TECHNIQUE FOR POLY BAG NURSERY OF EUCALYPTUS CAMALDULENSIS.

by

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A nursery is a place/area where we can grow and nurse young progeny of plants;

Size of beds:

- Beds of 4ft width and 15ft length are recommended which will be adequate to accommodate 1000 plants each.
- On soil surface with support of bricks or otherwise with pegs on all the four sides and a wire rope around the polythene tubes for support.
- In sunken beds(not more than 4" deep), if preferred the sides of sunken beds can be lined all around with B. bricks to make it a permanent feature for ever and to save the expenditure on dressing of berms.

Area required:

$$A = \frac{N}{\text{No.of poly bags per square metre}} + C$$

A = Area (in square metre)

N = Total No.of plantable seedlings

C = 25 to 30% additional area for paths, tank, sheds, manure, material and store etc.

Size of poly bag:

- Size of polythene bags to be used: 3 x 7 inch (flat size) or (18 Cm x 30Cm)
- Gauge of polythene bags recommended : 0.002 inch

- Number of punch holes in the tube : 16 to 24 or even 30
- Size of punch holes = $\frac{1}{8th}$ inch (0.320m) to $\frac{1}{5th}$ inch(0.50

Soil media to be used:

- Soil : Sand : Humus
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- The objective should be to produce a mixture that can be classified as a sandy loam (clay content of about 15 to 20%) or a loamy sand (clay content between 10 to 15%). The total contents of clay + silt combined should be between 10 to 15% of total soil. Use of well-rotten leaf mould as humus is preferable.
- Quantity : Poly bag 3" dia x 7" length when filled will have 50 cubic inches = 1.0 to 1.13 Kg of soil.

Seed:

- Seed should be collected from 5 years old and above trees with good form (+) trees. Preferably certified seed should be obtained from PFRI, Faisalabad.

Sowing of Seed:

- Sowing of fine seed like that of Eucalyptus can be done preferably in Kunalies of 14" to 16" lin having 5 No. of holes of size $\frac{1}{8th}$ of inch at the bottom for the discharge of excess of water. Same soil media as for poly bags can be used for filling in Kunalies.
- One and a half gram seed of Eucalyptus may be sown in a Kunali which will give 1000 seedlings.
- Very small size seed like that of Eucalyptus can be mixed with sand before sowing to make distribution easier.

- After sowing seed should be covered with a layer of sand and fine ash/dust (mixed) equal to the thickness of the seed.
- Direct seed sowing is also done in P.bags.
- If more seeds are sown in P.bags, subsequently hand pricking is done by retaining the best one.
- One gram of seed is required to cover an area of 40Cm x 20Cm of seed bed surface.
- Another method to sow seed is to prepare 0.2m wide and 2m long beds with trenches all around them.
- Irrigation will be done by rosecan having fine seive with mouth upwards.

Pricking out:

- Seedlings are pricked out into poly bags when they are about 25 to 50 mm tall and have about 2 pairs of leaves.
- Seedling should be placed in the centre of P.bag.
- A hole should be made in the centre of filled poly bag with a woolen stick of pencil thickness to accomodate roots of seedling to be transplanted.
- Keep P.bags in the shade after pricking of seedling.

Shade:

- Plants are generally over shaded in the nursery which should be avoided. Only minimum shade required by the plants should be provided.

Irrigation:

- Irrigate immediately after pricking out.
- Number of watering during Summer : Twice a day(in morning and evening).
- Number of watering during Winter: Once a day (in the evening).

- The plants should receive about 5mm of water in each poly bag with each irrigation.

- Daily water requirement for 500 P.bags lying in 1.3m x 3m bed would be 78 liters or approx. 20 gallons.

- If all the conditions remain good, only half the amount of water calculated may be needed.

- Experiments conducted to find optimum water requirement of nursery plants indicated that over watering produces delicate plants. Therefore over watering should be avoided to produce strudy plants.

Polythene sheet on nursery beds:

- Polythene sheet of durable and economical thickness (0.006 gauge) is preferred to be spread under P.bag plants so that roots of plants may not penetrate into soil. This practice can save expenditure of root pruning. Polythene sheet can also be used to cover the seedlings during severe cold weather or storm.

Weeding:

- Weeds compete with seedlings for water, nutrients and space etc.

- First weeding should be done only when the seed sown in poly bags has germinated, in case of direct sowing.

- Weeding should be repeated as and when necessary.

Shifting and root pruning:

- Shifting of poly bags becomes necessary when roots start coming out of poly bags through holes made for drainage and aeration.

- Copious watering has to be done immediately after shifting to reduce pruning shocks.

- Root pruning is done with the help of pruning scissors.
- Shifting of tube from one bed to another takes average time 14 seconds per pot including taking, moving, shifting and return.

