

-PD-ABI-605 ISBN=88795-

## Consultancy Report On Vanilla



**Steve Caiger**

Vanilla Specialist  
High Value Horticulture  
UK

**BEST AVAILABLE DOCUMENT**



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

December 1993

# CONTENTS

	<b>Page</b>
<b>Executive Summary</b>	ii
<b>Introduction</b>	1
<b>Review of Issues</b>	2
Production	2
Structure of Production	4
Processing	5
Markets/Marketing	5
Industry Structure and Control	6
<b>A Structure for Levers</b>	6
Overview	6
Function of Outgrower Management	7
Outgrower Management Systems	7
A Structure for the Levers Development	8
<b>Wider Investigation and Promotion of the Development of a Vanilla Sector</b>	9
<b>A Development Plan</b>	10
Outline of Possible Levers/Keells Estate/Outgrower Development Supported by AgEnt	11
Outline of Possible Support to Investigation of Potential Vanilla Cultivation in Wider Area	13
Schedule of Activities	14
Areas for HVH Continuing Inputs	15
<b>Appendices</b>	
Appendix I      List of Persons Met	16
Appendix II     Field Tour	17
Appendix III    Key Parameters for Rapid Processing Method	22

## EXECUTIVE SUMMARY

A tour was made of the main potential growing areas, and discussions held with a range of people and companies interested in developing commercial vanilla operations in Sri Lanka. Detailed discussions were held with Levers, and Keells concerning their proposed commercial development.

Many areas appear to offer a favourable climate/environment for vanilla cultivation, but this can only be confirmed by actual trial cultivation through to harvest. Interest is being shown in a range of production systems. There are a few scattered isolated plantings of vanilla in the country, some old and degenerate, some productive but minimally managed, and some new where the owners are gaining their first experience in cultivation. Whatever experience and expertise was present in Sri Lanka in the past has been lost, and there is now no significant practical experience available in cultivation.

A similar situation exists with respect to processing (curing). No proper bean curing is being done. Any beans produced are essentially dried.

As a result of the experience gained on the tour, a range of key issues were identified that have to be addressed if commercial development is to be successful - relating to production, management, processing, marketing and the structuring of the commercial enterprises.

In discussions on commercial development, a number of key assumptions about how, and within what limits, it would be sensible to plan any development. These are summarized. It is clear that knowledge about the product, the market, and potential short and long term changes to the market, is limited. This must be addressed if companies and institutions involved are to be able to take sensible commercial decisions and commit to them.

A strategy is outlined for commercial development of a vanilla production and export sector, a time frame and scale for this development is laid out, and a range of support activities identified. The strategy is in 2 parts: direct support to an initial core development; and technical support to a wider group of pioneer companies to gain experience in the crop and assess potential in their areas, so that they will be in a position to assess their interest in commercial developments on the basis of practical experience if future changes in the market create scope for a substantial increase in supply of vanilla from Sri Lanka over the limited volume targets that form the basis for the first commercial development.

## INTRODUCTION

A tour was made through the main areas thought to have potential for growing vanilla. The tour covered Kandy and adjoining up-country areas, Matale, mid and low country areas around Ratnapura, through Deniyaya down to Galle, the Western coastline and immediate hinterland, and coconut and rubber areas of NW Province.

Contact was made with plantations, interest growers and the key government agencies to inspect existing vanilla and to give a general briefing on the requirements and potential for vanilla production and marketing.

### **The primary purpose of the tour was to:**

- see different environments and land systems;
- look at current vanilla plantings and management;
- get idea of people's strategic interest/scales;
- try to give overview of crop, process, product and market;
- identify issues that have to be resolved in pursuing development to reach commercial stage; and
- discuss these issues with interested companies (and individuals) and suggest ways/scale to move forward to reach stage at which can make justified decision to go commercial/ stop without excessive risk/cost.

A preliminary meeting had been held with the Controller of Corporate Buying, Quest International (Mr Ivan Horwill) in Europe to gain a basic understanding of the interests of the Unilever group as it related to any developments promoted by Lever Sri Lanka.

### **Key assumptions to strategy for development:**

The key assumptions underlying the assessment are given below. It is argued that these should form the basic framework within which any development should be undertaken. Proceeding outside this framework would carry unnecessary and unjustified levels of commercial risk.

- development plan/scale should relate to current market volume/demand, and not rely on substantial changes to existing market demand/volume;
- *must* develop market linkage from beginning, during development/pilot phase; have to have prospect of assured market entry;
- product must be high quality product: no scope for low quality/low value product, no competitive advantage or market demand could be projected for this sector;

- for high quality product, process and organization/ structure curing is key issue;
- growing and processing takes experience, and neither present in country: must be established.

#### **Target production/marketing levels:**

- an initial production target of 20 to 40 tons in 7-10 years would be reasonable in terms of current market demand and supply: this would not in itself upset any market balance;
- volume below this level would not offer significant interest to producer/exporters, or to importers who must be able to see scope for reasonable volume;
- target volume in excess of 40 tons would imply immediate movement to being one of the major suppliers to the market and there is no justification at this stage for assuming that the quality and price of product from Sri Lanka could support such a position.

#### **A reasonable scenario for growth in the sector would be:**

- 3-4 year development phase, producing little product - maximum few tons/year at end;
- rapid expansion towards end of period, giving rapid increase to 20-40 tons;
- revised view of market and production and margins then offers choice of stabilize, or further rapid expansion within next few years to revised target - at 20-40 ton level increase in production can be very rapid from this extensive base.

