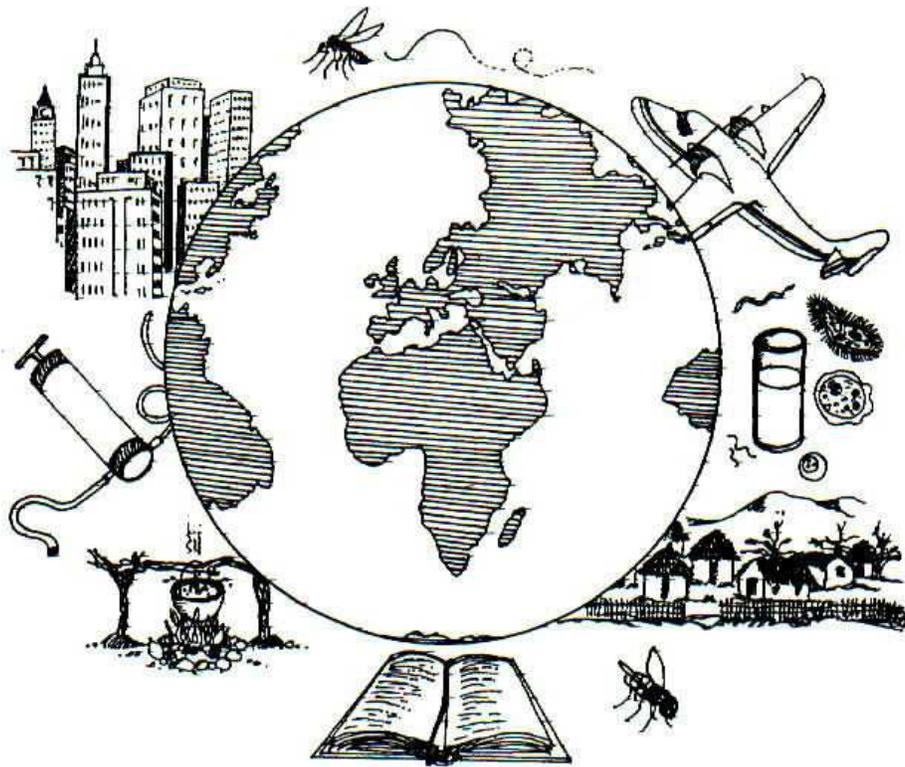
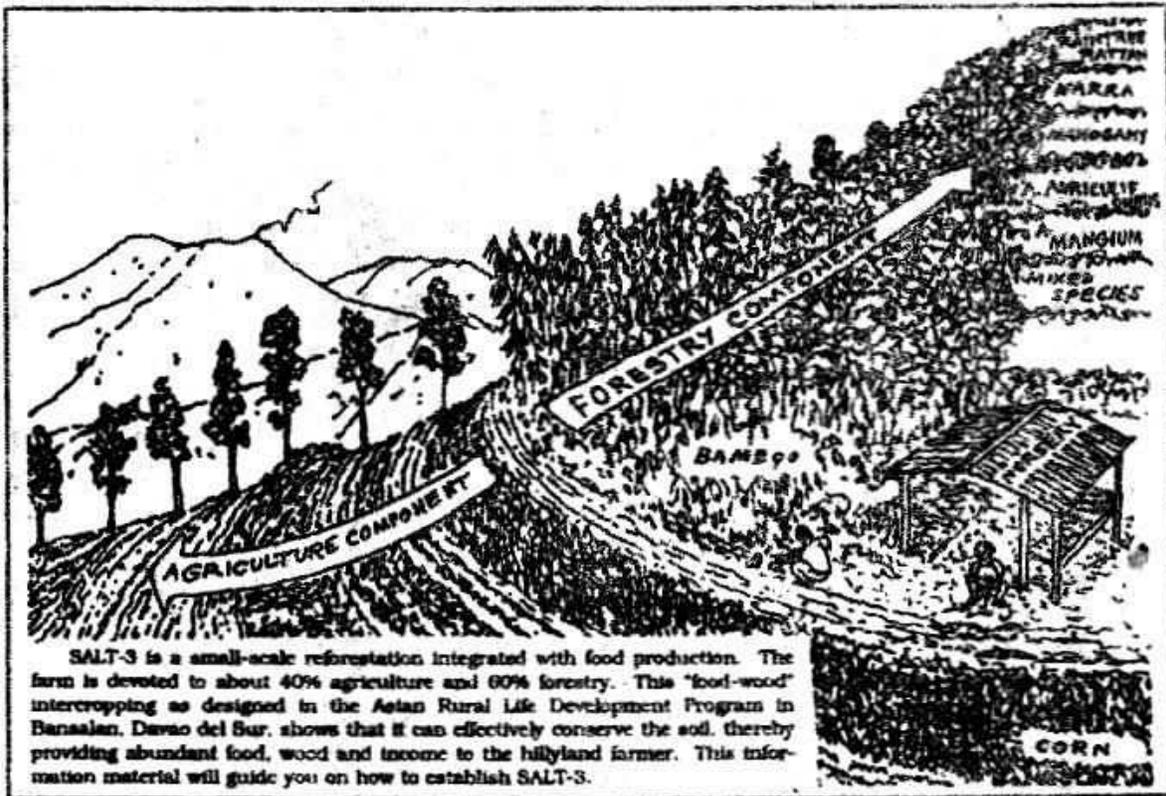


