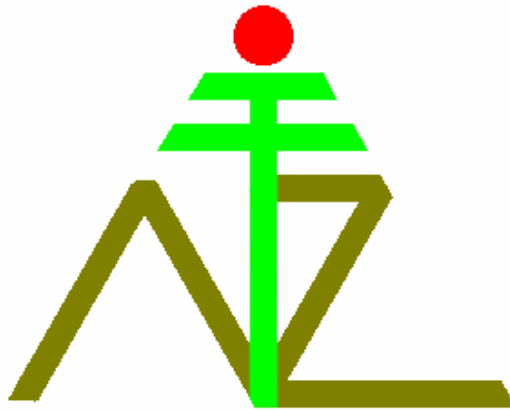


NRDC/ZEGA Training Trust



Workshop Proposals

**EUREP GAP Auditing
in the
Small Scale Farming Sector**

Training and Annual Update

NRDC/ZEGA Training Trust

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Documentation pertinent to Practical Audit Exercises

Note:

- 1. This documentation was developed in a parallel project involving ZEGA, NZIT and Agriflora and supported by funds from the Private Sector Development Project.*
- 2. Documentation is relevant to the old situation where Agriflora operated the scheme and will need to be revised to meet the requirements of the new LACCU, Farmer managed scheme.*
- 3. Procedures and proformas are supplied for reference only. Actual current documentation for the exercises is extracted from the Farmer files at the time of doing the auditing exercises.*

1. Aims and objectives

This workshop seeks to facilitate the achievement of EUREP GAP by Small Scale Farmers by:

- Facilitating exchange of experience and explaining how small scale farmers can meet the requirements for EUREP GAP
- Explaining the EUREP GAP audit methodology for the Small Scale Farming Sector
- Producing suitably trained Farm Inspectors & Extension Officers who will work with Small Scale Farmers
- Producing training materials that can be shared and used for future Auditor training
- Encouraging auditors to work together to ensure that there is a common understanding of the requirements and uniformity of standards accepted by Auditors.

Course duration

5¹/₂ Days Experienced Auditors

1-2 days to be added for less experienced groups

Course can be delivered on consecutive days or can be divided by activity so that all the activities and associated instruction and delivery are addressed over a period of time (max one month)

2. Selection of Participants

This course is designed primarily for experienced personnel who will work and Farm Inspectors and Internal Auditors I the Small Scale Farming Sector. Therefore candidates for the course should have:

- A formal qualification, minimum Diploma, in an Agricultural subject
- At least one year of experience in a practical farming situation
- Reasonable understanding of:
 - The principles and practices of Good Agricultural Practices
 - The principles and practices of Safe Food Production
 - Safe and Effective Use of Pesticides
- Some experience of or exposure to practical auditing of GAP and Food Safety

Personality is also important and the Candidate should be:

- Able to communicate effectively with all employers, managers and farm staff
- Open minded and able to think laterally
- Able to reason, analyse and make decisions
- Able to keep accurate records and meet deadlines for reports

Persons who do not have all the necessary exposure, knowledge and skills may wish to consider attending some of the other programmes available at the Trust.

These include:

Training of Trainers in food safety	6 days
Safe and effective management of pesticides in a Small Scale Cooperative	
Project leaders	2 days
Operators and Extension staff	5 days
Development of a record and traceability system	5 days
Introduction to Internal Auditing of GAP & Food safety	10 days

Lead Farmers may also benefit from attending this Audit workshop which will significantly improve their understanding of the Audit process and the standards required. This will assist them in explaining the requirements and audit process to fellow farmers. It is not however expected that they will complete the assessments where candidates are expected to complete the evaluation of the Quality Manual, write a formal Audit Report or pass the written examination.

3. Workshop programme

Monday 0800

- Introduction of Participants and Instructors
- Introduction to the programme
- Revision of reasons for developing Codes and Market Labels and a resume of Buyer, Supermarket and consumer requirements
Group exercise: “What you want and why you want it”
- Relevance of Codes and Market Labels to the Small Scale Sector, (Country, EUREP, ETI, Natures Choice, etc.)

Coffee

- Roles of Farm inspectors, Internal Auditors, External Auditors, Training Service Providers and Consultants
- Discussion
“Resolving the conflicts of interest of these groups and their activities whilst achieving clear, uniform and complimentary training messages and advice for the small scale farmer”
- Establishing effective Farmer : Auditor relations

Lunch

- Review of the Audit Process as it applies to Cooperative Groups in the Small Scale Farming Sector

Tea

- Review of the Audit Process as it applies to Cooperative Groups in the Small Scale Farming Sector

Homework

- Review of evidence that can be provided by the Small Scale Sector to meet specific EUREP GAP requirements
Group to split the Requirements between the group members
Groups to consider, what evidence to look for and accept, how to access evidence and how to verify the evidence
Feedback to be ready for presentation on Tuesday afternoon

Note: For inexperienced Groups the activities and homework planned for the first day of the programme will need two days for delivery.