## **REVIEW OF ISSUES**

As a result of the visit, it is clear that there are several key issues that underlie any proposal to develop the crop, and these must be taken into account in any strategy formulated to take development forward. The country is not in the position to immediately start large scale commercial production. It first has to establish what sort of product it can produce, how to produce it, and how production and processing should best be structured to give the levels of control and quality required to be economically competitive.

### **Production**

- wide range of potentially suitable environments, but covering a range of environmental variation that needs investigation:
  - rainfall (levels and seasonal variation)
  - soils (clay/sand; acid/moderate)
  - altitude/humidity (maritime/inland mid/high country)

The crop should be able to grow well, but there is no existing production of any relevant scale to review. Actual levels of production (yields) able to be achieved have to be established through actual cultivation.

- do old tea/rubber/coconut lands carry any particular disease/pest problem?
- what is the intrinsic quality (vanillin levels, aroma profile) of these environment(s)? Is there significant difference between areas? (- links to processing and market issues)?
- experience in production — have to gain this and will be slow and progressive improvement;
- production systems — intercropping/estate-smallholder:
  - mainly issue for plantation sectors that want to mix vanilla with tea/rubber. The smallholder sector will put the crop into a diversified garden at a small scale and this is typical of vanilla cultivation in many countries and is unlikely to give problems on a wide scale;
  - are tea/rubber compatible with vanilla — pest and disease, management systems, soil pH, shade etc;
  - what level of mix is viable;
  - where does the primary interest come from plantation companies for vanilla — are plantations primarily interested in improving returns to established land under tea/rubber (so intercropping is the key), or introducing a separate crop (where intercropping is just one option for development)?
  - do we have a problem with coconuts/termites/sandy soils/coir mulch? (this is relevant to both estates in the NW Province and large individual farmers);
- will vanilla work in large single stands - plantation?
  - can we get yields (consistent/high);
  - will we set context for pest/disease problems?
  - this is not a traditional cultivation system for vanilla in the major producing countries
  - is there a lesson here?
- planting material:
  - how much vine exists at the moment in abandoned plantings;
  - what area will this existing resource plant up — enough for initial development requirements? If not, what extra nursery production is required?
  - do we have to go down nursery route? Field plantings established directly from long (3 ft or longer) cuttings will give the best results and earliest yields;

It is necessary to establish:

- rainfall: areas too wet/too dry  
poorly defined dry season for flowering
- acid soils and response to liming
- coconut lands
- intercropping
- mulch types (coir/tea waste?)
- survey planting material resources
- cured bean quality/variation

## Structure of Production

The basic options are to consider Estate only, smallholder only, or a mix of the two sectors with the balance between the two determined by an assessment of the relative importance of the advantages and disadvantages of each.

### *Estate*

#### Advantages:

- deliver management, control, investment;
- strong cross benefits to processing/quality and short export chain;
- good structure for pioneering work;

#### Disadvantages:

- high overhead and fixed (high) minimum cost of production; this results in high expectations (and need) of returns;
- possible problem of limitations of scale of long term development, and therefore number of estates that can be involved. If small area only possible within an estate, then further pressure to see high gross margin/ha to give sufficient commercial interest;
- not typically grown as an estate crop; can it deliver good yield levels and low level of production problems;

### *Smallholder*

#### Advantages:

- should be strategically competitive on costs and withstand price instability (cross link to market projections);
- low risk/low cost development;

#### Disadvantages:

- have to deliver extension/advice — how?
- have to deal with processing and prevent home processing — how?
- potential for excessive number of middlemen in chain, leading to low farm gate price relative to export price;
- need company/large farmer enterprise to pioneer small outgrowers — who? Not found yet. Is slow startup phase, and Sponsor/Enterprise has to be willing to carry early costs — *i.e.*, uneconomic collection of early harvests etc;
- potential for unstructured, scattered, uncontrolled excessive development — boom/bust;

### *Nucleus Estate/Outgrowers*

#### Advantages:

- ideal providing balance between management, control and investment resources of production companies and production cost and risk efficiencies of smallholder sector, but plantations not expressing interest in providing services to outgrowers;
- would be logical business for large farmer type, but is there one with sufficient motivation/funds? This is not instant return;

#### Disadvantages:

- appears that no existing operations like this in current plantation sector;

- outgrower extension and management system requires close control to deliver required product;

## Processing

- choice of methods — traditional/rapid curing
  - implications for access/flexibility in market, as common market resistance against presentation form (chopped) of rapid cured product;
  - need expertise for traditional curing, and no knowledge locally;
  - processing is critical area as it determines what level of intrinsic quality is actually realized in the final marketed product (links to marketing);
- expertise required for traditional curing
  - none locally;
  - no one is actually curing properly — everyone is following some variation on a simple drying process;
- must maintain control over the processing/curing of the crop
  - quality of curing is the key to market entry and product reputation for small producer (country);
  - development of a significant poor quality sector in the early stages of development would reduce the potential for positioning Sri Lankan produce in the market in the high quality position it needs to find.

## Markets/Marketing

It is considered that links have to developed from the start with a major market outlet. Quest offers a potentially strong partner in this respect. The introduction is through Levers, and has to be pursued.

- can we develop links with Quest? How interested are Quest in the possibility for creating links back to production/ processing operations?
- what do Quest's potential volume requirements represent (for Sri Lankan type) in terms of a current potential target of up to 40 tons. At what stage of export volume do we have to look for other market linkages?
- should we look elsewhere — other companies — as well to prevent overexposure to Quest and allow other development routes outside of Levers;
- what FOB export price do we take for our projections? Is US\$30-35/kg reasonable in the medium to long term — we have to consider the long-term price at the development stage. A strategic assessment is required now, and it is more critical for estates with high fixed costs;
- traditional/rapid curing method choice — issue of importance for flexibility. Could and should we consider trial development of a whole bean rapid curing method?

