Blueberry Site Preparation and Establishment

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“ The Southern Highbush [Blueberry] is a plant looking for a place to die”

- Gerard Krewer, Dixie Blueberry News, March 2003

WHAT MAKES A GOOD BLUEBERRY SITE?

Ashe County, WNC

Bladen County, SENC

Good drainage, soil aeration, low pH, organic matter and water

- pH
  - Highbush blueberry -- 4.0 to 5.0
  - Rabbiteye blueberry – 4.5 to 5.3
- Organic matter
  - Humic matter above 3% naturally, or
  - Add pine bark, peat moss, composted sawdust
- Drainage
  - Surface drainage (bedding, ditching)
  - Internal drainage (soil amendments if needed)
- Irrigation
  - Overhead (allows frost protection)
  - Drip or micro-sprinkler (conserves water)

The best native NC blueberry soils are organic sands (>3% organic matter) with a water table within 12-24” of the surface; fields are bedded to improve root aeration.

Carolina bay black peat soil (muck) vs Piedmont red clay

High %HM, low pH
good internal drainage

Low %HM,
low pH,
poor internal
drainage

NCDA&CS Agronomic Division Phone: (919)733-2655 Web site: www.ncagr.gov/agronomi/

Soil Test Report

SERVING N.C. RESIDENTS FOR OVER 60 YEARS

Grower: **Cline, Bill**
3800 Castle Hayne Rd.
Castle Hayne, NC 28429

Farm:

Received: 06/24/2010 **Completed:** 06/30/2010 Links to Helpful Information **New Hanover County**

Agronomist Comments

Field Information		Applied Lime			Recommendations				
Sample No.	*Last Crop*	*Mo*	*Yr*	*T/A*	*Crop or Year*	*Lime*	*N*	*P_2O_5*	*K_2O*
F3					1st Crop: Blueberry,M	0	30-60	50-70	0-20
					2nd Crop:				

Test Results

Soil Class	*HM%*	*W/V*	*CEC*	*BS%*	*Ac*	*pH*	*P-I*	*K-I*	*Ca%*	*Mg%*	*Mn-I*	*Mn-AI(1)*	*Mn-AI(2)*
ORG	10+	0.55	19.2	44.0	10.8	3.7	23	41	35.0	8.0	22	65	

“Pamlico Muck” mulching not needed but P is limiting

Sample ID: BLUEB	Recommendations:	Lime			
	Crop	(tons/acre)	N	P_2O_5	K_2O
Lime History:	1 - Blueberry, E	0.0	10-30	30	0
	2 - Blueberry, M	0.0	30-60	0	0

Test Results [units - W/V in g/cm^3; CEC and Na in meq/100 cm^3; NO_3-N in mg/dm^3]:

HM%	W/V	CEC	BS%	Ac	pH	P-I	K-I	Ca%	Mg%	S-I	Mn-I
0.66	0.91	4.3	44	2.4	5.0	68	60	27	9	42	209

North Carolina
Tobacco Trust Fund Commission

Typical Piedmont NC soil sample result for blueberry
*LOW humic matter = add mulch
*P and K often sufficient without added fertilizer