Culling:

- During shifting all im-balanced, weak, whippy, diseased and extremely slow growing seedlings should be discarded, culled out & replaced with new seedlings.
- Culling should be done with every shifting so that ultimately only healthy and vigorously growing plants are left for out-planting.

Hardening:

- Hardening should be started at least one or two months before planting.
- Watering, shading and fertilizers application should be reduced gradually over the hardening period.
- Although hardening is important but the seedlings should not be stressed.
- Hardened seedlings should be well watered before leaving the nursery.

Grading:

- Before planting in the field, grading of plants of healthy and equal size is necessary in the nursery.

Transportation:

- During transportation, the seedlings should be loaded in up-right position and protected from excessive heat and air.
- It is better to pack seedlings in cartons or wooden

Fencing:

- Fencing of barbed wire 3 strands with 4ftlong angle irons can be used by fixing 6" lower portion in a concrete block of 9" x 9" size.

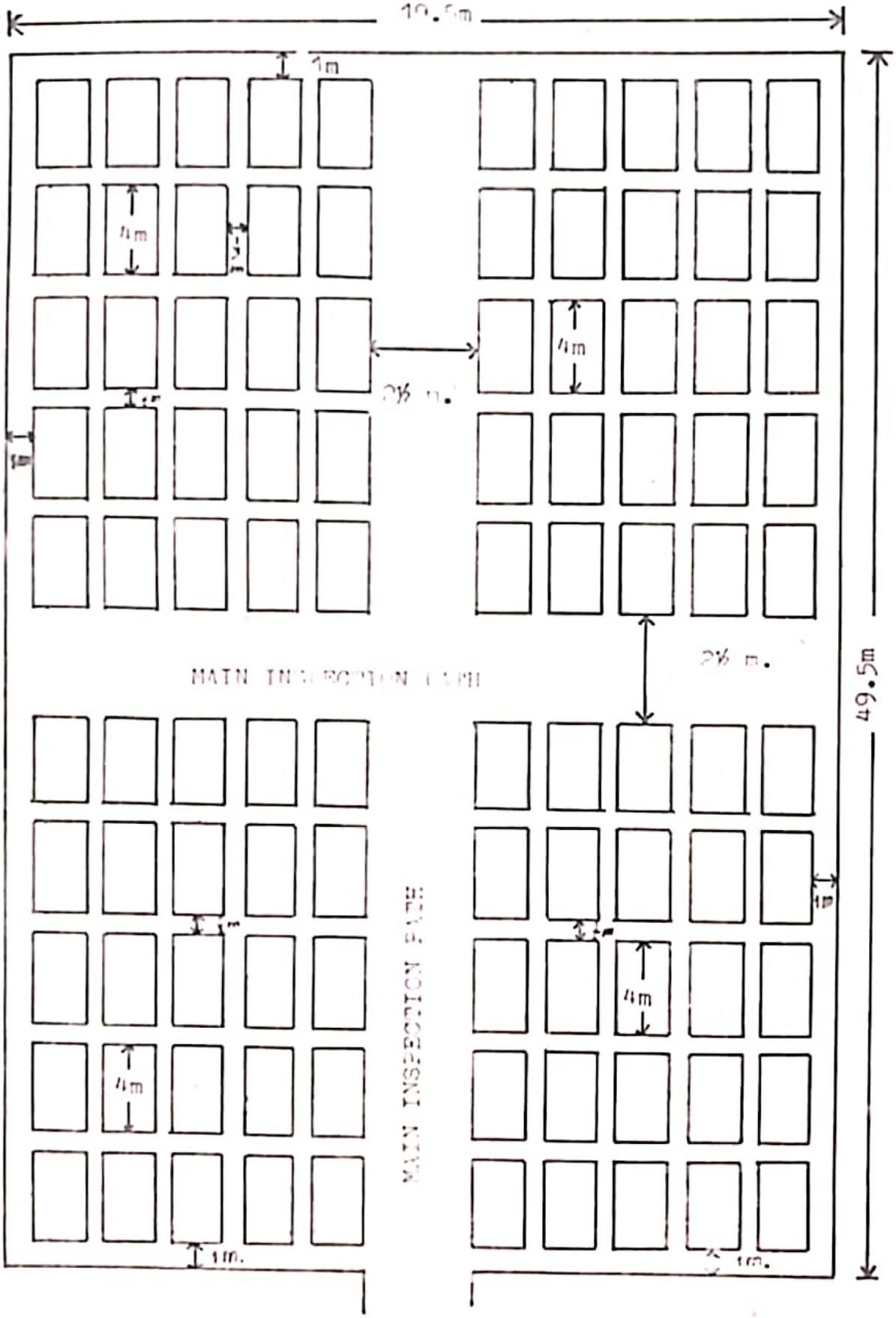
Water Tank:

- A water tank of 5' length x 5' width 4' depth will be prepared with bricks cemented inside, in order to store water which will be sufficient for irrigation of 50,000 plants.

