

Vanilla Report

Steve Caiger

Vanilla Specialist



**The Agro-Enterprise
Development Project**
Colombo, Sri Lanka

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SUMMARY

The core targets for the 1995 planting programme have been met. The field growth of the crop is encouraging. Extension messages and priorities have been revised to reflect the priorities that are becoming clear from field experience. Results to date indicate that the key area for vanilla development is Matale, and the focus of the extension programme is being changed to reflect this.

A programme has been put in place to process the December 95/January 96 harvest and deliver the samples to Quest for analysis and assessment.

Detailed discussions have been started with commercial clients interested in taking over the management and direction of the field development programme and developing commercial linkages with the international marketing partner. These activities will continue through 1996.

1. INTRODUCTION

The major objectives of the visit were: (i) to review the field programme and on the basis of results plan the programme for 1996; (ii) to develop linkages with the potential commercial clients, covering the crop development and extension programme, the initiation of discussions with the commercial marketing partner, and the initiation of assessment by the client of the operational and investment cost of taking over the commercial development of the crop; and (iii) to continue to maintain the direct linkages between Sri Lanka and the International marketing partner (Quest International) through provision of a range of cured bean samples for testing and analysis, to ensure that the target access to the market is maintained.

Field visits were made to the 3 main production areas (Matale, Kegalle and Kandy) and the Ratnapura/Palm Gardens estate development, and opportunities, strategies and requirements for involvement in commercial vanilla production, processing and export were developed with the main target clients both in the field and office.

2. FIELD PROGRAMME

The field programme has largely achieved its targets for number of farmers and vanilla plants established. The current (October/December 1995) rainy season has been erratic and part of the planned planting programme has therefore been held back to be done at the start of the next rains (March/April 1996) as planting under current conditions risks poor establishment. When this final planting is complete farmer and plant numbers will be:

Area	Farmer numbers	Plant numbers
Matale	360	29,000
Kegalle	260	16,000
Kandy	325	20,000

A sound basis for commercial development has therefore been established: around 900 outgrower farmers, and 55,000 plants. The production potential from these plants (when mature at 4 to 5 years after planting) will be in the range 18 tons fresh beans/yr (at a conservative 0.3 kg/plant/yr) giving around 3.5 tons/yr cured bean. At US\$50/kg this has a value of US\$175,000. The bulk of these plantings have been established during 1995, and first cropping from these plants will be 1998. However, a few of the first plantings that were made in 1994 are already strong enough to start bearing, and these should give some harvest in Dec 1996.

The field establishment achieved to date represents a real commercial asset. Rapid expansion should be possible from this core planting.

It is becoming clear from the field programme that Matale probably offers better scope for the crop than either Kegalle or Kandy, and potential for the crop is Kandy

appears restricted. Field staff responsibilities are therefore being revised to reflect this, increasing the level of field work in Matale, and restricting work in Kandy. A major review of the results achieved in Kegalle and the potential there in relation to Matale is planned for March/April 1996.

2.1 Farmer Organisation

The field extension programme has been based on farmer clusters centered around a Lead Farmer. The Lead Farmer is used as the extension and training contact point for the group. As the overall number of farmers and groups expand, this structure has to be reinforced to increase the working efficiency of the extension staff. To achieve this, a Lead Farmer Incentive programme has been put in place, supported by a more formal Lead Farmer and Farmer internal training programme. Both are outlined in the Appendices.

2.2 Training Programmes

The Training programmes will be based around the various demonstration gardens that have been established both in selected farmer gardens and at key Institutions (District Training Centers, Export Crops Farm, University Farm, and National In-Service Training Center). There are now an excellent range of gardens that show good vanilla plantings and management at all stages from planting to mature and ready for flowering and yielding. These provide very powerful training and demonstration aids. The programme is covered in the Appendices.

Extension staff have already developed excellent linkages with Export Crops Extension and Training Department, and recently with the National In-Service Training Center. The programme will continue to work productively with these Institutions, cooperating with and supporting their own training programmes for staff and farmers on vanilla, to ensure that the Government Extension services are also actively involved in the field in promoting vanilla cultivation in the high potential areas.

2.3 Harvesting and Curing Programme

The harvesting and curing programme will again be based around the University as the processor, with samples going to Quest for analysis. This year the programme will include frozen pulped fresh beans as well as rapidly cured beans. Details of the programme to be followed are given in the Appendices.

3. CLIENT DEVELOPMENT

3.1 Background

The integration of a commercial client into the vanilla development programme is a central objective and requirement, but this is not a simple or a quick process. The commercial logic and opportunity for the commercial vanilla development

remains sound, and it is useful to briefly re-state it here, as it has been presented to the clients in discussion:

- There is a market opportunity for new high quality vanilla suppliers. The break-up of the vanilla production and marketing cartel (centered on Madagascar and the Indian Ocean Islands) under market pressure has created an opportunity for new suppliers to enter the market as a restructuring of producer/ buyer linkages takes place. Madagascan production is in decline, and major buyers are looking for alternative origins where they can create strong long term linkages with individual processor/exporters. There are several examples of this around the world: McCormicks has made contractual linkages with producers in Uganda, Tonga and Indonesia; Bush Boake Allen is a joint venture partner with Parry Agro in a new vanilla development in India etc.
- A major buyer is interested in Sri Lankan vanilla. Quest International have stated an explicit interest in developing and linking with a source of vanilla from Sri Lanka, and have been involved in its development on the processing, analysis and assessment of cured bean samples over the past three years. The programme is therefore able to offer clients a potential joint venture partner to secure the marketing outlet for the commercial development.
- The processing technology has been prepared for Sri Lankan clients. The technology for rapid curing of vanilla has been introduced, and Quest are particularly keen to develop a source that uses this technology. This technology will give Sri Lanka a competitive advantage in the market, in both cost and quality.
- The core structure of a production base has been established, supported by dedicated extension services with trained personnel, established demonstration gardens, extension materials, and this can be substantially and rapidly expanded. There was no initial production base other than a source of planting material. The first 1,000 growers/50,000 plants are on the ground, and the results show both that good crop performance can be achieved, that farmers will take up the crop, and that the crop can fit well with and compliment the existing farm crops (bananas, pepper etc). This can support rapid expansion.