Reprogramming of the
being fun

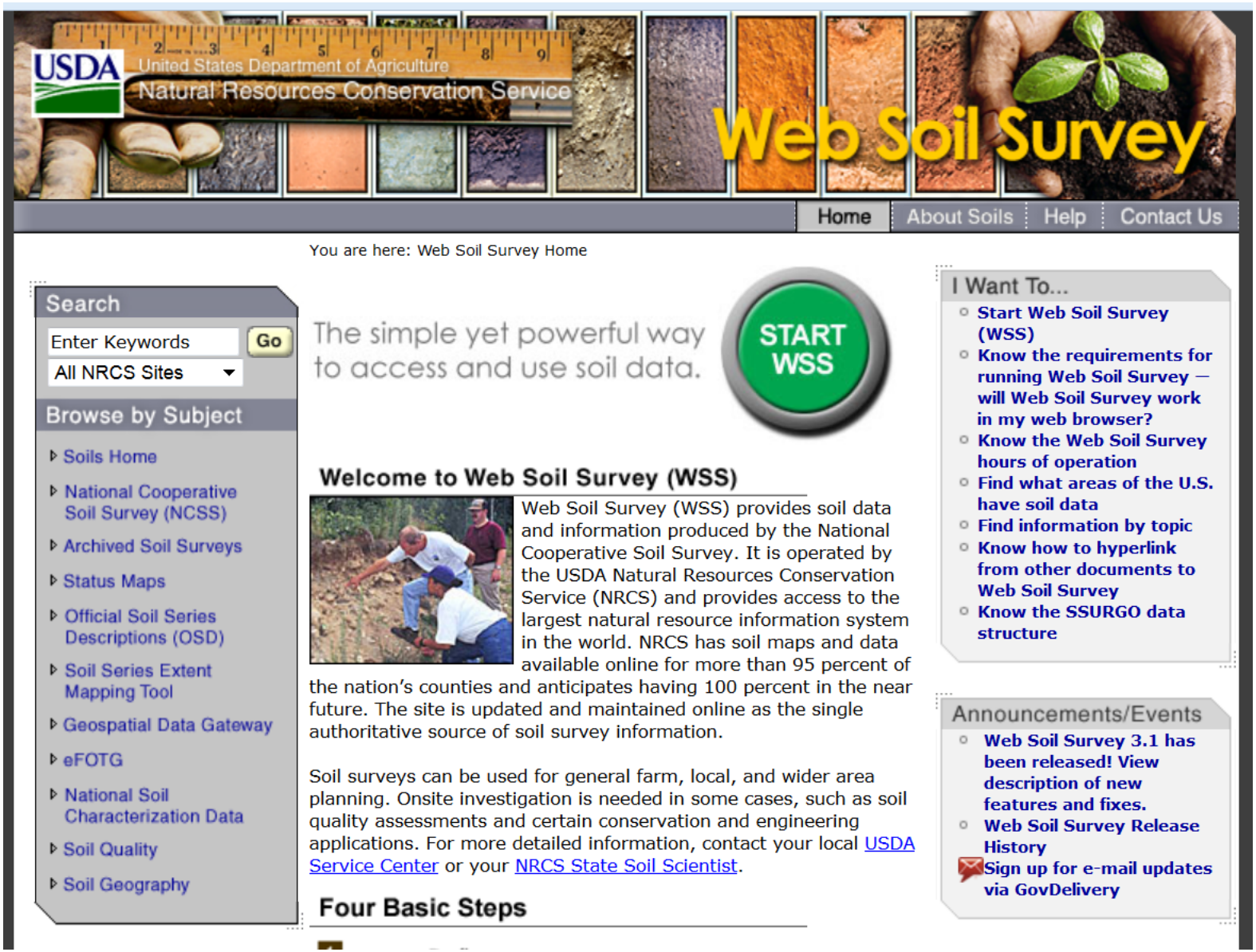
Thank you for using

Fertilizer Applications

- Amount based on your soil test results
- Start at leaf-out in Spring, apply every 4-6 wks (granular)
- End Mid- to late Summer to allow time for plants to harden off before Winter
- Maintain pH at 4.0 to 5.0
- Maintain P and K in sufficiency range
- N requirement increases with plant age
- Urea (46-0-0) or ammonium sulfate (21-0-0-24S) are common N sources
- Secondary elements and micronutrients – only if recommended

Fertilizing blueberries

- Highbush Blueberry Production Guide NRAES-55_Web.pdf
- EM 8918, Nutrient Management for Blueberries in Oregon (OSU Extension)
- HortTechology, August 2015. Nutrient Requirements, Leaf Tissue Standards, and New Options for Fertigation of Northern Highbush Blueberry -- David R. Bryla and Bernadine C. Strik.
- State recommendations if available
- Your own soil test results are the ultimate guide!



http://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm

ON UPLAND SITES, Bark mulch is added to provide an organic substrate, lower pH and improve drainage. Finished height of beds will be 12-18 inches.

Drainage is critical for aeration in the root zone

Bark or Wood Chips?

- Amend soil by mixing in **pine bark** or well-decayed sawdust
- **Wood chips** (interior part of tree) are OK for a surface mulch, but if mixed in the soil will tie up too much nitrogen

Basic steps to establishing a new blueberry planting:

1. **Select a well-drained site in full sun** with an open, porous soil – avoid clay soils.
2. **Acidify the soil** as needed for a pH of 4.0 to 5.0.
3. **Have your soil tested**, and adjust fertility levels (N-P-K) according to soil test results.
4. **Purchase the correct species and cultivar(s)** for your soil type and location.
5. **If needed, add acidifying organic matter** (peat moss, pine bark, or aged sawdust) to the soil.
6. **Mix and mound the amended soil** to form raised beds or raised rows before planting.

Basics of establishment (continued):

7. **Plant dormant bushes in raised beds or rows**, usually in late winter (Feb-Mar).
8. **Prune at planting** to keep only 3-4 upright shoots, and to reduce height by one-half to two-thirds.
9. **At planting, remove all flower buds** to prevent fruit production in the first year.
10. **Provide water** -- irrigation is essential for establishment and survival.
11. **Maintain a weed- and grass-free zone** around each plant.
12. **Apply a 3-4-inch layer of surface mulch** (pine bark, pine needles, wood chips, or woven plastic mulch).