Tuesday 0800

- Site visit to see Farms and Depot facilities to be used in the Practical Audit Case Study

Coffee

- Modality of Auditing Small Scale Farmer Groups for EUREP GAP (Option 2, the PMO)
- Preparation of the Audit Plan for the Case Study Audit

Lunch

- Discussion of Homework:
“How the requirements for GAP and Food Safety can be met in the Small Scale Farming Sector”
Feedback from participants regarding evidence collection and evaluation from the Small Scale Sector in relation to the requirements for EUREP GAP

Tea

- Discussion of how the requirements for GAP and Food Safety can be met in the Small Scale Farming Sector
Feedback from participants regarding evidence collection and evaluation from the Small Scale Sector in relation to the requirements for EUREP GAP

Homework

- Read:
The Quality Manual pertaining to the Site visit and the Practical Case Study Audit
EUREP GAP Annexes 2-4
- List procedures and practices described in the manual that you will need to verify on the Practical Farm and Depot Audit on Thursday

Wednesday 0800

- Round Robin Audit of Evidence (Documentation and Records), pertaining to selected requirements in the EUREP GAP standard

Coffee

- Discussion of round Robin Audit exercise
- Review of the requirements for the Quality Manual as specified in the EUREP GAP General regulations
Annexes 2-4

Wednesday cont...

Lunch

- Participants to prepare a check sheet and conduct a Desk Audit of the Quality Manual

Tea

- Feedback and discussion of the results of the Quality Manual Audit
- Review of procedures and practices to be verified during the Farm and Depot Audit

Homework

- Preparation of the Farm and Depot check sheets to be used for the practical audit

Thursday 0800

- Practical supervised audit of the Depot and one Farm site per person (Note: each person will have the opportunity to see two or three farm sites but will only act as lead auditor on one of these sites)

Friday 0800

- Review of practical audit visit

Coffee

- Contents and layout of an Audit Report
- Preparation of an Audit Report for the Case Study Quality Manual, Farms and Depot

Lunch

- Preparation of an Audit Report for the Case Study Quality Manual, Farms and Depot
- Course review

Saturday 0900

- Written examination

4. Assessment of participants

Learning by doing is an effective method of:

- Encouraging auditors to discuss the acceptability of what they are looking at
- Giving Auditors the opportunity to learn from each other
- Building confidence
- Making it easy for learning to be related to the practical situation when the Auditors return to their work place.

This Case Study provides both a learning experience and an opportunity for assessment of the strengths and weaknesses of individual Auditors

The Case Study is built around the Agriflora Small Scale Farmer Scheme that is a Partner, with NZTT in the CPHP project.

Cooperation in these types of studies is also a valuable learning experience for the Small Scale Scheme staff and farmers who gain experience of the Audit process and confidence in presenting themselves for Audit.

The Case Study is divided into three parts:

- Desk audit of the Quality Manual
- Practical 'On Site' audit of the Farms and collection Depot
- Completion of the Audit Report

Introduction

Agriflora Small Scale Makeni Depot and Farms

Agriflora operates a Small Scale Farmer Scheme that produces Baby corn and Mange tout peas for export.

Farmers are also involved in the production of local crops and coffee.

Farmers are divided into cooperatives and deliver produce to a local Depot.

Agriflora provides inputs and extension services and employs spray teams that are based at each Depot to spray export crops as necessary.

Farmers deliver their produce to the collection Depot where it is weighed, recorded and placed in the cold store to await collection by Agriflora cold trucks.

Produce is collected from the Depot cold Store by Agriflora and is packed and exported from the commercial pack house at waterfalls.

Exports are primarily to the Supermarkets in Europe.

Agriflora commercial farms achieved compliance with the EUREP GAP standard late last year but the Small Scale Section is still working towards compliance and aims to be ready for external audit at the end of

Case Study Part One

Desk Audit of the Quality Manual

Introduction

Group Certification for EUREP GAP, using Option 2, requires that the farmer Group has a 'Quality Manual' in place to explain the relationships between the partners in the Group and how the systems pertinent to the EUREP GAP requirements are controlled in the Group situation.

Guidelines for the content of the Quality Manual are given in Annexes 2-4 of the General Regulations.

Each of the topics specified in these annexes, where relevant to the situation should be regarded as a Major Must as without effective controls in place there can be no reliable control of standards of production and produce.

It remains for the Individual Auditor to decide whether the system described in the Quality Manual is adequate and can be verified as working effectively in practice.

