

Specifications for Production Facilities for Eastern Cape (East London:)

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1 Scope of work

To erect a flat roof shade net structure, minitunnels, with automated irrigation systems, to be used as a medicinal plant cultivation at (East London)

2 Location of site where the structure will be erected

Coordinates: **ARC: Addo resesarch station-Barkly Bridge Rd, Addo, 6105**

Specification of shade net structure

2.1. Dimensions of structure

- To erect a flat roof shade net structure of 40 x 40m
- The minimum cover area of the structure must be 4050 m²
- Sides must be at an angle of 45 degrees
- The sides of the structure must be covered with the same net as the roof
- A 40% shade effect, grey net should be used

2.2. Poles

- Gum or Saligna poles (green tanalith treated)
- Poles: 3 m x 100 mm
- Plant at a depth of 500 mm
- Configurations (distances between the poles = 5m x 3m) are as shown in Figure 1&2
- The soil around the poles must be properly compacted

- The poles must be covered on top with rubber to protecting the net from tearing

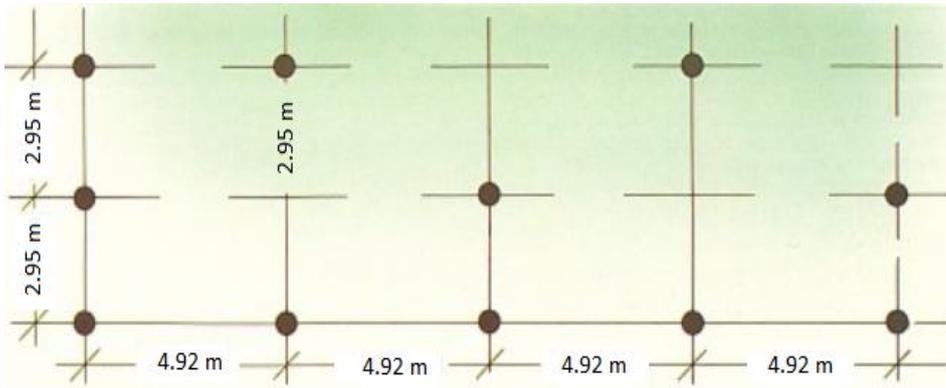


Fig 1: Orientation of poles

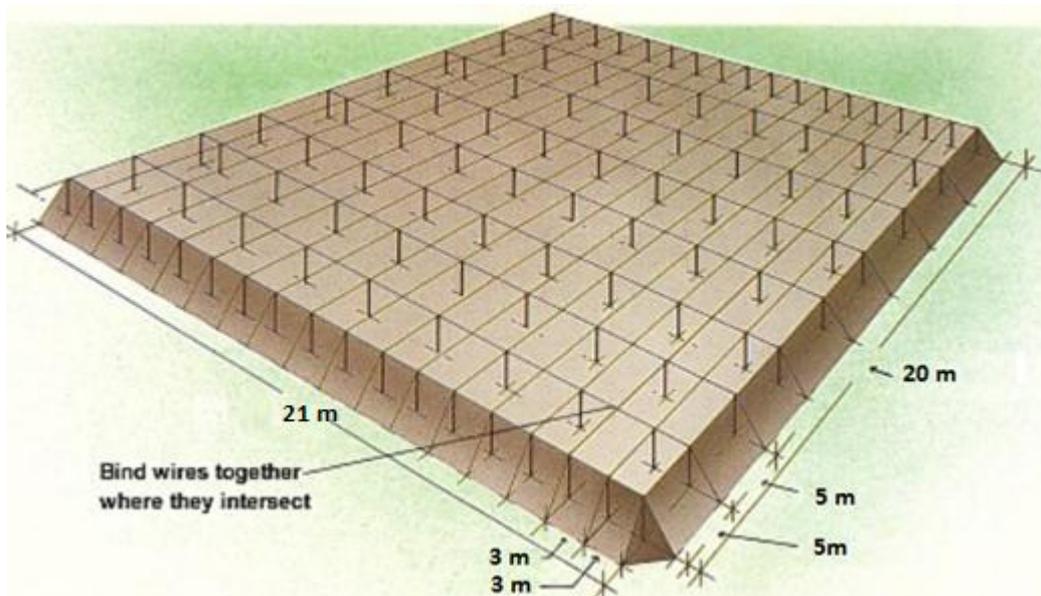


Fig 2: Overall dimensions of structure (should be adapted to the requested size)

2.3. Anchoring

- Tie your support-wire (**Double 2,5 mm galvanized wire**) around a Y standard – 1m long, then hammer the peg at an angle of 45 degrees until it is below ground level.