## **Industry Structure and Control**

It is important to maintain the primary focus at the growing/ processing enterprise level. What sort of business is going to be able to deliver the production and processing required to supply and service the target market.

At present Levers, a number of other plantation companies, and individuals with large and small holdings all have an interest in the crop. No one on their own appears able or willing to provide the whole package required for successful development, and this all has to be seen in the context of uncertainties over production, processing, environment, management systems etc.

- can a company grouping be formed that allows the nucleus estate/outgrower model advantages to be taken and delivers product through the Levers/Quest chain?
- if we restrict development to the plantation sector alone, we are going for the high cost untried large scale system, and can this be justified; an unmanaged smallholder system does not offer a viable route to develop production — a private sector management structure has to be found;
- what are Lever's strategic commercial interests in this area: in what way are they able to get involved, what will they commit to, and what functions do they need to reserve exclusively to themselves;
- if AgEnt goes outside Levers/Quest linkage for commercial development (in contrast to trial assessment of suitability in an area) how do we control target volume and will we end up splitting the overall volume too many ways;
- excessive development of middlemen to collect, bulk and move product will significantly lower potential farm gate prices and reduce strategic price competitiveness;

## **A STRUCTURE FOR LEVERS**

### **Overview**

Levers are currently promoting the crop through the University at Kandy. Levers pay for University staff to provide advice, make demonstration plantings, and purchase and collect the crop from small farmers.

Levers have started discussions with Keells with a view to a joint venture based on Keells providing a core nucleus estate, outgrower purchase/collection of beans, and processing. Levers will make the exports and profits from the whole process (production through to export) will be divided.

Current thinking and intentions are to provide outgrower extension and management under contract through the University, with Levers just providing overall management responsibility for this part and finance.

Logically, it would be preferable to see the core (bulk) of the development of production in the smallholder sector. To achieve this, management resources must be concentrated in this sector, but if Keells restrict field management to their estate, the key commercial management strength of the partnership is restricted to the smaller (minor) estate sector. This gives a fundamental weakness to a partnership strategy where an important level of production is seen as coming from an outgrower sector.

It is not considered that the University can offer the level and type of commercial management that is required, and Government systems are not an option.

## **Function of Outgrower Management**

The following summary identifies the key characteristics of the system:

- Outgrower production removes the physical production and field production costs and risks of adverse season-to-season variation in field production costs from the enterprise.
- It does not remove the requirement for management and supervision of production. This still has to be provided at the scattered sites of production and it is more difficult to do so than within the context of in-house estate production. Also, since outgrowers are not employees, additional difficulties are added to the process of achieving results on the ground.
- To the extent that:
  - projected outgrower production is an important component of raw material throughput, and;
  - outgrowers are not tied through an exclusive enforceable contract to sell to the enterprise, and;
  - competitive buyers exist, and;
  - it is necessary to restrict production within maximum and minimum volume limits required for purchase;

then management is more important and complex and extensive than simple estate management.

- The gain in removal of production to outgrowers is therefore partly offset by an increased management requirement.

## **Outgrower Management Systems**

An outgrower management system delivers:

- training and extension for farmers at the farm/village level;
- monitoring of the crop in the field — plants, pest and disease etc, leading to advance forecasting of performance and problems;
- advance projections and continuing assessment of yields (down to the individual farmer level);

- correlation of projected yields and actual purchases to monitor/identify leakages of raw material from the system;
- control of quality at the farm gate;
- assistance (where relevant) with the delivery of advances, credit etc.

Growers have to be grouped in some way:

- the primary advantage of outgrower systems is in shifting production (and associated costs and risks) off the estate;
- the further growers are removed from the central estate, and the more scattered they are, the greater the costs and difficulties (and therefore disadvantages) of dealing with extension and management.
- there is therefore a positive advantage in managed/directed grouping of producers compatible with cost effective delivery of management. The number and location of growers has to be managed in relation to the need and planned location of staff.

The structure and function of the parts of the system are:

- the system is based on village level field staff who:
  - deliver group training on a regular basis
  - make regular individual farm/farmer visits;
  - make regular surveys for plant numbers, growth, flowering, yield;
  - keep records on an individual farmer basis.
- field staff are supported by technical/supervisory staff who:
  - have a regular visit programme for individual field staff, coordinated with farmer group meetings to deliver training;
  - hold regular group meetings with field staff to formulate a work programme and to deliver training associated with the planned extension messages within the programme;
  - make individual farm visits to assess specific technical problems identified by field staff.
- organised central record keeping on all aspects of farmers and production;

The key to the system are the technical staff who train and supervise the field staff. Field staff can be good competent farmers who are respected locally and who themselves grow vanilla.

## **A Structure for the Levers Development**

Levers offers a secure, credible corporate base, strong overall management and marketing expertise, financial resources, and the ability to develop strong vertical linkages with a major multinational buyer (Quest International) within the Unilever group.

Through a proposed joint venture with Keells, it can bring a plantation company to provide a nucleus estate operation and controlled processing capable of delivering high, reliable

quality with an understanding of the strategic importance of quality and reliability. Keells is also prepared to undertake buying of fresh beans from outgrowers.

Levers propose to contract outgrower management to the University at Kandy.

