

Tobacco Seedlings and Transplanting

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Tobacco is a transplanted crop. Seedlings are produced in either conventional seedbeds or float tray system then transplanted to the field for maturation. Conventional seedbeds use natural soils and basal and straight fertilisers are applied directly into the soil. The latter makes use of trays made of expanded polystyrene or plastic filled with pine bark (soilless) media that contains trace amounts of agricultural lime and fertiliser. This system makes use of complete, water-soluble fertiliser sources that contain appropriate quantities of the macro and micronutrients required by tobacco seedlings.

A] Float Tray Seedling Production System

Individual tobacco float trays contain 288 to 338 individual cells. Each cell is filled with soilless media, dibbled with a roll bar, and a single pelleted tobacco seed is placed in the centre of each dibble. 20 000 pelleted seed is enough for a hectare. The trace quantity of fertiliser within the media blend is not enough to promote sufficient seedling growth and development. Therefore, supplemental nutrients must be added to the underlying water solution 7 to 10 days after floating and again roughly three weeks later. Small openings on the underside of each float tray allow the fertilised water source to wick upwards to the root zone of seedlings. It takes 50 to 60 days for seedlings to reach a size that is appropriate for transplanting.



An ideal seedling under float tray system.

Benefits of the float tray system

- Uses less water, chemicals, fertilisers and labour.
- Uses less area for seedling production (1/4 of conventional system).
- Produces superior, more uniform, drought tolerant seedlings with high establishment percentage after

transplanting.

- Environmentally friendly as it employs economically integrated management of diseases and pests.

B] Conventional System

This system is commonly and widely used by small scale farmers in Zimbabwe, whereby actual seedbeds are made on the ground. It is desirable that the seedbed site is changed every year as it will minimise the incidence of diseases, pests and weeds. Deep ploughing of the nursery sites twice during summer months (April-May) is recommended as it will expose and desiccate the eggs and larvae of the nematodes. The soils of the seedbed area should be loamy or sandy-loamy.

Conventional seedbed preparation - The seeds are sown on raised beds (10-15 cm high beds having slopes on all the four sides). The seeds are very small; therefore, they need very fine tilth.

Soil sterilisation - Soil sterilisation is important to protect the growing seedlings by killing nematodes, weed seeds, soil-borne diseases and eggs or young insect-pests. The sterilisation of beds may be done in the following two ways:

- Burning** - Burning is the process of incinerating trash, weeds or any organic refuse on the soil surface. 15-20 cm thick layer of leaves, weeds or paddy straw is uniformly spread over the soil surface and then it is burnt destroying established weeds, stubble's, weed-seeds and kills the insect-pests found on the surface-soil besides improving physical properties of the soil.
- Sterilisation by chemical treatment** - This treatment is done by applying nematicides, fungicides and herbicides on the soil surface.

Seedbed layout - The beds should be about 1.2 meters wide (to get 1.0 m wide bed after tapering) and of convenient length but not more than 30 meters. There should be 0.5-meter-wide channel between the beds. The beds should be 15cm higher than the side channel.



Conventional seedbeds.



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Seed selection and seed treatment - Tobacco seed should be of high purity and germination for economic and healthy seedling production (farmers must use TRB certified seeds). A seed rate of 5g/ha is found to be optimum for all types of tobacco. Higher seed rate results in over-crowding of seedlings, which in turn lowers their quality and induces diseases like “damping off”.

Sowing time of seed in nursery- The sowing time of seed in nursery varies from area, region to region guided by tobacco legislative dates which recommend the start of seedbed production on the 1st of June of each year for irrigated crop. Dryland seedlings sowing time depends on climate of a particular tobacco growing region.

Application of Fertilisers - For steady and uniform growth of seedlings in the nursery, it is essential to apply fertilisers in the soil. Basal application of 1.4kg of compound S per 10 square metre bed and min of 50grams of Nitrogen fertiliser per 10 square metre.

Agronomic Care of Tobacco Seedlings

For raising healthy seedlings, the following points should be taken into account;

- To minimise damage to the young seedlings from scorching sun or from beating rains it is necessary to mulch the nursery by a thatch prepared out of grass, coarse sand and perforated plastics. The shading also minimises water loss from the beds, besides, the bed surface does not crack or become hard.
- In order to keep the beds moist, they should be irrigated initially by using a watering can every evening but there should be no water accumulation at any spot of the bed. Later the beds are flooded with controlled flow of water.
- The seedlings must be thinned out 10 to 15 days after sowing in order to protect them from damping-off.
- The seedbed should be kept weed free throughout the seedlings growing period.
- The grass mulch should be removed soon as the seedlings have two leaves.
- Routine spraying for fungicides at recommended rates should be maintained to prevent spread of fungal diseases.
- For control of pests' routine spraying of a combination of different pesticides is required.

Clipping - This is removal or cutting part of the leaf area to slow the growth of the seedlings and maintain seedling uniformity in the seedbeds.

Hardening - This is the intentional stressing of the tobacco seedlings by withholding water and or nutrients supplies to enable them to survive when exposed to harsh field conditions (14-28 days before transplanting).

Pulling - During pulling process, the beds must be watered copiously to facilitate the pulling of the seedlings without injury to the root system

Transplanting

- After seedlings are uprooted from the nursery beds, they

become ready for transplanting.

- Before transplanting, a hole with a capacity to hold 3 to 5 litres of water must be made with a hole at each intersecting point of lines drawn by a marker with desired spacing both ways after soil surface is completely levelled.
- One seedling must be planted at each planting station or hole and the soil is pressed all-round the seedling to provide a firm foot-hold for the plant. Gaps are filled within 10 days of planting.
- Transplanting of smaller or younger seedlings causes a higher percentage of gaps while aged or woody seedlings result in a poor growth of plants and thus both the types have a tendency to lower the yield of cured leaves.
- Above all an ideal seedling must possess the following characteristics, robust root system, stem pencil thick (10mm), stem length of 15 to 17cm, 8 to 10 leaves below the bud level and must be uniform.



Healthy established crops from well-mannered seedlings.

For more information on the tobacco crop husbandry, contact the TIMB team on info@timb.co.zw or call 0772 145 166-9.

Backlink - For more information on tobacco seedlings please refer to ZiMunda Farming Newsletter Issue 3, A Brief Guide on the Grounding Work for Seedlings by Eloise Maloney Ripple Mead Farm, Rusape and Issue 20, Grow Better Tobacco Seedlings to Boost Your Crop by Tegan Buchanan and Helen Simon.

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