Many of the systems described can be audited as a desk exercise but the evidence must then be verified during the Farm and Depot Site Audits.

The purpose of this exercise is to Desk Audit the Quality Manual for the Agriflora Small Scale Farmer Scheme.

You are supplied with the Draft Quality Manual, Appendix 1, and are asked to carry out the following tasks.

Tasks

1. Read Annexes 2-4 in the EUREP GAP General Regulations
2. List all the items that should be included in the Quality Manual as it relates to the Small Scale Farmer Scheme described and visited.

3. Prepare a check sheet for the Quality Manual showing:

Topics

Requirements: Qualification, allocated responsibility, funding, longevity, review, contractual arrangements, etc

Lay out your check sheet so that you can make comments as you read the manual.

Remember that you will need space to note what you are satisfied with and what you still need to verify as being implemented reliably and effectively in the practical farm and depot situation.

4. Complete a desk Audit of the Quality Manual supplied
5. Make a list of all the items included in the Quality Manual that you need to verify as being implemented reliably and effectively in the practical farm and depot situation.

A copy of your completed Quality Manual check sheet should be retained for reference and handed in as part of the assignment Audit report at the end of the course.

Case Study Part Two

Practical Audit Exercise

Introduction

The second part of the EUREP GAP Audit requires a site visit to audit a sample of farm production sites and associated structures.

You have already seen the basic layout of farms and collection depot and are now asked to carry out the practical site Audit for the Makeni Depot and Farms

Your visit host and facilitator is: Perry Ngoma &

Remainder of class should divide into three groups.

All three groups should appoint a lead auditor and carry out an audit all of the aspects of EUREP GAP relevant to the Farm and Depot activities.

You are provided with the official EUREP GAP Check sheet and the NZTT Check lists used for routine Farm and Depot inspections.

Tasks:

1. Make an Audit plan and communicate your requirements to Perry who will make the necessary arrangements at the Depot and with the farmers
Copies of the plans, requirements and correspondence should be retained for reference and handed in as part of the assignment Audit report at the end of the course.
2. You are asked to carry out a full audit of the Depot and a sample of farm sites

Your Audit should comprise

One Opening meeting	Organised and delivered by the class or nominated Class representatives
Depot and farm site visits	Each Group should audit the Depot and one farm site per group member. All groups should then combine their farm site observations
Closing meeting	Organised and delivered by the class or nominated Class representatives

Please also nominate a Group member and give feedback and thanks to each of the Farmers that you visited

Copies of your completed check sheets for the Depot and Sample Farm sites visited should be retained for reference and handed in as part of the assignment Audit report at the end of the course.

Case Study Part Three

Audit Report

Introduction

The Audit report is the official notification to the organisation of the outcome of the Audit. Your audit report should:

- Note the details of the Audit Date, persons met, sites visited, auditors involved
- Combine the results of the Quality Manual and Site visit Audit
- Highlight positive aspect of what you have seen during the Audit
- Confirm the requirements discussed in the Closing meeting
 - Outline problems encountered
 - List corrective actions required, (Cross referenced to label requirements)
 - Confirm the action plan, agreed at the closing meeting, for the corrective actions required

Tasks:

1. Prepare an Audit report for the Makeni Depot and Farms
This should combine all your observations from the audit of the Quality Manual and that of the Depot and sample Farms visited.

Please submit, as Appendices to your report, your audit plan and the completed check sheets for the Quality Manual, Farm and Depot audits.

NRDC/ZEGA Training Trust

**Internal Auditing of Good Agricultural Practice and Food Safety
Written Test**

Time Allowed: 3 Hours

Please answer all the questions

Section A Good Agricultural Practice and Food Safety

50 marks are allocated to this Section

1. a. Explain the term 'Good Agricultural Practice'.
b. Describe briefly how a producer of flowers or vegetables can implement Good Agricultural Practice in a Small Scale Farm situation.
2. a. List the **Three** major categories of risk to food safety.
b. Give **Two** examples of risk in each category and explain briefly how, in each case, the risk can be minimised or removed.
3. Code compliance requirements frequently refer to 'Risk analysis'.
a. Outline the procedure for conducting and documenting a risk analysis.
b. List the areas of concern that should be considered when conducting a 'Risk analysis' on **One** of the following:
 - Use of a new production area
 - Use of animal manure
 - Working conditions for farm staff
 - Handling and transport of vegetables from field to pack house
4. a. List the key components of training for 'Spray men'
b. Explain how you would confirm that the training that has been provided is adequate and acceptable.
5. a. Explain the following terms:
 - Re-entry time
 - MRL
 - PHI
b. Explain how to ascertain whether these restrictions/limits are observed.