Sustainable Agroforest Land Technology (SALT – 3) Sustainable Agriculture



Training Pac



Deforestation, soil erosion and appropriate farming technologies are the three major causes of low farm productivity, thus the manifold poverty in the uplands. Agroforestry is fast becoming one of the sustainable alternatives to sufficient food production and income generation for the uplands. SALT - 3 is a variant agroforestry and here is how to put it up in your hilly land.

STEP 1: SET UP THE AGROFORESTRY NURSERY.

Ensure sufficient supply of planting materials for your agroforest farm by setting up your own nursery. A nursery of about 10' x 25' can sufficiently meet the needs of a 2-hectare agroforest farm.

Establish your nursery where it is accessible, with the following fixtures: potting shed, transplant shed, seedbeds, etc. Basic equipment like sprinklers, shovel, spade, should also be available.



STEP 2: CARE AND MANAGE YOUR SEEDLINGS.

For better growth and field survival, the production of healthy and vigorous planting stock is necessary.

- Sow the seeds. Most forest tree seeds are hard to germinate so they need scarification either by mechanical or hot water treatment. The most common problem encountered in seed germination is damping off and insect defoliators. Sterilize the soil before sowing the seeds to avoid damping off. Use chemicals when necessary.



The seedbeds or transplant beds must be kept moist at all times. Mulch and shade the plants.

- Transplant. Prune the roots of species that can be outplanted bare root (mahogany, teak, etc.). Do not allow weeds to compete with your transplant. Fertilizer may be applied in conjunction with watering long before transplanting. Dissolve complete fertilizer (14-14-14 or 15-15-15) at the rate of 10 g/l water.

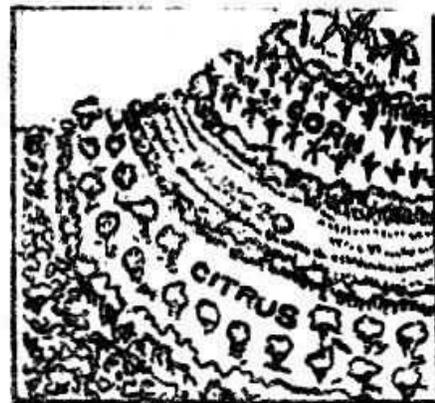


Harden off seedlings by gradually exposing them to more adverse conditions obtaining in the field. Do this 3-6 months before transplanting. Seedlings ready to be planted should have sturdy, well-developed crowns and many fine, fibrous lateral roots.