2.4. Steel wire

- High-tensile, minimum 2,25mm cross wire through the pre-drilled holes, 100mm from the top of the pole, at tops of each row of poles as illustrated in Fig 3.
- All wires must be heavy galvanized
- Bind all edge wires and cross wires together wherever they intersect.
- Stay cables or wires must be stronger than the horizontal wires or cables used in the structure;
- The load-bearing surface of the anchor must be at 90 degrees to the stay;
- The stay must not be more than 45 degrees to the horizontal;

- Metal connections in contact with the ground must be at least 12mm in diameter and galvanized or well-treated for rust prevention;
- If eyebolts are used, they must be twice the diameter of the cable and the eyes must be welded;
- When twisting up 4mm diameter wire for stays, the final twist must be permanently locked in order to retain tension.

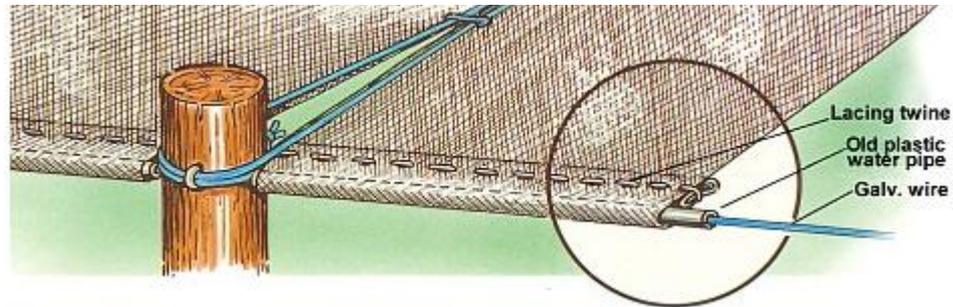


Fig 3: Anchoring the wire

2.5. Wrap netting

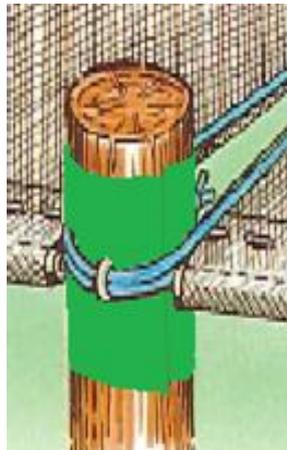


Fig 4: Wrapping of net around the poles

- Where a pole come in contact with the tight horizontal shade net, an extra piece of shade net must be wrapped at a minimum of 2 layers around the pole. (Fig. 4)
- The wrap Net around the pole must be minimum 200mm high with the horizontal tight net in the middle.
- The wrap Net around the pole must be staple to the pole.

2.6. Shade Net

- Colour: Grey
- Percentage shade: 40%
- Lacing twine: Alnet's monofilament binding twine to stitch pieces of shade cloth together.
- All sides at ground level must be burried at a minimum depth 150 mm

2.7. Nursary Entrance/Gate

- Two gate for entrance are needed, minimum width of 1.5 m and height of 2m.
- Gate pole hole and pole minimum depth 1 m. Pole diameter minimum 100 mm wood.

- Steel gate frame (Galvanised), wrap with shade cloth and stitch with Alnet's monofilament twine (or equivalent quality).
- Gate must have proper lock mechanism.

4. Automated irrigation systems

- Supply and install 2 systems (1 for the shadenet structure and 1 for the minitunnels).
- The automated system controller should be **Hortisensor** or similar, which will allow monitoring of the irrigation system remotely (Fig5 A)
- The system is to be provided with all accessories including a 12 station irrigation controller, soil moisture sensors, software, wifi connections, etc.
- Supply and install 10 climate sensors (**Sixth sense – Hortisensor**). Seven in the shadenet structure, 3 in the minitunnels (Fig 5B)



Fig 5: An automated irrigation system and a pump covered/protected in a black plastic frame (A), with the climate sensor in the minitunnel (B) and a water tank (C).

- Supply one 20 000L water tank as an addition to the existing tank (Fig 5C)
- One tank to supply the shadenet structure and one to supply the minitunnels
- Supply 2 pressure pumps (2.2kw) to deliver water to the shadenet structure and to the minitunnels, each separately
- Supply and install 4 solinoid valves.
- Water meters and gate valves to installed for each solenoid valve

NB: Pipe sizes for connecting the systems shall be discussed during a compulsory site briefing.

5. Security systems

- Supply and install a solar powered surveillance camera with a memory card and cellphone connectivity. To be installed where the pumps, automated irrigation system, and tanks will be.

Features: Human Motion Tracking, 30m NIGHT VISION, Motion Detection, Waterproof / Weatherproof, Built-in Siren, PAN-TILT, Two-way Audio,

- Supply and install laser beam sensors around the structures (X4)

Features: 6 ft Detection Range, Motion Sensor Control, solar powered, Wireless, with an alarm

NBMonkeys?????may come around and set off the alarm