

**NATURAL RESOURCES CONSERVATION SERVICE
PACIFIC ISLANDS AREA**

CONSERVATION PRACTICE SPECIFICATION

SILVOPASTURE (381) – SHADE ENCLOSURES

SCOPE: This specification pertains only to the PIA Silvopasture (381) 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 eight feet.

Paddock size (ac)	Maximum number of shade trees	Minimum number of enclosures
<5.0	3	1
5.0 – 19.9	6	1
20.0 – 49.9	12	2
>50	24	4

- Each enclosure shall contain no more than 6 trees.
- Corner posts shall be wood (minimum diameter of 4 inches), be buried to a depth of 24 inches and be braced as follows:
 - One wood angle brace per corner post for cattle or larger livestock
 - None for smaller livestock (e.g. sheep or goats)
 - None for welded wire panel enclosures.
- Line posts shall be buried a minimum of 18 inches and placed a maximum of 10 feet from corners or other line posts.
- If Hawaiian hoary bats are documented in the area, 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 3.5 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.

Enclosure wire minimum 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 nd wire	3 rd 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-foot lengths. Corner post braces are not required:

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

Triangle enclosure dimensions:

	Triangle Side Length (ft)
Tree Quantity	8 Foot Tree Spacing
1	8
3	16
6	24

Example layouts – For triangular shade tree enclosures with 8-foot spacing between trees (artwork credit: Carl Rossetti, NRCS Engineer, Kealahoukua FO).