Planting out:

- The general rule for judging wheather the seedling is of the right size for transplanting is that the above-ground growth of potted stock should not be less than 20 Cm & no more than 1m tall.
- 25 to 30 Cm height is considered as a standard plantable size.
- It is also important that the collar size of seedlings should be sufficient to keep the plant erect.

LAYOUT PLAN FOR POLY BAG NURSERY



- No.of polybags in one bed (4 x 1 m) = 1000
- Area required for raising 100000 plants= 49.5x19.5m

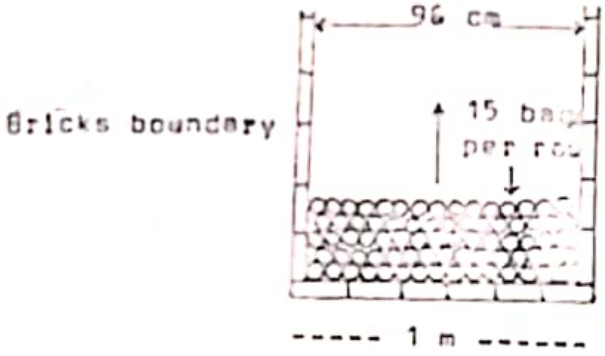


Fig.8. Placement of bags within nursery beds.

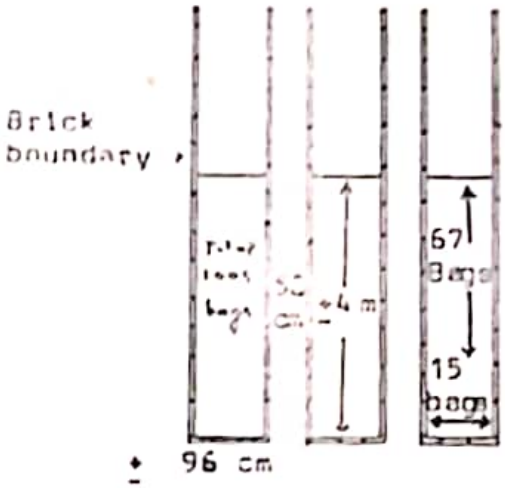
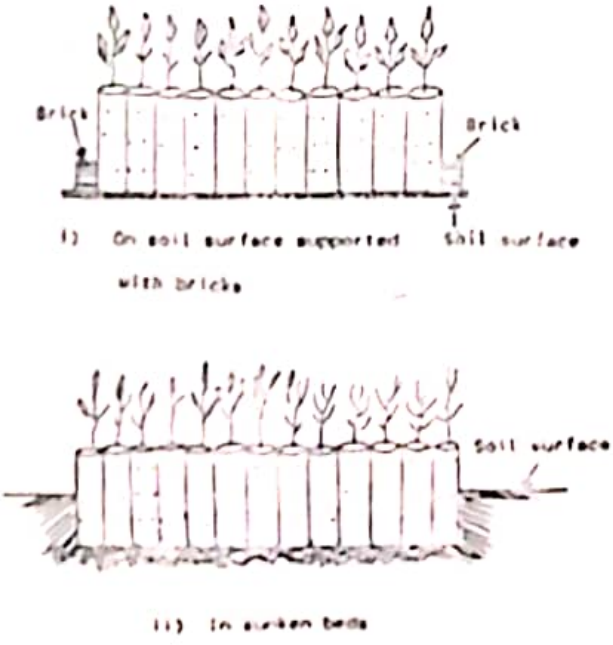
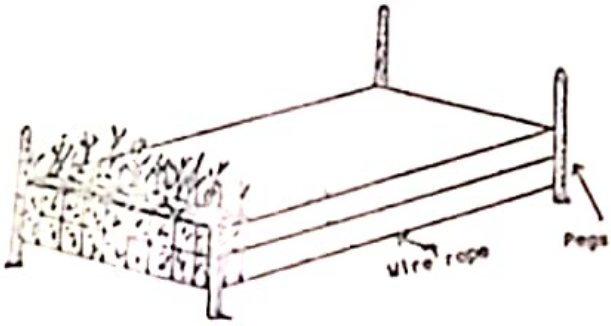


Fig.9. Nursery Bed Layout.



i) On soil surface supported with bricks

ii) In sunken beds



iii) Poly tubes supported by wire ropes

Fig.10. Arrangement of Polythene Bags in a Nursery.