Additional Considerations

- Deep plowing may be needed prior to bedding
- Weed control (and pH, mulch) may take a year to get right
- If sulfur is needed for pH lowering, apply a year ahead of time, and re-test
- Drainage and raised beds are best addressed before planting
- Row orientation to optimize drainage is more important than orienting to optimize sunlight

Continued --

- Bedded area should be raised and “fluffy” enough to plant with bare hands
- “Start Clean and Stay Clean” by using disease-free plants.
- Buy extra for re-sets, double set a few
- Weed matting or plastic (fumigation?) recommended on previously planted areas
- Irrigation is essential

Coastal SC, amended and bedded, no plastic, southern highbush

Coastal NC, pick-your-own, pine bark amendment, southern highbush bedded with black plastic

YR 2, rabbiteye amended with pine bark under black plastic

2011, certified organic, rabbiteye blueberries with weed mat

Bearing rabbiteyes, amended site on black plastic, Piedmont region, NC

Piedmont NC, rabbiteye on amended site, shredded wood mulch

Netherlands, amended soil with weed mat, northern highbush

Chile, amended and surface mulched with aged sawdust

Early-ripening southern highbush in bark beds, south Georgia, 2009

Common mistakes when establishing/ growing blueberries:

- Poor site selection/preparation
- No raised beds (poor drainage)
- No irrigation during establishment
- Planting before adjusting pH (interveinal chlorosis shown)
- Wrong blueberry species for your area
- Failure to prune hard enough

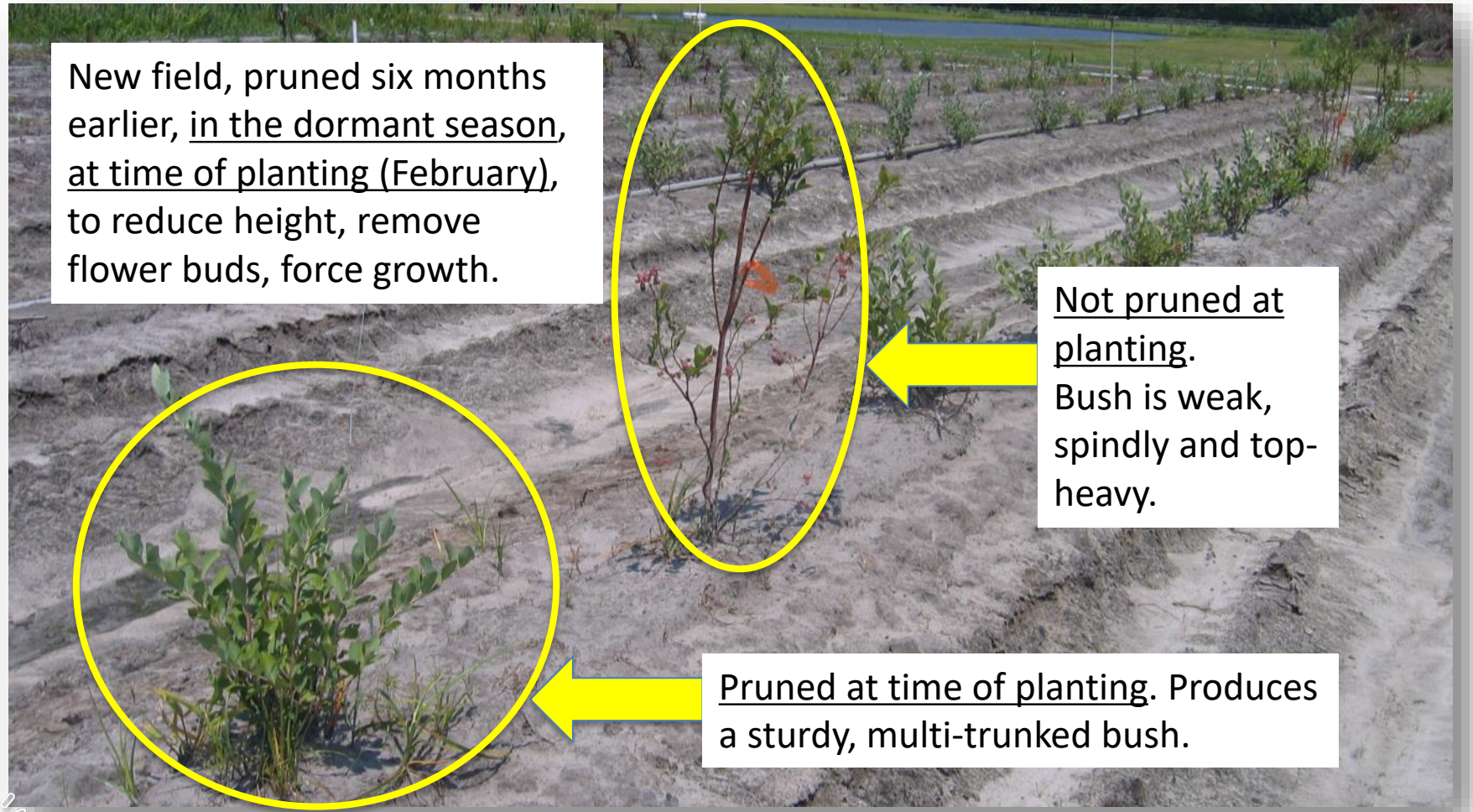
Interveinal Chlorosis
Symptom of iron deficiency caused by soil pH being too high

