



Introduction to Wild (Lowbush) Blueberry Production

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Wild Blueberry Industry

- 42,000 acres in ME
- 485 land owners
- 308 active growers
- 5 large producers
- NH, MA, NS, NB, PEI, QC



Lowbush Blueberry = Wild Blueberry

Why are these blueberries WILD?

1. These blueberries are not planted.
2. No commercial breeding, varieties, cultivars are not planted
3. Native plant to northern New England
4. Yes, WILD is a marketing strategy

Sure, they are “wild” but this is a managed crop.

Pesticides are used.

Fertilizers are applied.

Organic certification is available.

Crop insurance is available.

Food Safety is required.



Field Diversity

1500 genetically distinct individuals/field

System resilience

Two species of wild blueberry:

Vaccinium angustifolium

Vaccinium myrtilloides







Unique System Brings Challenges and Resilience



- Mix of drought & pest tolerance
- Unique crop to market
- No planting, existing fields
- Cheaper land (\$900-7,000/acre)

- Fits well as an addition to CSA share
- Value-added and fresh pack price is higher



- Lack of consistency in fruit quality
- Consumers don't know low vs. highbush
- Price for frozen conventional berries is low

Two-Year Cropping Cycle

PRUNE/SPROUT YEAR

1. Prune (mow or burn in Fall or Spring)
2. Weed management
3. Vegetative growth
4. Irrigation
5. Tip die back stage, Fertilize
6. Bud development



CROP YEAR

1. Mummy berry and weed management
2. Bloom → BEES
3. Green fruit development
4. Irrigation
5. Blueberry maggot fly management
6. Color development
7. Harvest
8. Post harvest weed management
9. Prune (mow or burn in Fall or Spring)



Prune Year - Emergence

March-April

May



Prune Year – Vegetative growth



Prune Year – Tip dye back



Prune Year – Bud development










Prune Year – Leaves turn red and drop after fall frosts
Leaf harvest for tea










Prune Year – winter, no leaves



Crop Year – starts with bud development

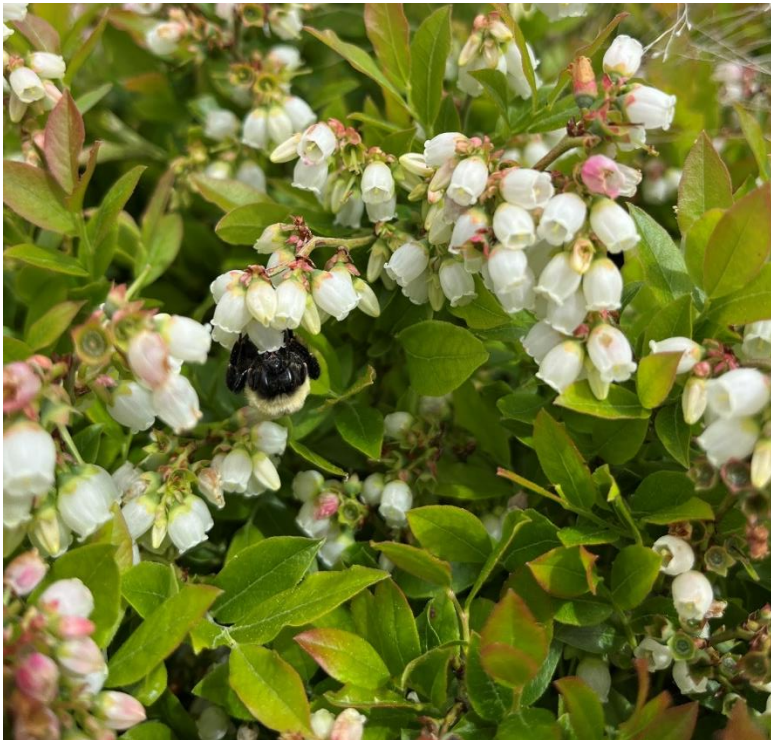
Leaf Stages			Bud Stages			
						
Early Green Tip (V1): Spikey green tissue emerges from tightly closed buds along stem (spikes < 2mm).	Green Tip (V2 & V3): Green tissue continues to emerge (V2; spikes 2-5mm), and tips begin to separate (V3; spikes >5mm)	Shoot Expansion (V4): Leaf shoots expand; leaves unfurl, and enlarge in a whorled pattern.	Bud Swell (T1): Buds continue to swell with scales separating. Flower parts start to round inside bud.	Early Bud Burst (T2): Buds continue to swell with scales separating. Scale tips are pointed.	Bud Burst (T3): Bud scales separate fully with to show rounding flower parts.	Tight Cluster (T4): Petals (corolla) in flower buds are visible, elongated, but remain closed.