STEP 3: ESTABLISH YOUR FOOD CROPS ON THE LOWER HALF OF THE FARM.

Plant your preferred short-term crops on every first or second strips. A strip is a 4-5 m alley created between contour hedgerows. Depending on their suitability to your farm, plant long term crops like citrus, coffee, cacao, banana, black pepper, etc. on every third strip. Then intercrop them with fruit trees, like rambutan, durian, lanzones, guava, siniguelas, duhat, etc. following appropriate planting distances.

The earlier you establish your food and cash crops, the better off you will be in meeting your immediate needs.



Follow SALT 1 steps in establishing your food crops.

STEP 4: PREPARE THE SITE FOR YOUR WOOD CROPS.

Locate the woodlot at the upper half of the project so that the agriculture component on the lower portion will benefit from the conserved moisture and nutrients from the wood crops.

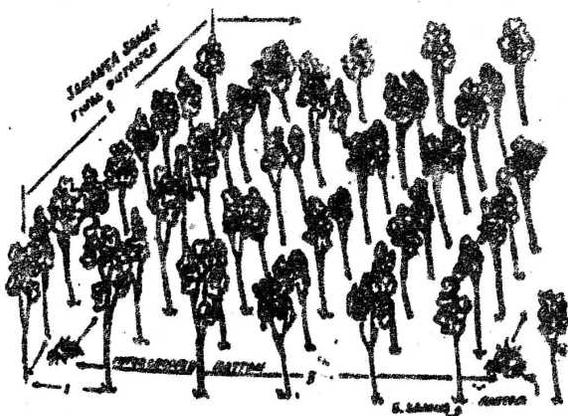
On areas with steep slope and with erodible soil, extra care must be exercised so as not to induce soil erosion when clearing the area. You can use either partial or complete removal of vegetation whichever is more favorable to you. Avoid burning.



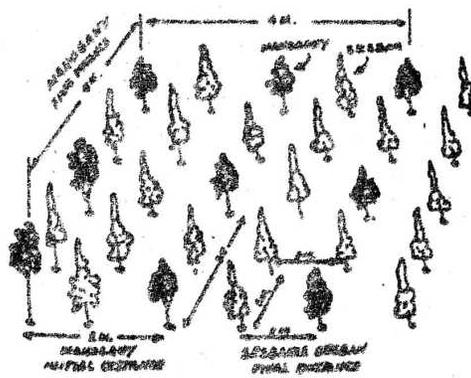
STEP 5: COMPARTMENTALIZE AND SPACE YOUR WOOD CROPS.

For a 3-fold object of soil rehabilitation, firewood production and timber growing, you can maximize the use of land space by following the high density strategy of establishing small-scale woodlots.

As jointly designed by representative foresters, agriculturists, farmers and countryside developers consulted by Asian Rural Life Development in developing SALT-3, the following were recommended:



AN INTERCROPPING LAY OUT OF SAMANEA SAMAN AND RATTAN.