Commercial scale exports cannot be made until the vanilla plantings are mature. Typically, the crop begins to yield after 3 years (with yields reaching a maximum around year 4 or 5, depending on conditions), and continues to yield for the next 8 to 10 years. The first plantings were made in 1994, but the bulk of the plantings to date have been made during 1995. Pilot commercial yields can therefore be expected in Dec 1997, with full commercial operation in Dec 1998.

If plantings continue at the same rate as currently established (around 50,000 plants/year; 500 growers) over the next few years, then the following commercial production and farmer involvement can be projected for the early years:

FARMER AND PLANT NUMBERS

Year	1994	1995	1996	1997	1998	1999
	f = 400 p = 20,000					
		f = 500 p = 30,000				
			f = 500 p = 50,000			
				f = 500 p = 50,000		
					f = 500 p = 50,000	
						f = 500 p = 50,000
Cumulative Totals	f = 400 p = 20,000	f = 900 p = 50,000	f = 1,400 p = 100,000	f = 1,900 p = 150,000	f = 2,400 p = 200,000	f = 2,900 p = 250,000

Export Value of Cured Vanilla:

	1997	1998	1999	2000	2001	2002	2003
Total cured beans (tons)	0.6	2.1	4.5	7.5	10.5	13.5	16.5
Export value US\$	30,000	105,000	225,000	375,000	525,000	675,000	825,000

With an expanded extension and promotion programme, and natural growth in plantings through existing farmers expanding their existing plantings and surrounding farmers starting plantings having seen the crop performance locally, the rate of crop growth should be substantially in excess of that shown in the Tables, and exports should be higher than shown after the Year 2000.

A major issue in discussions between the Client and the international marketing partner will be the security of this production projection. This development is based on small farmer/outgrower plantings. Security of overall production primarily depends on farmers taking up the crop, and maintaining it through to the first harvest (3 years), and outgrower extension services are the key lever in building this security. Whilst the client does not have to invest in estate production, and has passed the risks and costs of cultivation to the outgrower, the client must invest in extension services to support growers. Government Extension Services cannot be relied upon to give the level and quality of extension and training services to farmers that are required to promote rapid uptake of the crop, and to concentrate development of the crop in areas that have high potential for vanilla cultivation and are close to the clients center of operations. The client also has to develop linkages to the grower to ensure that the crop is sold to him, and not others, and provision of extension services is a strong and effective way of doing this.

In the process of integrating clients into the vanilla programme, so that they take over responsibility for the direction and management of the programme, the maintenance, direction and re-structuring of the field extension programme is the key issue, and will require the bulk of the financial investment (the investment requirements for processing are not large and do not have to be made until the harvests are made, and capacity can be continually and gradually increased to match increasing production, with no fixed minimum scale of investment required). Ability and commitment to run and expand the field programme is therefore the key selection criteria for identifying the local client (both for AgEnt and the international marketing partner). It is clear from progress in this area to date, that selection and integration of the client into the programme will be a gradual process.

3.2 Summary of Progress

Discussions were pursued with target commercial clients for the vanilla programme. The key issues for successful commercial development of the sector in Sri Lanka are the continued promotion of field cultivation of vanilla centered in the small farmer sector, and establishing the joint venture linkage with the target international marketing partner, Quest International.

It is clear that establishment of a successful linkage with Quest will require, among other things, evidence that concrete steps are being taken to establish the level of production required within the time scale required. The key to this is an active outgrower management and extension programme. Discussions with the Sri Lanka clients have been focussed on addressing this issue, and developing an understanding of the need for this, and the operational programme required. In addition, specifications for processing equipment have been given to clients to allow quotations to be made and capital investment requirements to be quantified and assessed.

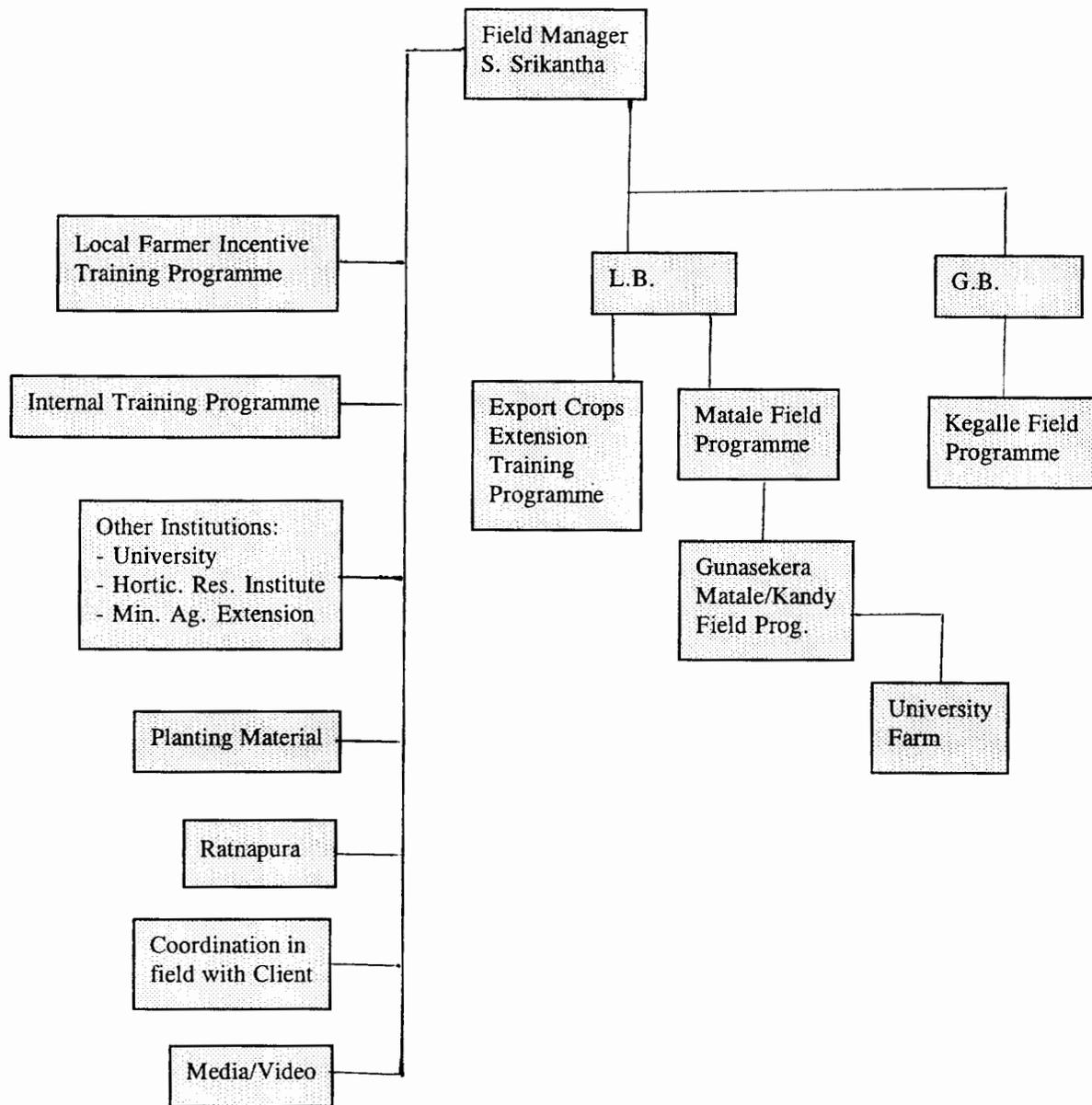
In parallel to this, clients are being introduced to Quest, and initial meetings between Quest and clients have been arranged for January 1996. A successful outcome of these initial meetings will provide the necessary base to secure client commitment to active involvement in the field programme. Further development of the joint venture negotiations would continue in parallel.