Overhead vs Drip Irrigation

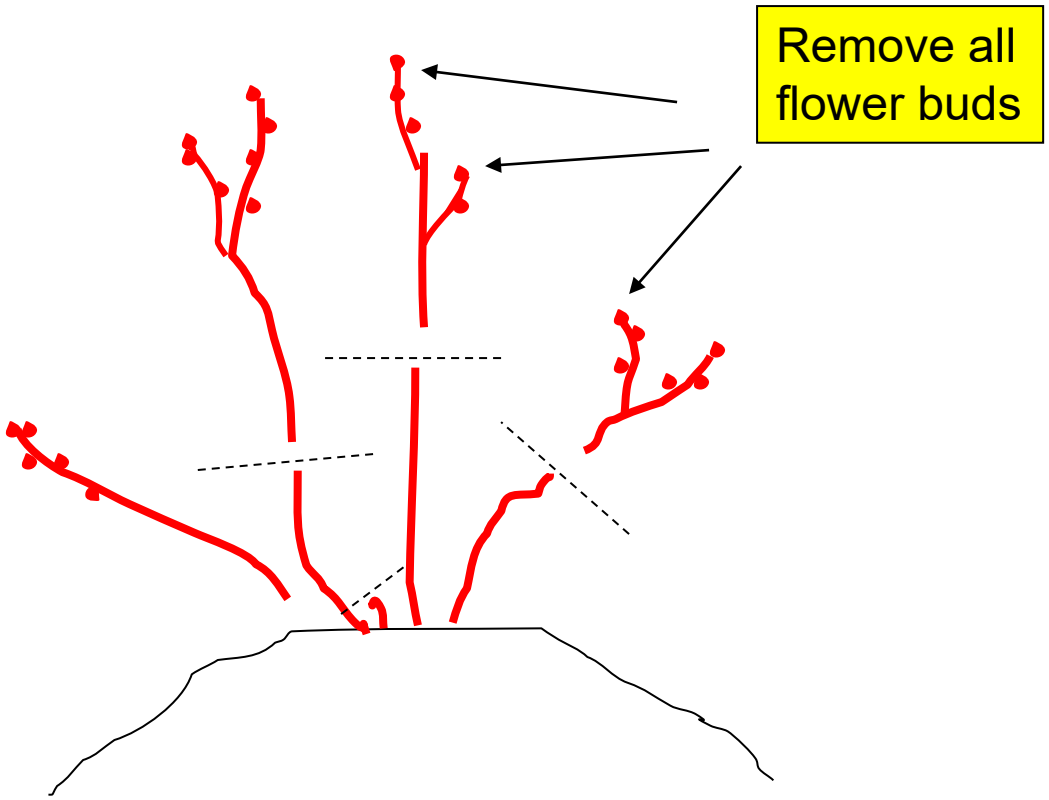
Overhead can be used for freeze protection in Spring; high volume