Bloom		Fruit Development				
						
Early Flower (T5): Pre-bloom; petals (corolla) extend beyond the green base of the bud (calyx) but remain closed.	Open Flower (Bloom): Flowers may be various shades of white to pink. Flower petals are open for pollination.	Petal Fall (Pin Head): Petals drop but the calyx and stamen remain.	Early Green Fruit: Fruit swell begins, but fruit remains hard, small, and green.	Late Green Fruit (Blushing): Green fruit begins to blush around the top but remains green where connected to the stem.	Red Fruit: Fruit is formed and turns various shades of pink and red prior to turning blue. Acid content is still high.	Blue Fruit: Fruit is ripe, sugar content is high.

Stages correlate with Hildebrand, P.D., and P.G. Braun. 1991. Factors Affecting Infection of Lowbush Blueberry by Ascospores of *Monilinia Vaccinii-Corymbosi*. *Canadian Journal of Plant Pathology* 13(3): 232–240. Images taken by UMaine Extension. /

Crop Year – Bloom & Pollination (Black Fly Season: May-June)

- Maine brings in ~50,000 honey bee hives/year
- Combination of native and managed bees required for highest yields
- Honey and bumble bees brought in
- Habitat required and encouraged for native species



Crop Year - Fruit Development (June-July)



Pin Heads



Green Fruit



Late Green Fruit



Red Fruit

“Bloom”= wax
Acidity High



Blue Fruit

Acidity Drops
Sugars Increase

Plants develop at all different rates.
Everyone harvests some green berries.
Manage and harvest for the field average.



Crop Year – Blue Fruit

Yield Range: Organic 500-4,000lbs/ac
Conv 2,000-8,000lbs/ac



Crop Year- Harvest (July-August)



Bragg Harvesters



Hubbard Rake Company, Jonesport

Pictou County Berry Ltd, Nova Scotia

Crop Year- Prune post harvest (flail mow or burn)



Burning: *not for the untrained*

Propane burning for smaller scale
Need more people, takes longer



Atlas Obscura, Nicolas Lindholm


Oil burner for large scale
#2 heating oil



\$\$ Cost of Production \$\$

- Conventional frozen commodity as of 2020
 - Medium-high yield cost/ac: \$1,618
 - = \$0.40 per pound
 - Conventional Frozen 5 year average price/lb: \$0.50

- Organic fresh pack & fresh frozen as of 2022
(Retail & wholesale operation)
 - Medium Yield Cost: \$1800/ac
 - Revenue: \$3000/ac = \$3.00 per pound



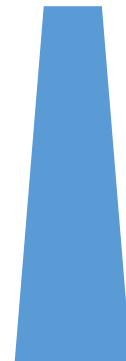
Considerations when purchasing wild blueberry land

- When was it last managed?
- What is the yield history?
Yield should be 2,000-8,000 lbs/acre
- Has the field been de-rocked and land leveled?
- Is the field split?
- Are their neighbors?
- Will you manage it conventionally or organically?
- How many fields will you manage?
- Where will you sell the berries?
- Have you made a budget?