During the first part of 1996, clients will be given a detailed tour of the field plantings in all Districts to give them a clear understanding of the scale, structure and location of the outgrower network. This will then enable practical discussions to take place on the scale and locational focus of client involvement in the field during the year, and the field programme adjusted to reflect this.

APPENDIX 1: VISIT PROGRAMME

Date	Location
Monday 20/11	Dept UK
Tuesday 21/11	Arrive Colombo
Wednesday 22/11	Colombo
Thursday 23/11	Colombo
Friday 24/11	Colombo/Kandy
Saturday 25/11	Kandy/Nuwara Eliya/Colombo
Sunday 26/11	Colombo
Monday 27/11	Colombo
Tuesday 28/11	Colombo/Ratnapura/Kegalle/Kandy
Wednesday 29/11	Kandy
Thursday 30/11	Kandy/Matale/Kandy
Friday 1/12	Kandy/Kegalle/Colombo
Saturday 2/12	Colombo
Sunday 3/12	Colombo
Monday 4/12	Colombo
Tuesday 5/12	Colombo
Wednesday 6/12	Colombo/Kandy
Thursday 7/12	Kandy/Matale/Colombo
Friday 8/12	Colombo
Saturday 9/12	Colombo
Sunday 10/12	Colombo
Monday 11/12	Colombo
Tuesday 12/12	Colombo/UK

APPENDIX 2: STAFFING STRUCTURE AND RESPONSIBILITIES



APPENDIX 3: CLIENT FIELD COORDINATION

1. Prepare maps to show location of villages and farmer numbers (use large scale maps we already have)
2. Prepare charts that show:
 - village/area name
 - Lead Farmer name
 - number of farmers in group
 - number of plants in group
 - major dates of planting (year/season)
3. Arrange visit programme for Client staff to see major clusters of farmers so can get a practical understanding of what is already on the ground (plant age, plant size, typical garden size, how farmers are clustered/dispersed, how farmer locations relate to Clients key location etc).

Initially:

arrange a two day visit programme for Aitken Spence staff to cover main Matale area, so that they can see:

- how the current distribution relates to their existing Estate locations;
- what intercrops are being used for vanilla (pepper, banana etc)

Follow this up later with a visit to cover the Kegalle area.

4. Make preliminary audit of suitable sites for vanilla cultivation in key areas/ locations where client interested in basing operation, to assess general potential and suitability for vanilla cultivation, and rough estimate of whether development of substantial vanilla area would be relatively straightforward, or would be very difficult to achieve.

APPENDIX 4: PROCESSING PROGRAMME FOR DEC 95/JAN 96 HARVEST SEASON

Copy of this to be give to Colin Peiris

The University will be the prime cooperating institution, undertaking the bean processing. All product samples for analysis will come to AgEnt for onward dispatch to Quest.

1. FROZEN FRESH BEAN PULP

We need to collect 10 kg of ripe mature beans, pulp them in a blender, and freeze them.

As beans become available, pulp them and freeze them until 10 kg have been done. There is no need to do 10 kg in a single batch. We need to have 10 kg done by the end of the season.

No one has pulped fresh beans before in a blender so it is difficult to give instructions! We should put the beans in a blender (you may have to cut them into small bits first) and then blend them until they are fairly well mashed up - a mixture of lumps and gooey liquid, I would think.

Put into plastic bags and freeze IMMEDIATELY after blending. Label each bag with date of freezing and add any relevant notes about the beans (average length, whether fully mature - ie tip changing colour - or only beginning to mature, etc.).

We can also do some immature beans if you like, but keep separate from the mature beans and make sure they are clearly labelled. Do not do more than 5 kg of immature beans. (This is in addition to the 10 kg of mature beans.)

When 10 kg of mature frozen beans ready (plus any immature frozen if you have done some), AgEnt will arrange packing (to keep frozen) and airfreight to Quest (contact me for final details on this when everything is ready to ship).

2. RAPID CURED BEANS

All other beans to be cured by the existing rapid curing method in the laboratory. Keep mature and immature beans separate.