Drip conserves water, avoids wetting bush

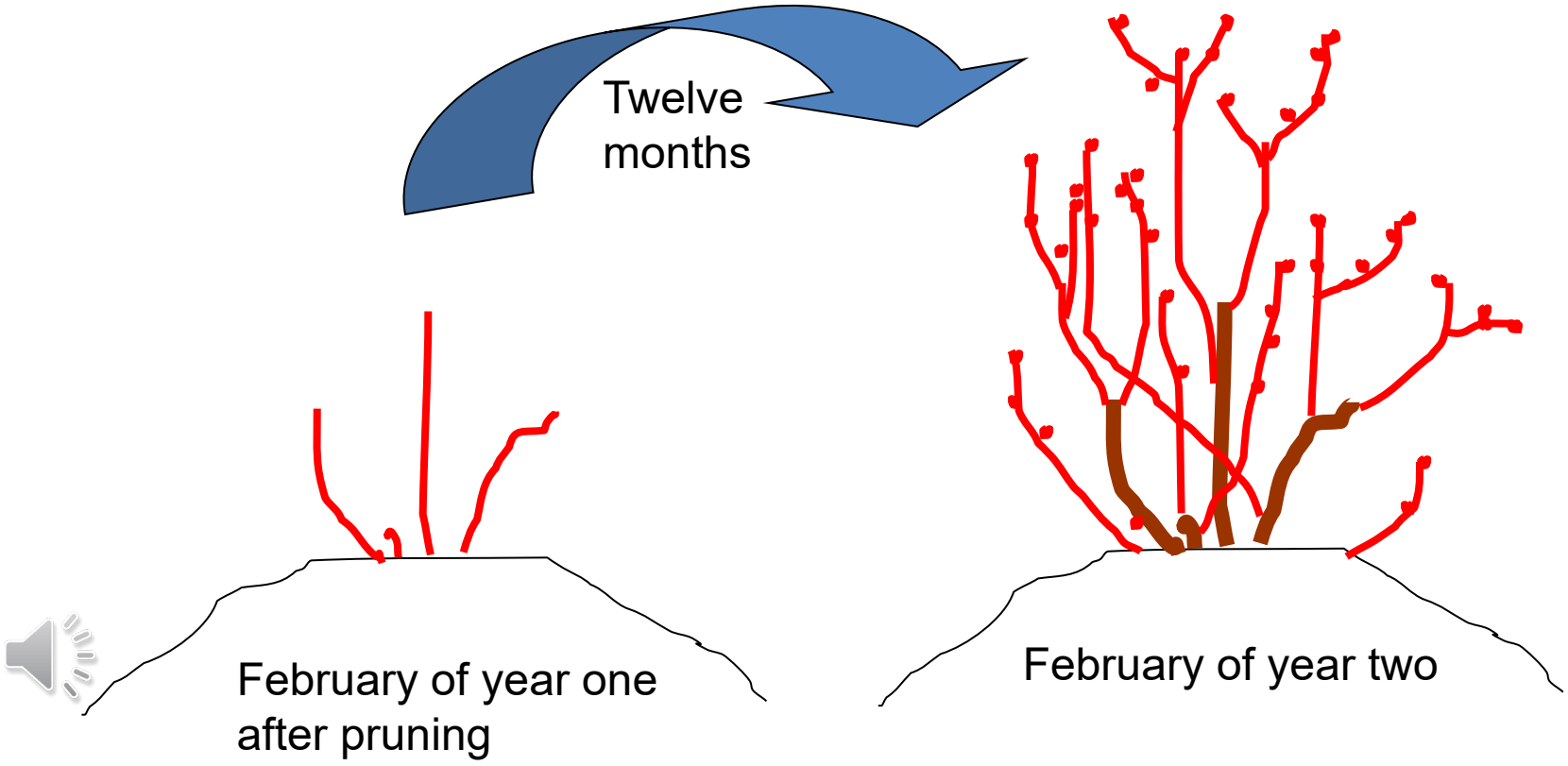
Pruning Young Bushes (0-3 yrs)



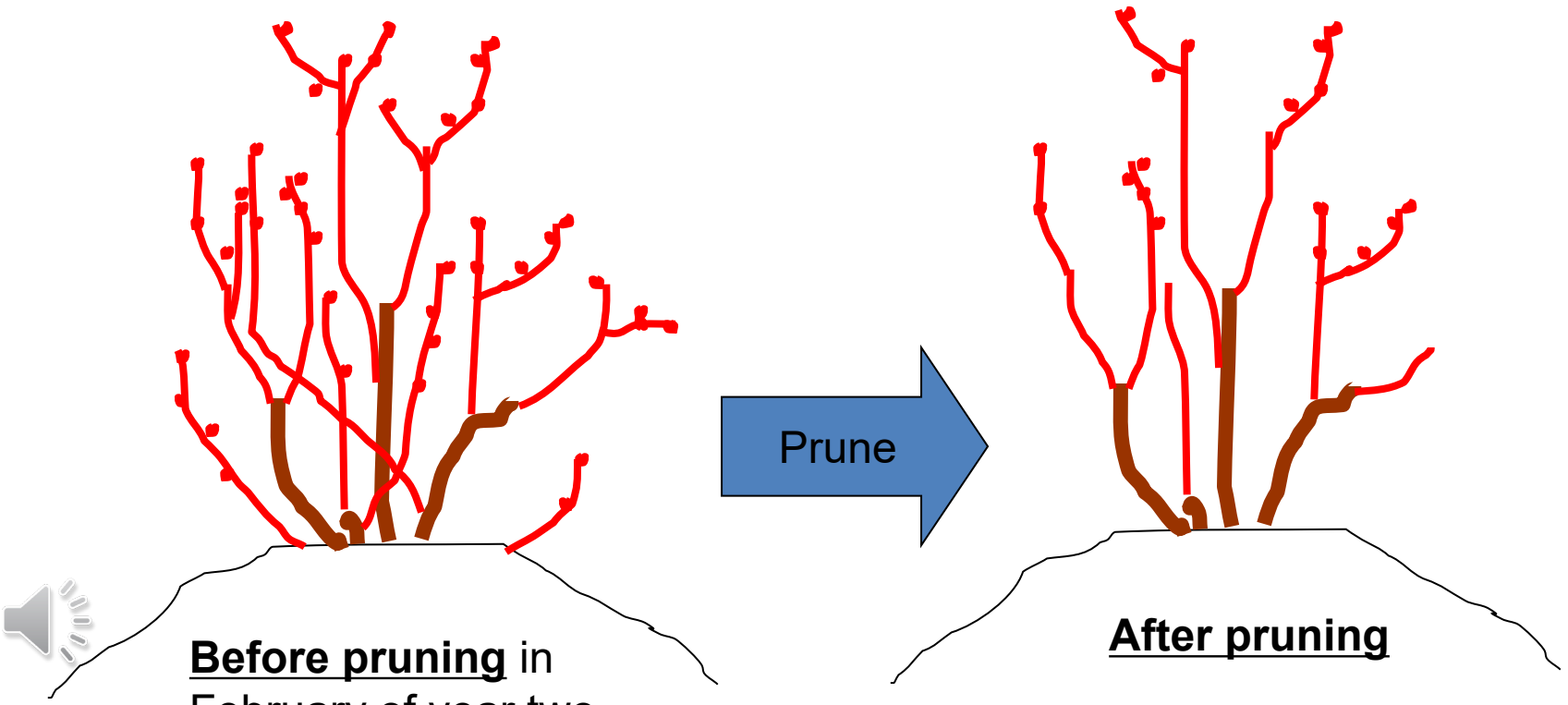
Setting out new plants -- Always prune or rub off all flower buds and cut back 1/2 to 2/3 of the height at the time of planting.
For potted plants, gently separate and spread out the roots so that the root mass is no longer in the shape of a pot.