The primary weakness in this system is outgrower management:

- it is not considered that a part of the University could deliver a sufficient level of commercial management in the field; nor could it deliver the necessary level of commercial responsibility for these services;
- if outgrowers are to form a significant part of the production chain (and there are very strong grounds for recommending this) then it is strongly recommended (if not essential) that the key commercial partners have direct responsibility for implementing the management and support services related to this. This sector has to be driven from a strong profit motive and to face the financial losses inherent in a failure to deliver commercial targets. Whilst the University as contractor would face the loss of the contract, it neither shares in the profits nor has money invested to loose;
- the University (or any other part in the Government system) would have great difficulty restricting their field services and development to any particular group of farmers: they are generally perceived and understood to have a remit to provide advice and assistance to all who ask.

It is strongly recommended that Keells consider establishing an outgrower management system to cover outgrower production. If this context is established, then the AgEnt project has a clear, coherent commercial structure within which to deliver complimentary technical and financial support to the development of the outgrower field production and management system.

## **WIDER INVESTIGATION AND PROMOTION OF THE DEVELOPMENT OF A VANILLA SECTOR**

A large number of other Plantation Management companies (Haileys, Forbes, Steurts etc) as well as large individual landowners, small landowners and small farmers are interested in vanilla cultivation and/or curing. Some have already made trial plantings. Interested parties cover the main Central, Southern and Western growing areas.

It is not possible or sensible at this stage to encourage everyone to go ahead with development. Any initial development must first concentrate on pilot operations to assess the actual suitability for production and quality, market competitiveness and level of financial viability of production; early commercial development must be controlled to keep within the initial volume targets suggested; and the necessity to develop early linkages to the markets requires that if Levers/Quest are not involved, alternative companies must be sought.

Until the issues identified with the Levers/Keells partnership have been resolved, there is no firm basis for actively proceeding with support of commercial developments with another core Sponsor. There would be an inherent conflict of interest in this approach.

However, it is clear that there is justification and a strong logic in promoting the pioneer investigation of the suitability of other areas for production of vanilla outside the key area within which Levers/Keells plans to develop their activities (Kegalla District).

There would be significant benefits in supporting (through training, technical advice and documentation, strategic market reviews, assistance with planting material etc) any pilot vanilla plantings taking place in the estate/large farmer sector in these other areas (but not initially with small farmers). In particular, the basis would be laid for a rapid and substantial expansion of the industry if market conditions did change to increase the demand substantially and there was therefore scope for a wider range of companies to become involved.

## **A DEVELOPMENT PLAN**

The following activities can be pursued concurrently over the period now to March/April 1994:

- a. Levers to pursue discussions with Keells to decide on structure for delivery of outgrower management services.

If this results in Keells committing to provide these services, then there is a clear commercial structure within which AgEnt can deliver direct support in this area.

If Keells want to restrict involvement with outgrowers to purchase of green beans, then either:

- i. reconsider final proposal from Levers/Keells for outgrower management or restriction to estate only initial development. If considered viable, then continue; or
  - ii. assist Levers to find an alternative partner to Keells — this is likely to be a large landowner/businessman rather than one of the estate management companies; or
  - iii. concentrate on the wider development work (Section 4 above) while awaiting/promoting an acceptable commercial development to work with.
- b. Assist Levers to survey scale of planting material resource (Rangith to organize through University staff of Levers). If low amount found, organize nursery production accordingly targeting March to June planting season.
  - c. Commission or undertake strategic market review for vanilla (for period to the year 2000) to be used as planning tool for both Levers/Keells and briefing information for AgEnt.
  - d. Start direct discussions with Quest to clarify potential quality, price, and volume interests for material from Sri Lanka.

- e. Assist Levers to prepare pilot rapid processing facility for remaining January/February harvest to provide cured samples for Quest, and organize harvest and collection.
- f. Provide some revised estimates for plantation and small farmer crop budgets for vanilla.
- g. Re-establish contact with other interested groups and individuals, provide a clear analysis of the situation, and identify those who wish to participate in wider trials development programme. Determine what assistance required and justified.

On the basis of the above, it should be clear:

- which way, if at all, AgEnt can become involved directly in the support of a commercial enterprise trying to develop vanilla production involving some element of outgrower based production;
- what the potential short and longer term interest is of Quest in Sri Lanka as a source of vanilla;
- an early quantitative indication of the intrinsic quality of cured Sri Lankan vanilla, allowing an independent assessment of its potential place in the vanilla trade;
- the potential level of commitments that could be involved in providing assistance to a wider trial development and assessment of the potential for vanilla cultivation in the country, and the feasibility of estate production;
- where, and in what form, planting material will come from for all initial plantings;
- the basis for an agreed target crop budget for both estate/ large scale and small farmer vanilla cultivation, that can be incorporated into a provisional financial analysis of the key development enterprise.

Depending on the conclusions reached, AgEnt should be in a position to draw up, and sign a range of Contracts for the shared delivery of specialist technical support to establish the technical and management basis for the development of specific commercial enterprises, and the investigation of the wider potential for vanilla cultivation in the country.

### **Outline of Possible Levers/Keells Estate/Outgrower Development Supported by AgEnt**

#### *Scale*

- **Estate area:**  
An initial development in the range 2 to 10 acres in a single estate, or divided between 2 estates. The full area should not be in a single contiguous block but should be divided into separate parcels of minimum 1 acre size. Plantings should be planned to provide assessments of:
  - production costs

- crop growth and early yield performance
- land suitability: old rubber land, partial rubber shade, soil acidity, use of coir and tea wastes as mulch
- crop performance under estate cultivation and management

These plantings will also establish core in-house experience in growing vanilla, and allow the development through practical experience of the core management regime required.