After the harvest, samples of these cured beans can be given to AgEnt for analysis by Quest (but concentrate on selecting samples of mature large beans, well cured with good moisture content). The objective of this years curing and analysis programme is to try to assess the top quality level that Sri Lanka can achieve.

APPENDIX 5: WORK PROGRAMME STRATEGY

1. Consolidate existing farmer clusters and build up group sizes to 15 to 20 farmers per group.
2. Concentrate new farmer growth in Matale and Kegalle areas; no new clusters in Kandy except where very favourable conditions (sites, farmer demand) and close to existing clusters.
3. In Matale and Kegalle, concentrate new clusters either close to existing clusters or in new areas if clear that there is potential for significant development (ie more than one cluster in good conditions).
4. Strengthen linkages to Export Crops Extension staff and programmes, and District Training Centers, so that these also actively promote vanilla themselves; renew linkages with University Farm and support their training programme, and make use of this plot for our staff and Lead Farmer training.
5. Strengthen functioning of Lead Farmer/clusters so that efficiency and effectiveness of extension increased. Implement Lead Farmer Incentive Programme.
6. Revise staff roles to achieve tasks.
7. Run separate extension programme for estate (large scale) developments (ie Greenet, Export Crops Estate, Matale Wazir etc).
8. Strong promotion of stimulation of flowering where at all possible during Jan/Feb (including degenerate plantings, suppliers of planting material etc) to try to get substantially larger crop in Dec 1996/Jan 1997.
9. Concentrate general extension messages on site selection, correct shade establishment and management, soil preparation and improvement, composting and mulching.

APPENDIX 6 VANILLA: LEADER FARMER INCENTIVE SCHEME

Introduction

The outgrower extension and management programme is based on developing Leader Farmers as the major contact point between field Extension Officers and farmers growing vanilla. Extension Officers meet farmers at the Leader Farmers garden, conduct training sessions there using the Leader Farmers vanilla plot, discuss farmer problems and pass on current extension messages etc. The Leader Farmer is used to notify other farmers in the group of the meeting, and to follow up farmers after the meeting to encourage them to follow the training and extension messages. The Leader Farmer is therefore a part of the Extension System, and their work plays a key part in the overall success of the programme. Without the Leader Farmers, the Extension Officers has to visit all farmers individually and this puts a very severe limit on the number of farmers he can deal with effectively.

It has always been planned that the Leader Farmers would get some financial remuneration from involvement with the extension system. In the long term, when beans are being produced, the Leader Farmers would act as collection points for beans, and would receive a commission on the beans collected. This therefore provides a direct incentive to encourage vanilla production within their area/village. However, it will still be some time until significant production starts, and it is hard to motivate Leader Farmers to commit significant time and effort to the promotion of the crop when the financial rewards are so far in the future. Current incentives are required.

Incentive Scheme

A reward and incentive programme split into 3 parts is proposed:

For all Leader Farmers:

- i. a gift of a pair of Secateurs, to recognize the work that they have done up to now to help promote vanilla cultivation in their area;
- ii. a training programme, based around 1 day courses at the National In-Service Training Institute at Kandy, that will concentrate on highlighting and informing the farmers about new developments in crops of interest to them (ie various vegetables, bananas, other cash crops etc). Training courses will concentrate on these other crops, rather than vanilla (though of course some further training will be done on vanilla using the demonstration garden established there), as the intention is to reward farmers for their help and work with vanilla through helping them with their other home garden and cash crops, rather than to simply give more training on vanilla. It is hoped that this wider training, at an Institute that they would not normally have access to, will increase their role and standing in their villages, and so also increase their capability to promote vanilla cultivation in their areas.

Training days will be organized so that at any one training course, selected Leader Farmers from all 3 of the major development areas (Matale, Kandy and Kegalle) will attend, so that they get a feeling of belonging to a larger programme.

For selected Leader Farmers only:

- iii. On a pilot basis, initially for between 6 to 10 selected Leader Farmers in total, a seasonal (6 monthly) contract payment will be put in place. Leader Farmers would be given a simple contract that during the season (covering one wet and one dry period) they would have to arrange a certain number of training meetings at which the Extension Officer would attend, and would have to make follow up visits to farmers afterwards. If this was successfully completed, they would receive a payment at the end of the season.

Contract details: The seasonal payment would be Rps 600. For this, a minimum of 3 meetings would be required to be held at the Lead Farmers garden, and 1 follow up visit to each farmer made by the Lead Farmer after each meeting. Any farmer selected for the first trial group must have at least 15 farmers in his/her group (although this number could be reduced to closer to 10 if the individual plantings are large, the Lead Farmer is a very strong one, and there is a good prospect of increasing group size to 15 or more during the contract period). The initial selected group of leader farmers will not be spread equally over the 3 main areas. The selection will be made on the basis of quality of the Leader Farmer and potential for vanilla production in the individual area.

The cash payment gives a direct financial incentive to Leader Farmers, and staff felt this was necessary until the commission on crop collection became large enough to be meaningful. Basing payment on achieving specific tasks makes it easy to assess whether a farmer has met his target, and therefore to pay or not to pay the cash payment. Starting on a trial, restricted number basis, allows assessment of the programme after 12 months. If the programme is not getting clear benefits from the payment system, it can be stopped. If it is successful, it can be expanded, gradually, to cover other selected Leader Farmers as their groups reach a certain size.