In Year One – the goal is to avoid fruit production entirely. With removal of all flower buds at the beginning of year one, the bush grows vegetatively, and by Fall of the first year has increased in size and produced more flower buds.



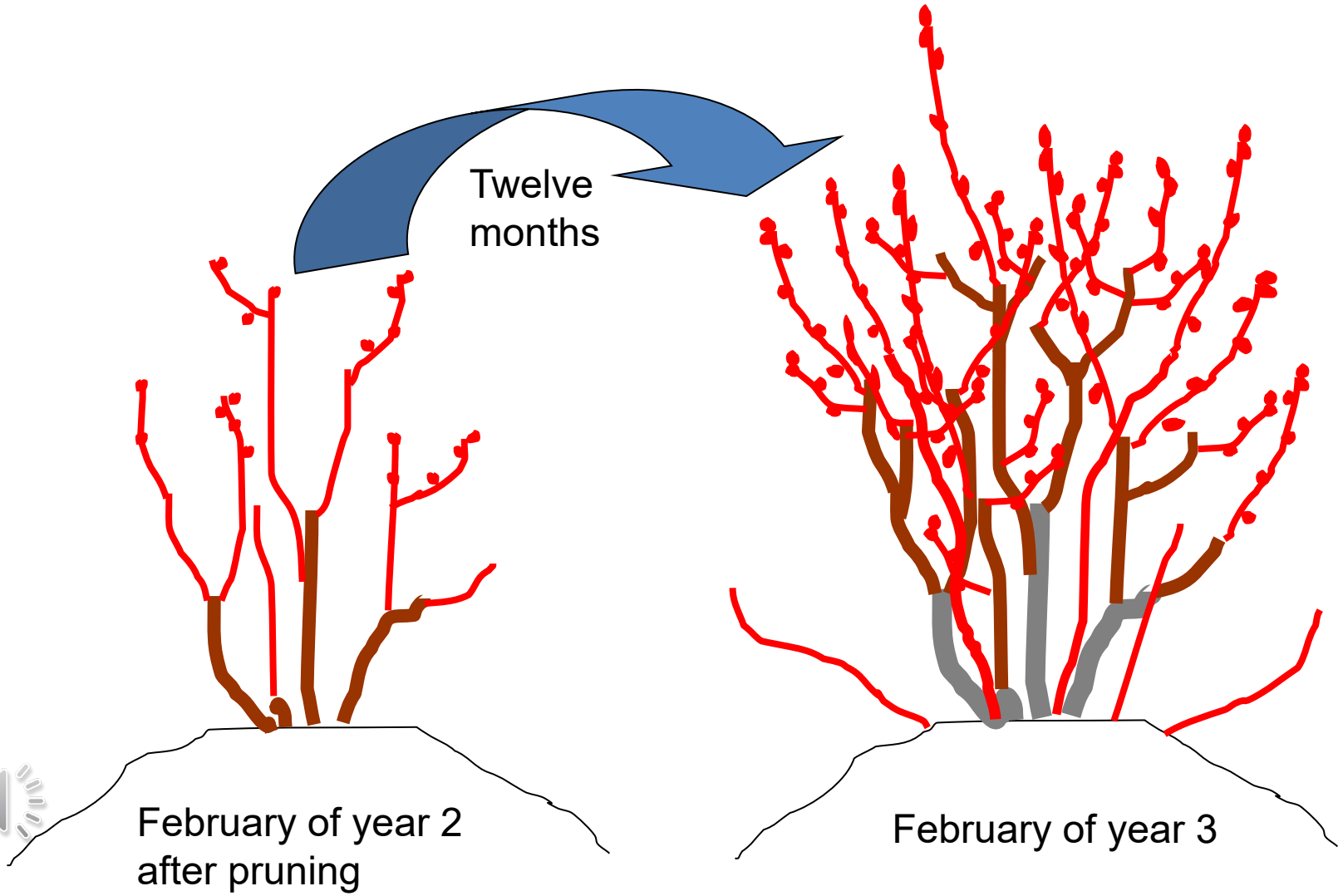
Young bushes -- In year two, remove low-lying or weak shoots and cross-overs, keeping the healthiest, large upright canes. Some flower buds may be allowed to produce fruit in year two if the bush grew vigorously in year one.