- **Outgrowers:**

An initial development building up to around 500 outgrowers having plant numbers in the range 50 to 500 plants/grower. Mean plant number/grower should be around 100 to 150 plants, giving around 50,000 plants in the outgrower sector.

Outgrowers should be restricted to 5 to 10 villages. Field staff should have responsibility for a maximum of 50 to 100 growers (to ensure that a high level of farmer contact can be maintained).

- **Status after 3/4 years:**

employment:

- 500 outgrowers involved
- 10 full-time (equivalent) labourers on estate
- 10 field extension staff

output of cured vanilla:

- 5 tons outgrower vanilla
- 1 ton estate vanilla

output value:

in range US\$180,000 to US\$300,000

- **Potential status after 7/10 years:**

employment:

- 3,000 outgrowers involved
- 60 full-time (equivalent) labourers in estate
- 60 field extension staff

output of cured vanilla:

- 30 tons outgrower vanilla
- 10 tons estate vanilla

output value:

in range US\$1,200,000 to US\$1,500,000

### *Location*

In the catchment area centered on Etna Estate, Kegalle District.

### *AgEnt Support Services*

- technical advice to company on estate and outgrower management;
- assistance in setting up record-keeping;
- provision of extension and training materials;
- training of key staff in field (and possible overseas visits to producing areas);
- support development of curing options;
- liaison with markets.

### **Outline of Possible Support to Investigation of Potential Vanilla Cultivation in Wider Area**

- pro-active targeting of support of individual landowners/ estates in key areas of interest (Matale, Ratnapura, Galle, NW Province coconut areas);
- provision of technical advice and materials;
- coordination and promotion of cooperation between participants;
- provision of market information services.

## Schedule of Activities

	Dec 93	Jan 94	Feb 94	Mar 94	Apr 94	May 94	Jun 94
<b>A. Enterprise</b>							
* Lever/Keells finalization	*****	*****					
* Alternative/additional partner			??????	??????			
* Estate development					*****	*****	*****
* Outgrower development					*****	*****	*****
<b>B. AgEnt</b>							
<b>— Support to Enterprise</b>							
* Assistance to enterprise structure		*****	*****	*****			
* Survey planting material		*****	*****				
* Market review		*****					
* Pilot curing facility	*****	*****					
* Discussions quest/samples	*****	*****	*****				
* Estate/outgrower crop profile		*****	*****				
* Production advice (est./outgrower)				*****	*****	*****	*****
* Outgrower management				*****	*****	*****	*****
<b>— Trials/Area development</b>							
* Identification pioneers	*****	*****	*****				
* Establishment programme			*****	*****			
* Start field developments					*****	*****	*****

## Areas for HVH Continuing Inputs

### *Commercial Enterprise Development*

A long term input by HVH to direct and supervise the development and commercial start-up of a commercial vanilla development is dependent on the establishment of a suitable commercial enterprise in Sri Lanka. It is not present at yet. If such a structure is established, HVH would have a productive role to play.

The schedule of activities envisages this structure present by March/April 1994. HVH could then provide a systematic series of consultancy inputs, covering 2 to 4 field visits per year and additional home office based support to market development and technical back-up to the field programme.

If a structure is established, it is recommended that a further visit (around 2 weeks) be made in March/April to assist in planning start-up operations, and to draw up an agreed long term support programme.

### *Trials/Area Development*

In addition to the support directed to the commercial enterprise, or separately if it is not established, HVH could provide technical direction and support in the field to the wider Trials/Area development programme. The purpose of this programme would be to establish pilot block plantings of vanilla in various areas of the country, to develop experience with crop production and performance, so that if it becomes apparent in the future that a substantial increase in production can be supported by the market, a range of companies in different areas will already have the information and experience to be able to assess crop performance and production costs, and to develop new plantings rapidly if they consider expansion viable.

The scope and requirements of this programme would depend on whether or not the core commercial programme was established.

### *Preliminary Development Support*

HVH can provide several small inputs to assist in the initial planning and formation of the commercial enterprise. The current participants are starting from a very restricted knowledge based of the industry, and this will inevitably hinder their ability both to formulate a commercial development strategy and plan of action, and make the commercial decision to implement it.

The key inputs required are:

- technical support to the design and operation of the pilot curing facility;
- development of discussions with Quest over quality and potential corporate demand;
- building of crop models and profiles for estate and outgrower vanilla plantings (to be integrated in companies analysis of financial projections);
- a strategic market review.

These should be done over the period December 93 to March 94.

An allocation of 14 days is required.