Timing:

Gifts: January 1996

Training programme: main programme to start during April 1996, but it may be possible to find opportunities to begin earlier, depending on the existing programme at the In-Service Training Institute

Contract Payment: January 1996

Costs

i. Gifts

56 Leader Farmers @ Rps 450 each Rps 25,200

ii. Training

4 courses/year

Per course:

Hire of Transport

Meals at Institute

Training Fees

iii. Contract payments

Rps 600 per 6 months

8 Farmers

Annual Cost Rps 9,600

Actions required by Programme Manager:

- i. get agreement from National In-Service Training Centre for one day Lead Farmer training courses; also investigate use of University Farm;
- ii. establish training and meal costs per head and/or per course, and preferred numbers per course;
- iii. fix participant numbers/course, and course frequency - target 6 per year, with each Lead Farmer attending at least once, and preferably (if they want it) twice;
- iv. work with Centre to establish course structure and content (based on full day allowing time for transport to/from Centre). General theme is innovations in technology and practices relevant to small farmers;
- v. prepare an advance programme of courses, attendants list and plan transport; fix budgets and get approval; deal with administration and payments. Plan for programme to end July should be completed before end January and submitted to AgEnt.
- vi. make first selection of Lead Farmers for contact payments, and finalise agreement with AgEnt Production Adviser

APPENDIX 7: INTERNAL TRAINING PROGRAMME FOR LEAD FARMERS

- i. primarily targeted at Lead Farmers, but other farmers can attend if interested and space on course/transport;
- ii. base programme on Demonstration Gardens already established in Matale and Kegalle, and local District Training Centers (preference to Demonstration Gardens as these are more than 1 year old and give clear and good examples to farmers of what they are trying to create in their own garden); also make use of University Farm;
- iii. content of training to emphasize current seasonal extension messages and general themes of: site selection and preparation (soils, organic matter addition, shade); shade management; composting and mulching;
- iv. base programme on half day programme (including travel time to/from) except where travelling to other areas (where could need to be full day);
- v. minimum target is 1 training course for each Lead Farmer in each District each year; preferable one every 6 months;
- vi. use project transport for farmer collection, or pay bus fares.
- vii. include estate developments (Export Crops Farm Manager, Wazir farm manager etc) in training programme.

APPENDIX 8: PROGRAMMES WITH OTHER INSTITUTIONS

1. University of Perideniya
 - i. Research Farm vanilla plot
 - Monitor progress
 - Encourage to keep up management and composting on the 3 rows that has management revised to our specifications
 - make sure shade is reduced and hanging vines made in January 1996 to stimulate flowering.
 - ii. Harvesting/Curing Programme
 - Liaise with Colin Peiris over rapid curing and pulping/freezing of fresh beans for Dec 95/Jan 96 harvest (see separate sheet that lays out processing programme for Dec 95/Jan 96).
 - iii. Training Programme at University Farm
 - where possible, link into/support their training programme for farmers and Export Crops based at University Farm (do not dominate or try to take over, but offer to assist IF THEY WANT, and keep in contact with their programme to find out from which areas farmers and Extension staff are coming from for the trainings).
2. Ministry of Agriculture Extension Service
 - Liaise with them over our vanilla extension programme, and assist in training their field staff in vanilla cultivation, making use of our Demonstration Gardens.
 - Encourage them to actively promote vanilla cultivation in areas where we have already got cluster villages (primarily in Matale and Kegalle).
3. Horticultural Research Institute
 - make contact ONLY IF we need their services for pulping and freezing of fresh beans for Dec 95/Jan 96 harvest.

APPENDIX 9: RATNAPURA PALM GARDENS ESTATE

- i. visit every 2 months to observe the crop performance and flowering. Assess how shade is growing at low level and whether soil is shaded and if this results in stopping of vine death where it is in contact with soil; get reports on this back to HVH;
- ii. no changes to be suggested to management. Existing management programme is:
 - allow low shade to grow to shade soil at base of plant; do not break off any low branches or shoots on the glyricidia;
 - allow weeds to grow on soil to directly cover the soil;
 - create hanging vines during Dec 95/Feb 96 to stimulate flowering where plants are large enough.

APPENDIX 10: EXTENSION MESSAGES

1. Stimulation of flowering (making hanging vines, removal of any new growing shoots that appear on hanging vines after removal of main growing shoot, reduction of shade to 30 to 40%) during Jan/Feb, to give flowering in March/April so that we can try to get decent volume harvest in December 1996;
2. Preparation of sites for April shade establishment and/or planting;
3. Promotion of compost making and mulching;
4. Lighten soil around plants at end of rains and mulch to prevent excessive drying and/or heating of soil during dry season;
5. Shade management: 60% shade at planting; 50% shade when established; 30% for flower stimulation;
6. Avoid selecting sites for vanilla where shade already too heavy unless shade can be easily and permanently reduced.

APPENDIX 11: AREA WORK PROGRAMMES

a. MATALE PROGRAMME

1. Integrate Gunasekera into District programme, so he takes responsibility for a logical part of the District for existing and new development; L.B. to be overall coordinator the area;
2. Consolidate and expand growers and clusters. Build clusters up to 15 or more farmers, and where possible make new clusters around existing clusters and in new high potential areas;
3. L.B. to be responsible for supporting Export Crops Extension Staff and farmer training programme on vanilla, and to coordinate with Export Crops Extension Staff working in our area so that they also actively promote vanilla;
4. L.B. to be responsible for Estate developments in Matale (Greenet, Wazir etc);
5. Leader Farmer/farmer training programme to be based at Export Crops Training Centre and Demonstration Garden. Make use of University Farm for selected farmers.

b. KEGALLE PROGRAMME

1. Consolidate and expand growers and clusters. Build clusters up to 15 or more farmers, and where possible make new clusters around existing clusters and in new high potential areas;
2. Continue development of linkages with District Training Centre; support direct vanilla extension work by Extension Staff based in area;
3. Give close supervision to demonstration plot at Training Centre; organise composting, soil improvement and mulching;
4. Lead Farmer/farmer training at Demonstration Garden (also use District Training Centre if garden there develops well, but Demonstration Garden is much further ahead and therefore more useful to show farmers how garden should look);
5. Farmer at Demonstration Garden to be taken to both Matale Demonstration Garden and University Farm;
6. Give close support to Export Crops estate; arrange for farm manager AND selected workers to go to the Matale and Kegalle demonstrations and to the University Farm.

c. KANDY PROGRAMME

Part-time programme:

1. Consolidate existing groups that are easy to access and build up farmer numbers to 15+ in each cluster;
2. Extension messages to concentrate on shade, soil improvement, composting and mulching;
3. No new developments in outlying areas; limit any expansion to areas adjacent to existing clusters and only then if clear that good potential for cultivation and expansion in that area;
4. Give management support to University Farm. Assist in giving advice on shade level for flowering (and a general reduction of shade in the main area where it is all too heavy); encourage continual composting and application of well composted material;
5. Leader Farmer/farmer training based at University Farm.