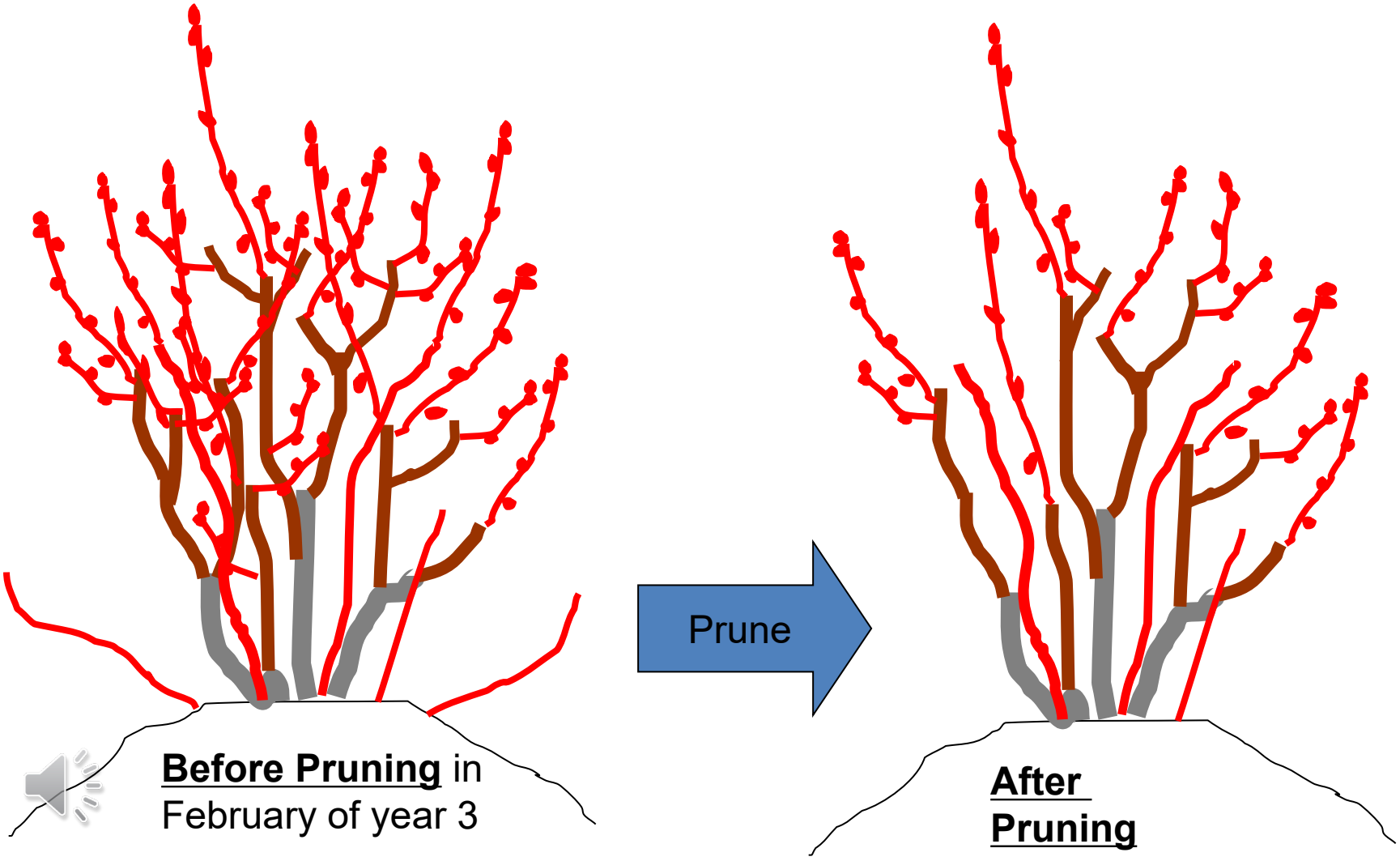
Before pruning in February of year two

After pruning

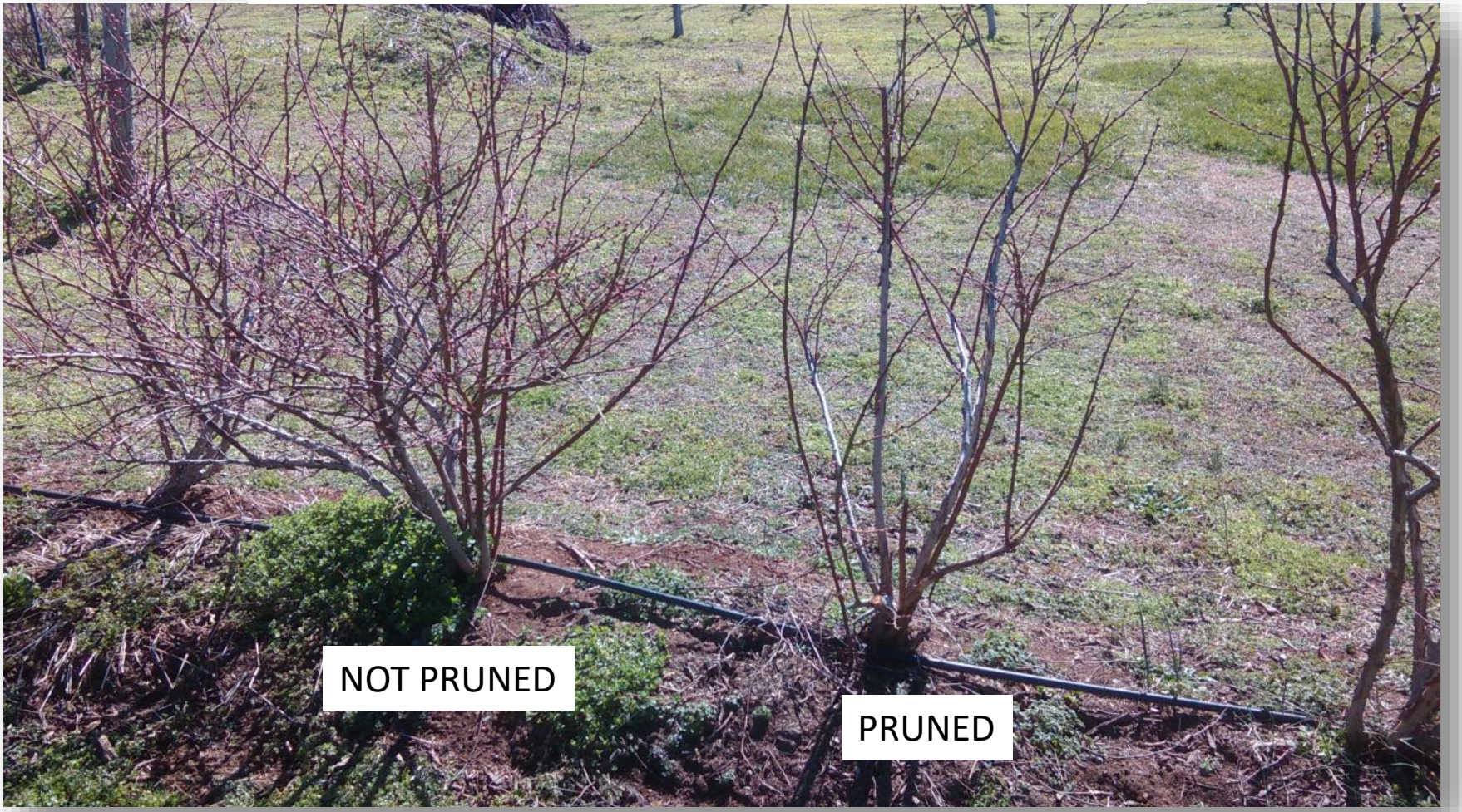
First crop? – the bush may be allowed to produce a few berries in year two, however the goal is still to promote vegetative growth that will build the structure of the bush for years to come.



Year Three – the bush is well established and capable of producing a significant crop. However, routine pruning should still remove 40 to 50% of the flower buds. Begin selecting new basal shoots that will replace older canes.



Pruning 3-4 yr-old bushes

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