## Appendix I

### List of Persons Met

Mr Richard Hurelbrink	Chief of Party, AgEnt
Mr Tony Dagleish	Marketing Adviser, AgEnt
Mr Neville Ghanapragasam	Crop Production Adviser, AgEnt
Mr Gamini Kumarage	Agri-business Adviser, AgEnt
Mr Rangith Piyadena	Vanilla Production Adviser, AgEnt
Mr Gary Alex	Head, Agriculture and Natural Resources, USAID
Dr Aruna Bandaranayake	Commercial Director, Levers
Mr Rangith Guruge	Plant Manager, Levers
Dr Colin Peiris	Senior Lecture Horticulture, University of Peradeniya, Kandy
Mr Upale Gunaratne	Technician, Vanilla Programme, University of Peradeniya, Kandy
Mr Asoka Senevirapne	Asst. Director, Export Crops Agric. Dept., Nuwara Eliya Div.
Mr Lionel Gunaratne	Senior Asst. Dir., Research Institute, Export Crops Agric Dept, Matale
Mr van Starracks	Farmer, Matale
Hon. Chandra Ranatunga	Minister for Building Materials (MP for Mawanella constituency)
Mr Shiran Guneratne	CEO, Kagelle Plantations Ltd
Mr Lasantha Wickremesooriya	Exports Sector, John Keells Holdings
Mr Ranjan Siriwardena	Superintendent, Etna Estate, Warakapola
Mr Gunasekera	Owner, Wattantirikanda Estate, Deraniyagala
Mr Edward Perera	Group Director, Balangoda Plantations Ltd, Ratnapura (Forbes and Walker)
Mr Harin Weerasinha	Resource Development Manager, Balangoda Plantations Ltd, Ratnapura (forbes and Walker)
Mr Amal Peiris	Superintendent, Palm Garden Estate, Ratnapura
Mr Vicky Wickremasinghe	Superintendent, Cotland Estate
Mr Nagendra	Chief Accountant, Balangoda Plantations Ltd (Forbes and Walker)
Mr Ranjan Pelpola	Superintendent, Handford Estate, Deniyaya (Haileys)
Mr Ravi Dhanayake	Superintendent, Deniyaya Estate, Deniyaya (Haileys)
Mr Rangith Jayasooriya	Superintendent, Walahanduwa Estate, Galle (Haileys)
Mr Sivaraja	Area Executive, Walahanduwa Estate, Galle (Haileys)
Mr Nihal Undugoda	Manager, Soils, Plant and Fertilizer Analytical Laboratory, Galle (Haileys)
Major R.C. Peiris	CEO, George Steuart Management Services
Mr Dilcepa Jayasinghe	Deputy Director, Agricultural Development Authority, Kurenagala
Mr Sundanayake	Manager, Reedegama Estate, Dodangaslanda
Mr Bandaiya	Farmer, Delwita
Miss W.T. Rosalinnone	Farmer, Mawatagama
Mr B. Karunaratne	Farmer, Dambadeniya

## Appendix II

### Field Tour

#### **Kandy University: Dr Colin Peiris**

Linkage with Levers to support demonstration/research vanilla planting at Research Farm (Dodangolla Farm, Kundasale) - approximately 1 acre.

Technician full time on vanilla programme to direct management of demonstration planting, contact growers in area, and manage collection and purchase of green beans from farmers.

Run nursery training programmes at Research Farm, and plan to add vanilla management to this.

Are producing vanilla plants in nursery, and have also produced plants through tissue culture. University is opening plant sales center (to be managed by Dr Peiris) and intend to sell vanilla through this. Plans for substantial new nursery close to main University (Meetwature Farm, under Faculty of Agriculture) for production of vanilla plants, funded by Levers.

#### **Mr Rangith Guruge, Plant Manager, Levers**

Accompanied for rest of Kandy area visit. Is coordinating development work for Levers under Dr Bandaranayake.

#### **Kothmale, Gampola area**

#### **Mr Asoke Senevirapne, Assistant Director Export Agricultural Crops Division, Nuwara Eliya District**

Field visit to grower (Kothmale reservoir) with abandoned vanilla in garden. Vanilla running wild up a tall tree in a dense planting of wide range of spice trees and food crops. Vanilla is completely unmanaged, and farmer has no knowledge of how to manage or cure vanilla. However, does know how to pollinate flowers, and whatever flowers occur naturally he pollinates, and dried beans and uses as flavouring in tea. Father introduced and grew vanilla in garden, but if there was ever any knowledge of how to manage crop it has been lost.

Export Crops Division buying beans (also on behalf of Levers). Division has network of Agricultural Instructors based in field who provide training and information to farmers on target crops.

#### **Dr Aruna Bandaranayake, Commercial Director, Levers**

Wide ranging discussion on potential for vanilla cultivation, requirements for cultivation, markets, competitive sources, types of planting material, strategic options for development etc.

#### **Export Crops Division, Research Department, Matale**

#### **Mr Lionel Gunaratne, Senior Assistant Director**

General discussion on vanilla cultivation, markets and potential for development. Visit research plots. Department has made collection of plating material from different sites, and has trials to look at use of live/dead supports, plant spacing, mulching and types of trellis systems.

Consider that main value of these plantings will be as simple crop plots used to gain experience in growing the crop, and monitoring performance and pest/disease status. Primary

requirement at present is to establish good cultural practices for vanilla. There is no production experience basis to support trials.

The priorities for any field development plantings (and this should apply equally to any involvement by any Research organisation) is to establish some core plantings to develop basic crop management skills and experience (using standard practices taken from the literature and adapting them in the light of experience), to monitor these plantings intensively for crop performance and pest and disease status, to make standard plantings in contrasting soil types (strongly acidic (pH below 5.0) and moderate (pH > 5.5), coastal sands and clays, in sole stands and intercropped with coconuts, in environments substantially drier and wetter than Matale. On the basis of these observational plantings, factors justifying further research/investigation can be identified, and the cultivation experience will be gained to allow the factor under investigation, not the poor management, to be the chief determinant of crop performance.

Major crops in the Matale area are pepper, coffee, cocoa, cloves, cardamom, nutmeg etc. all indicate potential for vanilla.

Additional staff at Department involved with vanilla programme are:

**Mrs Seramaika, Processing**

**Mr Sumanasena, Agronomy**

The department has an in-service and farmer training center at Matale. Have demonstration plantings there, and linkages to "model" farmers in the area.