APPENDIX 12: KEY EQUIPMENT REQUIREMENTS FOR VANILLA RAPID PROCESSING PLANT

1. Introduction

In the rapid processing method, vanilla is cured in a 3-stage process: chopping the fresh beans into half inch pieces; sweating the chopped beans in an enclosed heated drum (at 60°C) for 72 hours; and drying in hot air (initially at 60°C and then at lower temperatures) for 60 hours. Processing is done on a batch basis, with a 3 day cycle time: a batch of beans is sweated for 72 hours, this batch is then removed to the drier while the next batch is sweated.

There is no minimum commercial size plant, but a typical commercial sweating vessel has a capacity of 500 kg fresh beans (ie 1 ton/week) if fully loaded. Additional capacity is added by adding extra sweating vessels. Partial loads can be processed without any disadvantage (although unit heating costs would be slightly higher).

2. Outline Specification of Sweating Drums, Cradles, Trays and Flat Bed Driers

Details of size and materials for the drums, trays and cradles are given on the attached diagrams, and are sufficient to obtain quotes. Equipment can be larger or small, as required, and measurements and materials specifications can be adjusted accordingly.

3. Outline Specification of Balanced Curing Plant, up to 10 ton Cured Bean Output over 8 Week Processing Season

Equipment refers to size/specifications given in Section 2 above.

1. 5 sweating drums
2. 5 cradles
3. 35 trays
4. One 30 kW kerosene fired hot water boiler (or equivalent) to provide hot water (at 60°C) to sweating tanks
5. 3 flat bed driers
6. Three 60 kW kerosene fired indirect fired hot air burners (or equivalent) providing approximately 1400 c.f.m. airflow, output air temperature controllable in the range 30 to 70°C (c.f.m = cubic feet per minute)
7. 10m steel joist with moveable chain hoist (beam positioned above sweating drums, and used to raise loaded cradles in/out of sweating drums).

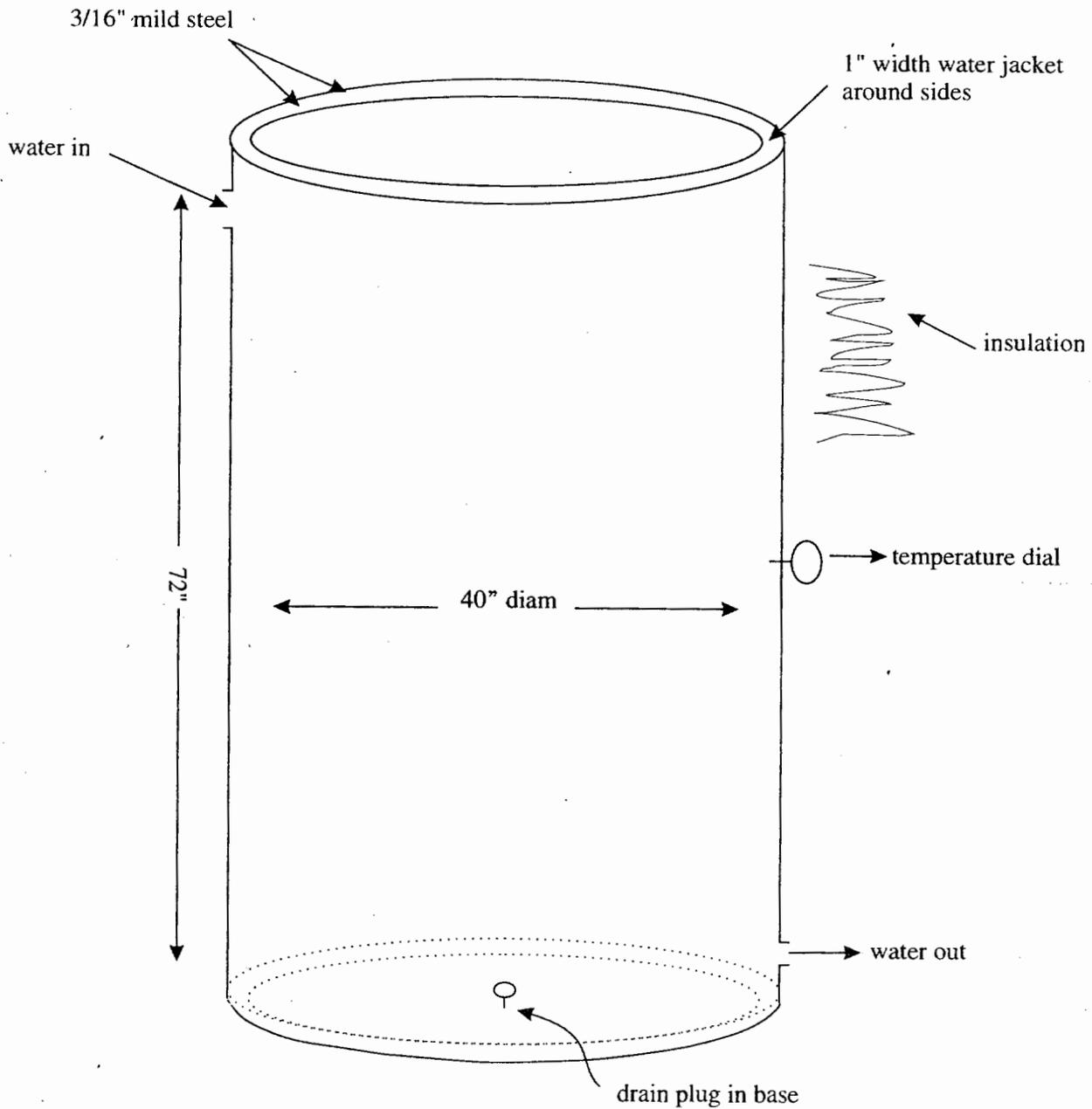
8. 4 cutting tables, each 2 m long by 1 m wide (bean cutting done by hand)

Note: All heat requirements can be provided via heat exchangers off central furnace or central hot water boiler if required (and will actually give greater efficiency).