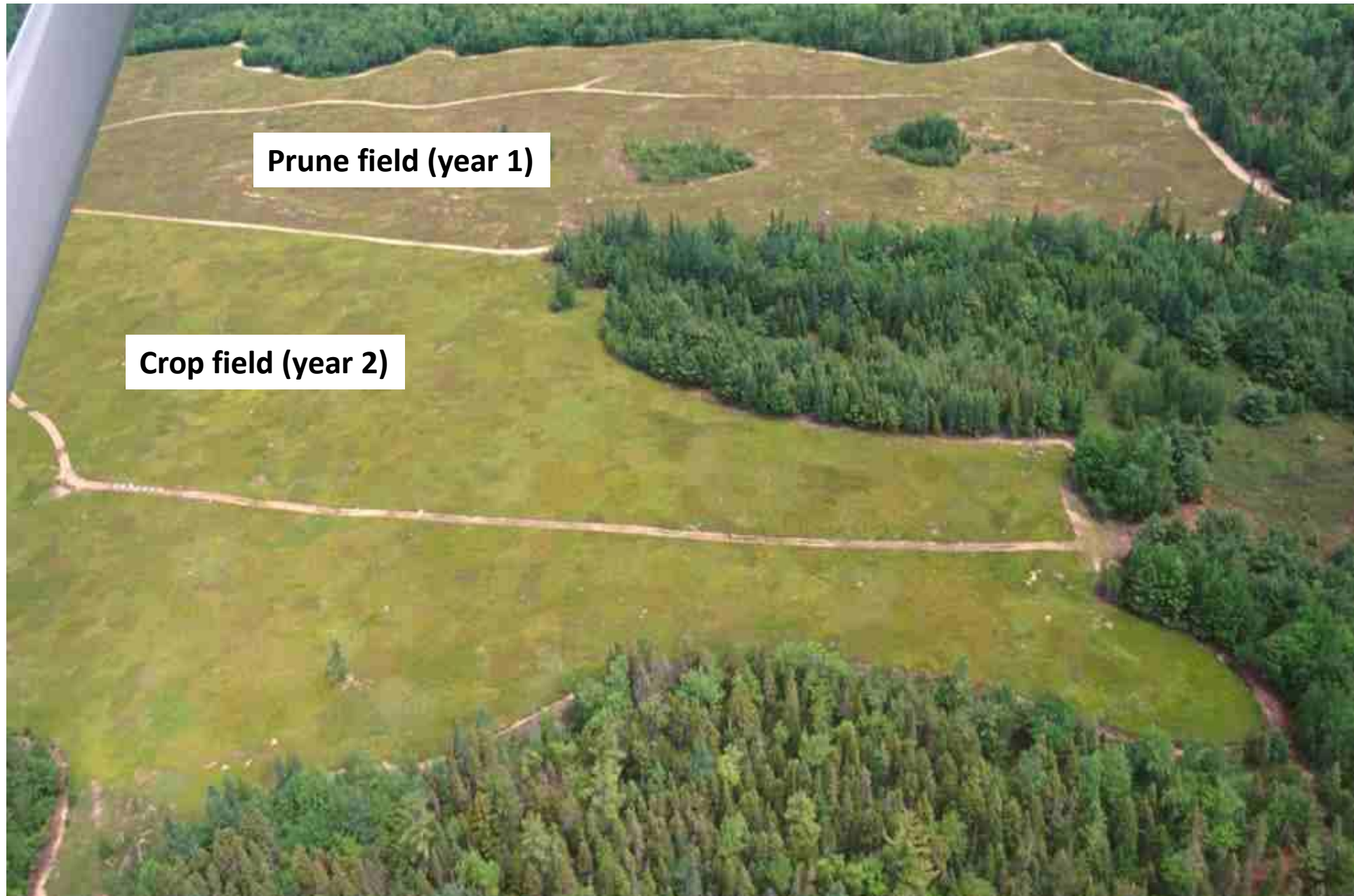
Land Managers



Home



Are the fields split?



Prune field (year 1)

Crop field (year 2)

Isolated (one cycle) fields help to manage blueberry maggot fly!



Weed Management

- Weeds are the #1 pest of wild blueberry (can reduce yield by 80%)
- Soil pH 4.0-5.0
- Weed wiping, pre & post-emergent herbicides
- Weed whacking above canopy & cutting woody weeds x3/season



2021 PEST MANAGEMENT GUIDE: WEEDS



Cultural Weed Management

Why culturally manage weeds? To increase yield and reduce pesticide exposure to off-target organisms, such as bees.

Weeds Compete with Wild Blueberry for:

- Water
- Light
- Nutrients

The method for controlling one weed may encourage another. A combination of careful ID and monitoring of the weed situation in a field, with cultural management and the wise use of herbicides (only when critical) forms the basis of a sound weed management program.

THERE IS NO QUICK FIX. One method will not control all weeds.

CULTURAL WEED MANAGEMENT FOR WILD BLUEBERRY		
WEEDS MANAGED	METHOD	COMMENTS
Most weeds, especially grasses	Test soil for pH and reduce with sulfur if above 4.0	Add fertilizer only if leaf analysis indicates a deficiency. Maintain soil pH at 4.0.
Most weeds except grasses	Hand pulling	Effective against spot infestations. Pull before any weed flowers go to seed.
Weeds spread by seed or vegetative parts carried on equipment, especially mechanical harvesters	Field sanitation	Steam clean and inspect equipment before entering a field.
Bracken fern, sweet fern, dogbane, seedling or sprouting trees, flowering weeds	Mowing above blueberry plants	Most successful if done during the vegetative year. Cut flowers off before they go to seed.
Coniferous trees, some weeds spread by seed	Fire pruning	When burning with straw or hay, use weed-free material.
Weeds that form crowns at or above ground level	Cut or mow woody weeds three times in the non-crop year	Mow or cut plants to ground level.
Some weeds spread by seed	Mulching on bare spots	Apply mulch 2" to 4" deep. Use one of the following: bark, woodchips, shavings, sawdust, peat or sand.

Chemical Weed Management

THIS CHART IS NOT A SUBSTITUTE FOR READING AND FOLLOWING THE LABEL. It is unlawful to use any pesticide for other than the registered use. Read and follow the label on the product container. The user assumes all responsibility for use inconsistent with the label. Trade names are used for identification. No product endorsement is implied, nor is discrimination intended against similar materials. Cooperative Extension makes no warranty or guarantee of any kind concerning the use of these products.

