Facility

in compliance with TN Food Safety Guidelines/Recommendations



Maintenance/Harvest Timeline for Prime Ark Traveler (Cul2vate 2022)

Jan-March: General Maintenance

April: Bloom Set and Fertilizer Application #1

May: Primocane* Initial Pruning & Tipping and Weeding

June: Harvest [total interval = 28 days: total Yield = 1672 pints] and Weeding

July: Floricane Removal and Weeding

Early August: Bloom Set, Fertilizer Application #2, and Weeding

Mid Sept – Mid Oct: Harvest [interval 28 days cut short Early Killing Freeze: total Yield = 65 pints]

Nov: Primocane* Final Pruning

Dec: General Maintenance



Lessons Learned About Primocane* Blackberry Production (Cul2vate 2022)

1. IMPORTANCE OF TRELLISING & PRUNING
2. LABOR REQUIREMENTS FOR HARVESTING
3. "PURPLE-FINGER" HARVEST SYNDROME
4. NEED FOR FRESH SALES & VALUE-ADDED MARKETS
5. SINGLE VERSUS MULTI-CULTIVAR SELECTION
2023 PLANS INCLUDE ADDITIONAL PLANT PURCHASES
[140 PONCA AND 60 PRIME* ARK TRAVELER]
6. CAREFUL DELIBERATION OF PRIMOCANE* MANAGEMENT
[SOME GROWERS MAY OPT FOR SINGLE YEARLY CROP]
7. 2022 WAS A MINIMAL RISK YEAR FOR PESTS/DISEASES
8. POTENTIAL SUPPLEMENTAL INCOME CROP





Just Do It

Don't just stand around looking at your feet!

Contact a Vendor and order your blackberry plants [and trellis maker] today.