4. Minimum Start-up Scale

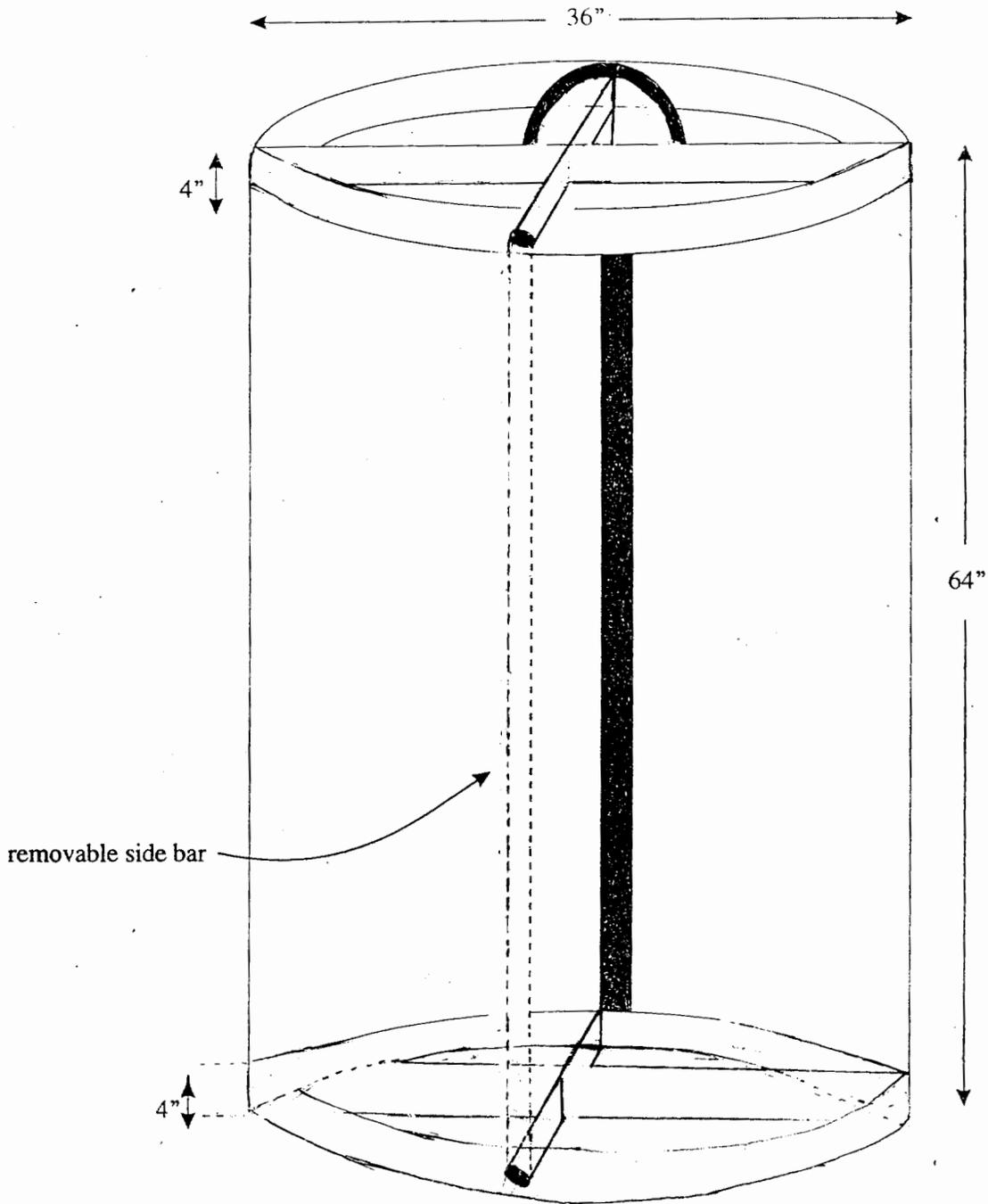
The minimum start-up scale is one sweating tank, with cradle and trays, and drying capacity to match. One standard sweating drum (1 ton/week fresh bean capacity) would give capacity for approx 5 to 8 ton fresh bean harvest (1 to 1.5 tons cured bean output). a reduced scale version would be made to provide smaller initial capacity (or fewer trays made).