AN INTERCROPPING LAY OUT OF MAHOBANY OR NARRA AND S. SESSAN

| Component on Top-Down Sequence | HECTARE | SPACING INITIAL | SPACING FINAL | DURATION |
|--|-----------|-------------------|-------------------|--------------------------|
| 1. Rain Tree (s.saman) | 1/4 | 1 x 1 m | 8 x 8 m | Long term (15-25 years) |
| 2. Rattan (C.merilli) as in intercrop with rain tree | 1/4 | 8 x 8 m | 8 x 8 m | Long term |
| 3. Narra (P indicus) | 1/8 | 2 x 2 m | 4 x 4 m | Long term |
| 4. Katuray (S.sesban) as intercrop with narra and mahogany | 1/4 | 1 x 1 m | 1 x 1 m | Short term (1-5 years) |
| 5. Mahogany (S. macrophylla) | 1/8 | 2 x 2 m | 4 x 4 m | Long term |
| 6. A. auriculiforsis | 1/16 | 2 x 2 m | 2 x 2 m | Medium term (6-14 years) |
| 7. A. mangiua | 1/16 | 2 x 2 m | 4 x 4 m | Medium term |
| 8. P. dulce & formosa mixed | 1/8 | 1 x 1 m | 1 x 1 m | Short term |
| 9. Acid ipil-ipil (L. diversifolia) | 1/4 | 1 x 1 m | 1 x 1 m | Short term |
| 10. Bamboo (botany variety) | on border | 8 m between hills | 8 m between hills | Long term |
| 11. Hedgerows or agriculture component | 1/4 | 4-6 m apart | 4-6 m apart | Long term |

STEP 6: OUTPUT THE TREES.

This can be started as early as the beginning or up to the middle of the rainy season so that seedlings can get established prior to the dry season.

You can also follow the contour when outplanting although it is not the imperative. Take care not to break the earth-ball when setting the seedling into the planting hole. The upper part of the earth-ball should be level or slightly deeper than the edge of the hole. Soil is filled into the spaces and tamped firmly all around.



For a fast recovery of the seedlings in degraded sites apply basal application of 50 – 100 g of complete fertilizer (14-14-14) mixed with urea (46-0-0) at 50:50 ration. Mulch your seedlings to ensure higher linability.

STEP 7: INTERCROP YOUR TREE CROPS. Short and medium term food and cash crops can be interplanted in your forestry component during the first two years. Long-term ones like black pepper and rattan can be incorporated at the beginning of the second year. You can even raise poultry (geese, turkey, muscovy) and small livestock (preferably sheep) underneath the tree crops during the following years.



For effective soil management, see to it that non-legume short-term crops are replaced by leguminous ones and vice versa in every cropping.

STEP 8: DO TREE STAND IMPROVEMENT.

Apart from regular ring-weeding and liberation cutting, improve the stand of your trees. Remove the malformed trees. Replant the missing hills if you feel the replanted trees can still catch up.



However, replanting is laborious and expensive and should be done only to maintain required spacing or density. This is also performed when mortality is more than 30%.

STEP 9: HARVEST YOUR AGROFOREST PRODUCTS REGULARLY.

Timely harvesting of crops saves waste. All households and useful products must be gathered, processed and marketed. In the forestry components – forage from tree prunings, fuelwood and roundwood from thinnings commence during the second year. Thin out regularly your forestry area until timber crop spacing requirement is complied with.



Here is a suggested schedule of harvesting your forest trees, patterned after Asian Rural Life Development Program Plan.

| YEAR | S P E C I E S | HARVESTING METHOD | U S E |
|-------|-----------------------|-------------------|--|
| 1 | None | Selective | Fuelwood/charcoal: Leaves for feeds, etc. |
| 2 | Sesbania sesban | All-out | Fuelwood/charcoal: Leaves for feeds, etc. |
| 3-5 | S. sesban | All-out | " |
| | Leucaena diversifolia | All-out | " |
| | Samanea saman | Selective | " |
| | Pithecelebium dulce | Selective | " |
| | Mahogany | Selective | Fuelwood and light Construction, etc. |
| | Narra | Selective | " |
| | Acacia mangium | Selective | " |
| | A. auriculiformis | Selective | " |
| 6-14 | Bamboo | Selective | Light construction Furniture |
| | Rattan | Selective | " |
| | A. auriculiformis | All-out | Fuelwood and light Construction, etc. |
| | A. mangium | All-out | " |
| | Narra, mahogany | Selective | Timber and furniture |
| 15-25 | Rattan | Selective | Timber and furniture |
| | Narra, mahogany | All-out | " |
| | S. saman | All-out | " |

SOURCE OF INFORMATION

Asian Rural Life Development Program – Author/Trainer with permission from Harold Watson