#### **Mr van Starraks, Vanilla Grower, Matale**

800 plants, growing on glyricidia at 3x3m spacing, unmanaged except for keeping vines growing within 6 ft height limit. Shade heavy. No soil management, but good soil structure under legume/grass cover and leaf litter from canopy.

Father grew vanilla and exported to Australia.

No stimulation of flowering. Natural flowering season in April with possibility of secondary flowering in October. Last flowering pollinated 2,400 flowers from 800 plants (average of 3 flowers per plant - negligible yield for size of planting), but in balance with demand from spice gardens - his only market.

#### **Mawanella District**

##### **Hon. Chandra Ranatunga, Minister for Building Materials.**

Organised the distribution of 3,000 vanilla plants (Levers nursery source) through the Divisional Secretary and the Agricultural Division. Taken by approximately 500 to 1000 farmers. Reported that Agricultural staff are following up closely, and requested AgEnt's assistance in improving field follow-up and farmer training.

Do not consider that these sort of distribution programmes are the best way to proceed. They are likely to lead to very scattered production with non-viable scale for individual farmers, and high probability of loss of most of the planting material.

#### **Etna Estate, Warakapola, Kegalla District, Keells Plantation Management**

**Ranjan Siriwardena, Superintendent**

**Shiran Guneratne, CEO Kegalle Plantations Ltd/PPK Management Services Ltd.**

**Lasantha Wickremeesooriya, Diversification/Export Sector**

Intended joint venture partner for Levers, using this estate as site for nucleus planting. Started clearing old rubber stand, leaving low level of rubber trees to provide base level of shade. Currently establishing glyricidia supports at 10x5 ft spacing and intend to plant vanilla in May/June.

Suggested that limit initial plantings well below 50-100 acres intending; that look at plantings without any rubber as well; that also look at glyricidia plantings in range 10x8-10 ft.

General discussion about vanilla - planting, management, curing, markets and marketing.

**Mr Gunasekera, Wattantirikanda Estate, Deraniyagala**

Small 48 acre estate, mixture of clove, cocoa etc. Also has ornamental plant production business, supplying exporters with rooted stock. Grew vanilla in 1970's and supplied Elephant House company who used vanilla for ice cream flavouring, but market closed when import restrictions lifted. Currently rehabilitating vanilla plantings (3x3m spacing on glyricidia, heavy shade) and bulking up plants via nursery operation and stock plant establishment. Very good nursery skills - rooting single node cuttings using potting mix of 1:1 soil:coir waste. Objective to establish 20 acres and supply Levers at published price *for cured (dried) product*.

Land is mostly steeply sloping, but he understands about soil management, mulching etc. A thinking man with good field plant skills.

General discussion about vanilla - planting, management, curing, markets and marketing.

**Palm Garden Estate, Forbes and Walker, Ratnapura.**

**Mr Edward Perera, Group Director**

**Mr Haren Weerasinghe, resource Development Manager**

**Mr Amal Peiris, Superintendent Palm Garden Estate**

**Mr Vicky Wickremasinge, Superintendent Costland Estate**

**Mr Nagendra, Chief Accountant**

Have established 500 plants on glyricidia spaced at 3x3m but with 2 rows of tea in interrow. Excellent growth (6 months old, planted 3 ft cuttings), mulching with glyricidia prunings and some manure. Soil is red sand/clay with gravelly patches. Acidic (tea lands) with pH just below 5.0. Low elevation, close to sea level.

Prompted by Levers, were considering 50 to 100 acres.

Looking at wide range of intercropping on estate incorporating tea, rubber, banana nurse crops, green mulch crops/erosion barriers etc.

Concern about intensity of intercropping with tea, and that could lead to soil compaction as crops grow into each other, and that soil acidity levels required for tea could be too low for vanilla.

Suggested that they should look at series of scattered blocks looking at cropping systems, spacing, mulch (like to use tea waste but acidic) and monitor through to harvest.

Saw recent delivery of plants from Levers nursery. Short rooted cuttings, appeared to be in pure soil with no organic matter addition (coir etc). Plants in 4" polybags.

General discussion about vanilla - planting, management, curing, markets and marketing.

**Handford Estate, Haileys Management, Deniyaya**

**Mr Ranjan Pelpola, Superintendent**

Tea estate around 280 ha. Factory at 1500 ft, but some land probably down to 1000 ft. High rainfall area, in range 3,000 to 4,500 mm/yr. Occasionally down to 2,000 to 2,500 mm/yr, but can be very high (just had over 800 mm in November). Dry season is Dec/ March, and again in Aug/September, but most "dry" months can have 200 mm or more in some years - concern that this would give poor flowering in these years.

Soils strongly acidic - tea lands. Try to bring up pH to around 4.9 to 5.0 (apply dolomite). Lot of tea rehabilitation and replanting going on.

Could get coir waste up from coast as back loads on tea transport at total cost of under Rs 1,000 per 7 ton lorry.

Looked at moderately sloping grassy sites, one quite high on slope and exposed, other more sheltered. Lot of surface rocks (but not a problem for vanilla). Lot of wild boar, and these would have to be controlled.

General discussion about vanilla - planting, management, curing, markets and marketing.

#### **Deniyaya Estate, Haileys Management, Deniyaya**

##### **Mr Ravi Dhanayake, Superintendent**

Tea estate, below Handford Estate. Around 400 ha, mostly on steep lands over altitude 1200 to 600 ft. Very similar to Handford. Prefer to use marginal tea land for vanilla but unlikely to be suitable. Have certain outlying blocks, and rocky blocks that not wanted for tea, and could be used for vanilla. Also got abandoned coconut block that could be rehabilitated and intercropped with vanilla.