A. Sweating Drum



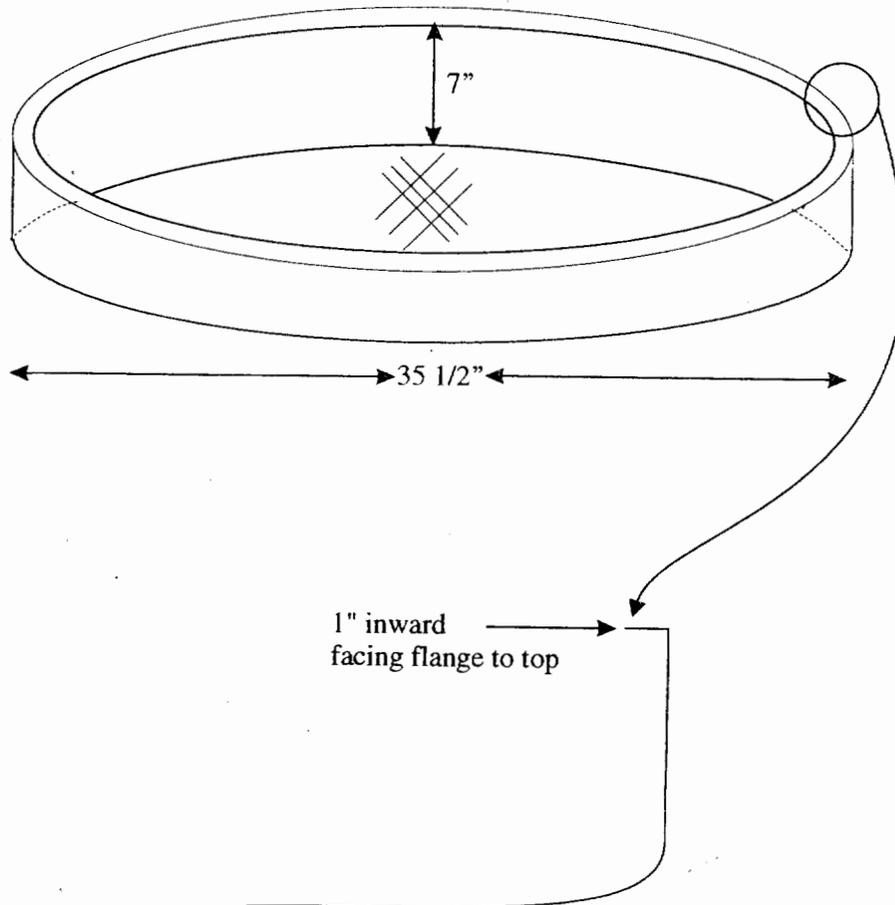
- overall dimensions 72" x 40" diameter
- materials mild steel, 3/16"
- water jacket around sides only
- removable lid on top, flat base fitted with drain plug
- optional stainless steel inner skin to base and sides

B. Cradle



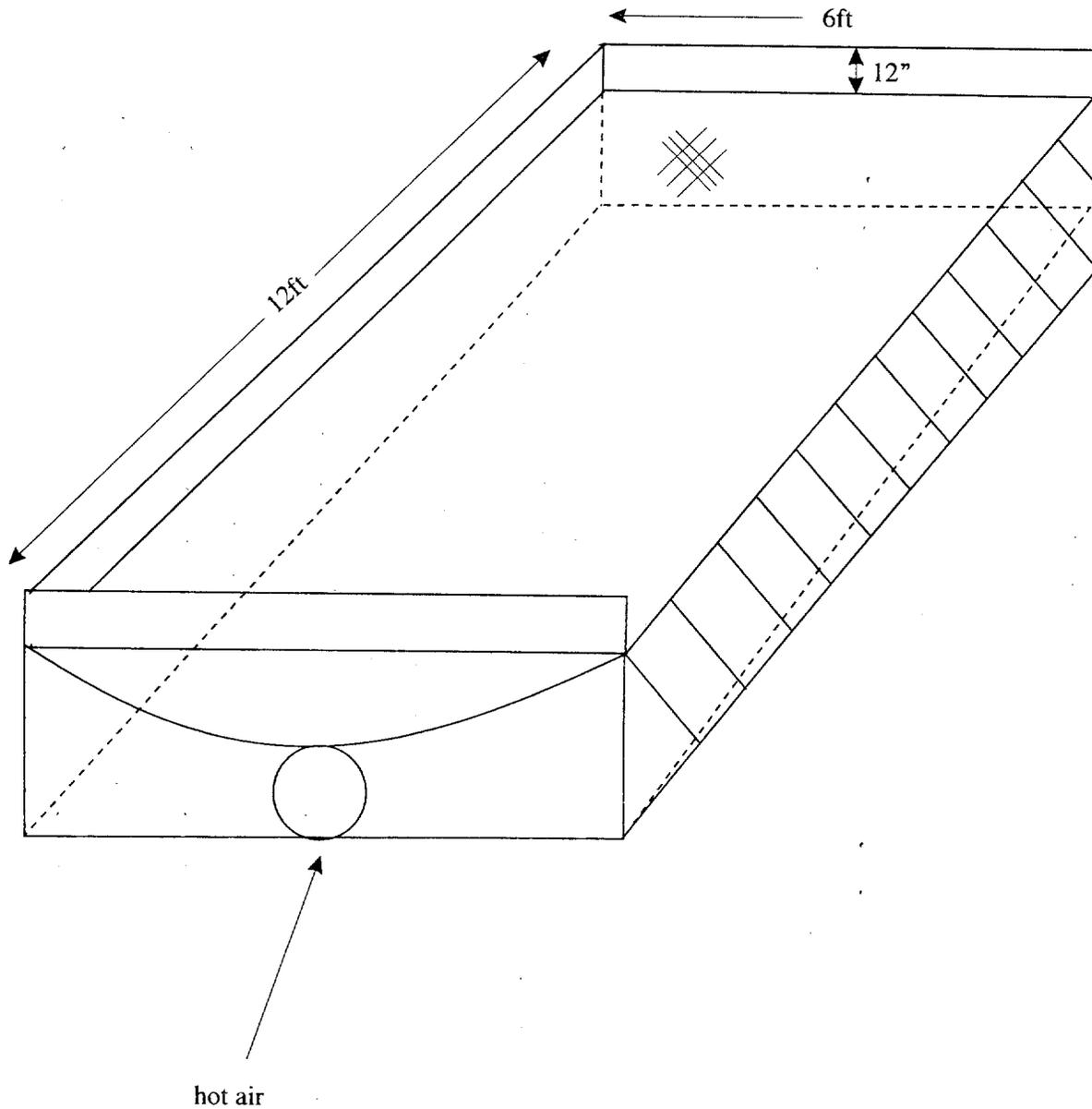
- overall dimensions 64" height plus top ring, 36" diameter
- materials 3/16" mild steel
- 4 vertical struts, one removable to allow loading/removal trays
- whole cradle has to have strength to hold 500 kg beans plus 7 trays.

C. Trays



- stainless steel
- 1" inward facing flange on top edge to allow stacking of trays
- perforated base (lay 1/8 holes or 5/16 centres)

D. Flat bed driers



- brick/cement/wooden panel construction on sides and end
- front end extended into funnel to give air inlet
- false floor rising from base of front to half way up rear end
- wire mesh suspended 12" below top of drier sides (with supports underneath) to give crop drying platform