

**NATURAL RESOURCES CONSERVATION SERVICE  
PACIFIC ISLANDS AREA**

**CONSERVATION PRACTICE SPECIFICATION  
SILVOPASTURE ESTABLISHMENT (381), SHADE ENCLOSURES**

**SCOPE**

This specification pertains only to the PIA Silvopasture Establishment Conservation Practice Standard Purpose “*Provide Shade for Livestock*” and the corresponding PIA Practice Payment Scenario. Tree seedlings or cuttings will be hand planted in a grazed land unit to provide shade for livestock. Triangular shaped enclosures will be constructed using typical fencing materials to protect shade trees during their establishment.

**SHADE ENCLOSURE SPECIFICATIONS**

Plant shade trees individually or in small clumps in a triangular grid pattern. For clumps, tree spacing shall be 10 feet for barbed wire or woven wire enclosures, and eight (8) feet for welded wire panel enclosures.

Paddock size (ac.)	Maximum number of shade trees
0.1 – 4.9	3
5.0 – 19.9	6
20.0 – 49.9	12
50+	24

- Barbed wire or woven wire triangular enclosures shall have corners constructed and braced in both directions per NRCS PIA Fence (382) specifications. *Exception:* for single tree enclosures, brace corner posts directly to each other with compression members per 382 specifications.
- Welded wire panel triangular enclosures shall have wooden posts with a minimum diameter of 4 inches at both ends of each panel section (including triangle enclosure corners), and buried to a depth of 24 inches.
- Line posts shall be steel T-posts or wooden posts at least 4 inches in diameter with:
  - Minimum buried depth of 18 inches.
  - Maximum distance between line posts of 10 feet for woven or barbed wire, and 8 feet for welded wire panels.
- If Hawaiian hoary bats are identified as a concern during the environmental evaluation process, do not use barbed or woven wire materials. Instead use welded wire panels or seek a variance for electric fencing from the State Range Management Specialist.
- Minimum distance between fence and planted trees is 3½ feet.
- Barbed wire shall be at least 12.5 gauge malleable wire or 15.5 gauge high tensile wire.
- Woven wire shall be: malleable with at least 11 gauge top and bottom strands and at least 14.5 gauge intermediate line and stay wires, or; high tensile with at least 12.5 gauge top and bottom strands and at least 14.5 gauge intermediate line and stay wires.
- Place shade trees far from water or mineral sources to encourage livestock movement within paddocks.
- Select trees that produce foliage, fruits or pods that are edible to livestock.
- Shrubs or vines are not allowed under NRCS Technical or Financial Assistance except with an approved variance from the PIA State Forester.

**Enclosure wire heights** - For two livestock species in the same paddock, select the enclosure height that will be effective for both livestock types:

Woven wire enclosures – Top with 0-1 barbed strands depending on livestock type:

	Height above ground (in.)	
	Woven wire	Barbed strand
Horse	48	54
Cattle	48	50
Goat	48	50
Sheep	32	N/A

Barbed wire enclosures – Four barbed strands:

	Height above ground (in.)			
	Top wire	2 <sup>nd</sup> wire	3 <sup>rd</sup> wire	Bottom wire
Horse	54	42	30	18
Cattle	44	33	22	11
Sheep	N/A - Use woven wire or welded wire panels			
Goat	N/A - Use woven wire or welded wire panels			

Welded wire panel enclosures – Typically purchased in 16' lengths. Corner post braces are not required:

	Height above ground (in.)
Horse	50
Cattle	50
Goat	50
Sheep	34

**Triangle enclosure dimensions:**

Tree Quantity	Triangle Side Length (ft.)	
	10 Foot Tree Spacing	8 Foot Tree Spacing
1	10	8
3	20	16
6	30	24
10	40	32
15	50	40

**Example layouts** – For triangular shade tree enclosures with 10-foot spacing between trees (reduce dimensions in drawings by 20% for 8-foot tree spacing):