Reclaiming a wild blueberry field







Land Leveling, Rock Removal & Mulching

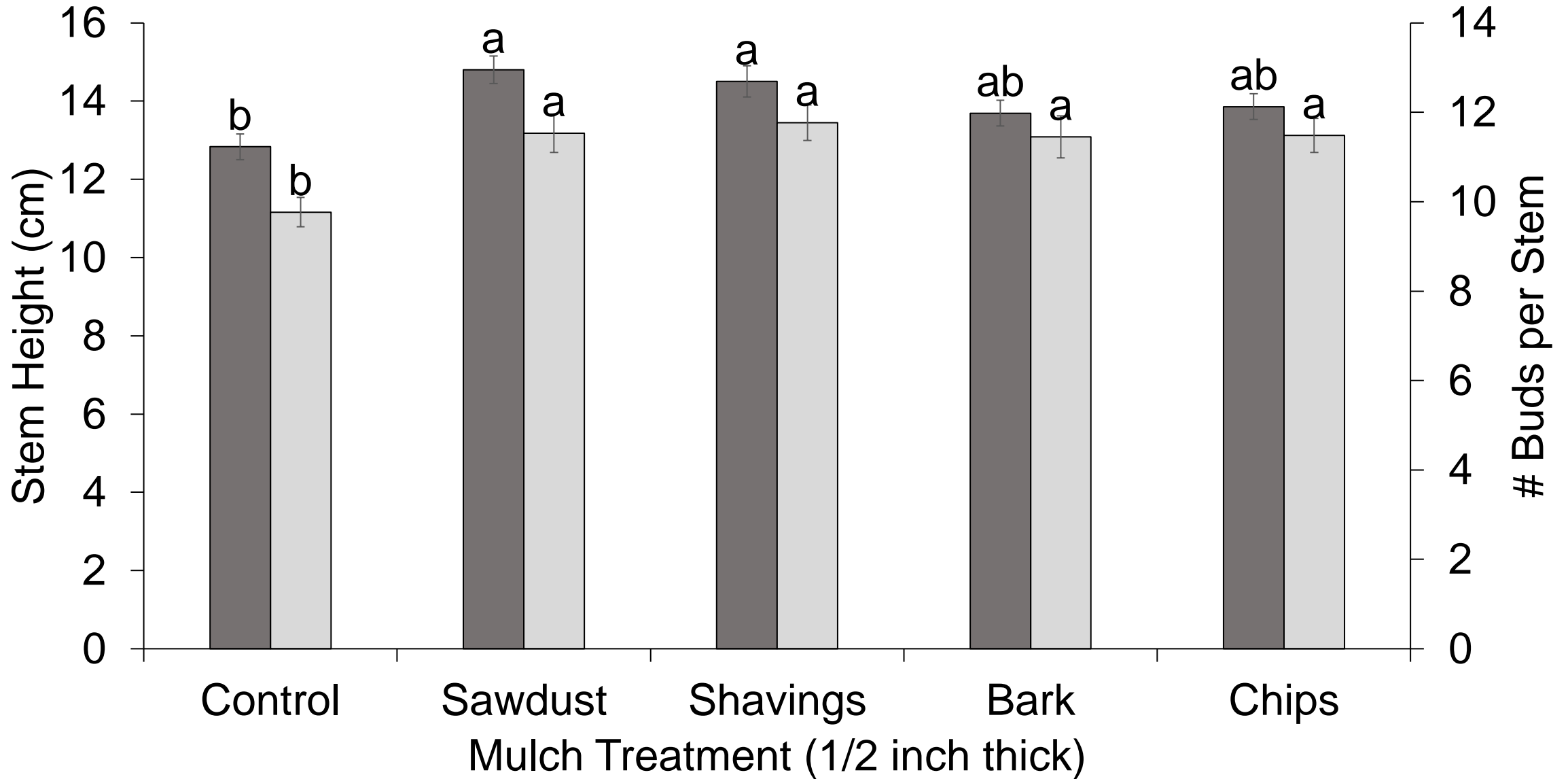
-all NRCS cost share programs





Mean Stem Height & Bud Number

■ Stem Height (cm) □ Bud Count



1 - 2 inches softwood chips

Increased soil moisture by 4-14% in 2022



Climate Change & Wild Blueberries

Changes

- Seasonal drought
- Spring frost events
- Migration north?
- Longer season in fall especially
 - Pests, fall bloom, winter hardiness?

Adaptations

- Mulch & biochar
- Irrigation?
- Earlier harvest
- Lots of research, shifting field event dates



Questions?

Resources

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<https://extension.umaine.edu/blueberries/>

- Newsletter
- Field meetings
- Research reports
- Virtual conference recordings
- Enterprise budgets (email Lily)