General discussion about vanilla - planting, management, curing, markets and marketing.

#### **Walahanduwa Estate, Haileys Management, Galle**

##### **Mr Rangith Jayasooriya, Superintendent**

##### **Mr Sivaraja, Area Executive**

##### **Mr Nihal Undugoda, Manager Soils Plant and Fertilizer Analytical Laboratory**

Plantation is around 450 ha, close to coast on gently undulating land. Mixture of tea, coconut and rubber (rubber is new). Coconuts are for domestic market, still harvested but little management given. Could interplant with vanilla and get cross-benefits to coconuts as well as having good site for vanilla. Would have to fence out cattle. Also saw open grassy site with gentle slope that could be used for new vanilla plantings. Plenty of coir mulch available.

Estate is site for major analytical laboratory with capacity for analysis of 2,000 samples/month.

General discussion about vanilla - planting, management, curing, markets and marketing.

#### **Matugama area**

##### **Wogan Estate, George Steuart Management Services**

##### **Geekiyanakanda Estate, George Steuart Management Services**

##### **Major R.C. Peries, Chief Executive Officer**

Wogan estate rubber only. Looking for alternative crops for land unsuitable for rubber due to flooding and waterlogging. Such land not suitable for vanilla.

Geekiyanakanda estate primarily tea. Got 2 areas of land possibly available for vanilla: one is close to factory on moderate to steep slope (maximum possible for vanilla), with remains of abandoned tea and glyricidia shade plantings. Other is at edge of estate, gentle slope with some rocks - appeared very suitable.

Soils are acid, pH5 or below.

Company has third estate in area that available, but no time to visit.

General discussion about vanilla - planting, management, curing, markets and marketing.

#### **Kurenagala District, NW Province**

Coastal lands dominated by coconuts, on predominantly sandy soils. A lot of flat and moderately sloping land. Rainfall is around 80" increasing to 90" in wetter areas where pepper, cocoa are common. Large individual farmers (50-70 acres) in area as well as estates.

##### **Mr Dileepa Jayasinghe, Deputy Director, Agricultural Development Authority,**

##### **Kurenagala**

Accompanied visits in area.

**Kuranagala Research Center, Coconut Estate, Potuhera**

Export Agricultural Crops Research Department vanilla trial, looking at live/dead supports intercropping in coconuts. Well maintained at soil level, and some looping being done, but severe soil problem leading to root rot and death of stem at soil level. Either a disease problem, or associated with termites. Termites can be common in old coconut lands, and will be encouraged by use of coir mulch.

Area reportedly gets very strong dry season in Jan/Feb.

**Reedegama Estate, Dodangaslanda**

Farmer with extensive coconut areas. Replanted at 30x20 ft spacing to provide scope for intercropping. Has given good central interrow where could place 2 rows of vanilla - either on glyricidia or on local wild castor plant (has good structure, gives little shade, and establishes from cuttings). Land flat to gently sloping.

**Mr Bandaiya, Delwita**

Farmer with large landholding with extensive pepper, clove and cocoa plantings. Interested in vanilla. Mostly steeply sloping land.

**Miss W.T. Rosalinnone (owner Mr W.T. Soloman Appuahamy absent), Mawatagama**

Small farmer with one clump of vanilla. Some looping, but main vines suspended on horizontal platform. No idea of vine management or stimulation of flowering. Is providing rooted cuttings for Agricultural Division.

**Mr B. Karunaratne, Dambadeniya**

Large vanilla plants climbing high into tall trees. Pollinates flowers that come naturally, but no idea of plant management and stimulation of flowering. Dried beans and uses to flavour tea. Beans that he had had good aroma. Says it would be possible to get a truck load of planting material from farmers in the area.

## Appendix III

### Key Parameters for Rapid Processing Method

1. Take mature green beans (bottom tip will have started to change colour from green to yellow/brown/black)<sup>1</sup>. When ready to start processing, cut into half inch long pieces.
2. Place the cut pieces in closed vessel and maintain temperature at 60°C for 72 hours<sup>2</sup>.
2. After sweating, remove cut pieces (they will be a chocolate brown colour, and dry with hot air at 50°C<sup>3</sup>).

<sup>1</sup> immature beans should be stored for up to 10 days to promote ripening. Over-mature beans (split) can be used. If possible, do not use beans less than 4 inches long. Mature beans can also be stored (in small piles at ambient temperatures in shaded conditions - check that they do not heat up) for 7-10 days before starting processing if necessary.

<sup>2</sup> at a commercial scale, beans would be placed in stainless steel trays with perforated bases (maximum depth of beans in tray 6 inches), and the trays placed in a large drum having an outer water jacket. A lid is placed on the drum (no special sealing required) and hot water at 60°C is circulated through the water jacket. The beans will release a little fluid which is corrosive.

At a pilot scale either a pot (with lid) could be partially immersed in a water bath; or an electric oven could be used (any exhaust outlet closed). If a large oven is used (large relative to volume of beans inside) it could be advisable to place a tray of water inside the oven to ensure a high level of humidity and prevent the beans drying. This part of the process is a sweating.

<sup>3</sup> indirect driers should be used (no exhaust from heat source must pass through beans). Excessive air flow should be avoided. The objective is to give a slow, gently drying. Product should be removed when moisture content is around 25%. (When dried to below 18% the availability of vanillin can be reduced, but the market does not like to buy water, and will usually adjust the price for the product on the basis of moisture content over 18 to 29%.