Section B Auditing Practices

50 marks are allocated to this Section

6. a. List the roles of a 'Farm Inspector and of an Internal Auditor in a Small Scale Cooperative group
- b. Explain the conflict that arises between the roles of trainer, consultant and auditor and how this conflict can be avoided whilst ensuring that the farmers receive clear messages about what is required to comply with the standards
- c. Differentiate between Internal and External Auditing
- d. Explain why External Auditing of Country codes and Labels is required by outside NGO's and Supermarket Buyers

7. a. Define the term 'Auditing'
- b. List the stages of the 'Audit Process' and explain what should happen at each stage.

8. a. Explain why an Auditor must observe 'confidentiality' regarding all information seen and heard during the audit process.
- b. Explain how to achieve an accurate result when auditing a farm

9. a. Explain the following terms:
Verification
Triangulation
Record trail
Performance indicator/Compliance criteria
Compliance
- b. Comment on the merits and limitations of an open ended Compliance Criteria stating "Adequate washing and toilet facilities must be provided".
- c. Prepare a series of specific statements that would allow this statement to be audited accurately.

10. a. Comment on the merits and limitations of carrying out 'spot checks' of topics included in a market label audit.
- b. Explain when to use a self designed check sheet instead of the formal code check sheet
- c. Explain how to use this sheet to involve supervisors in the audit process and to gain their commitment to working towards compliance.

Section C Codes and Market Labels

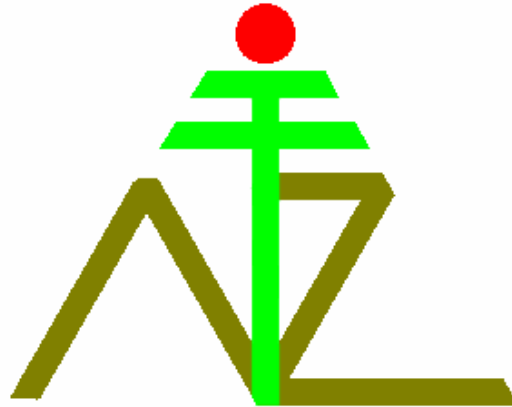
25 marks are allocated to this section

11. Outline the key concerns and characteristics of the following client groups, that have influenced the development of Codes of Practice and Market Labels:

Supermarket buyers
Supermarkets
End users

12. a. Explain to a producer of Vegetables for export the reasons why he/she should try to become accredited for EUREP GAP label.
- b. Explain how accreditation for the EUREP GAP label is achieved.
- c. Explain the PMO system of achieving EUREP GAP accreditation and comment on the merits and limitations of this system.

NRDC/ZEGA Training Trust



Workshop Proposals

EUREP GAP Auditing

Annual Update

NRDC/ZEGA Training Trust

NRDC Business Centre,
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Zambia

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1. Introduction

The opportunity for Auditors to come together annually for revision and update is essential and will help to ensure that Auditors:

- Remain up to date with Code and Label requirements, legislation etc.
- Have the opportunity to share experience and discuss common problems that have arisen in the course of their activities
- Establish uniform understanding of acceptable methods of achieving standards
- Learn from each other
- Remain motivated, enthusiastic and interested in the job

This programme has been designed for use with the team of Company and Country Code Internal Auditors and will be implemented in April/May 2005 as part of the preparation of the Training Trust Farm for the External EUREP GAP Audit.

All participants for the programme have already undertaken 2 weeks of formal training in the Auditing of GAP and Food Safety.

Details of the participants are given below:

Name	Employer	Auditing Roles	Training in Auditing
Isaac Nkhungulu	NZTT	Country Code	2 weeks 2000
Ernest Muzukutwa	NZTT	Country Code Internal Audit of EUREP GAP (LACCU)	2 weeks 2003
Elias Kansembe	NZTT	Country Code	2 weeks 2003
Geoffrey Matutu	NZTT	Internal Audit of EUREP GAP (NZTT)	2 weeks 2003
Perry Ngoma	NZTT	Internal Audit of EUREP GAP (LACCU)	2 weeks 2003
Lister Mwamba	York	Internal Audit of EUREP GAP (York Farm)	2 weeks 2000 2 weeks 2003
Kakenge Namakando	York PH	Internal Audit of EUREP GAP (York)	2 weeks 2003
Josphine Nayame	York Kashima	Internal Audit of EUREP GAP (York)	2 weeks 2003
Clarence Chisela	Chalimbana Fresh	Internal Audit of EUREP GAP (Agriflora)	2 weeks 2003
Hamakuni Lubaba	Chalimbana Fresh	Internal Audit of EUREP GAP (Agriflora)	2 weeks 2003

Workshop Duration: 3 Days at NZTT

2. Workshop programme

Day 1	0900	Introduction to the workshop Participant to share personal experiences Outline of audits conducted Achievements and challenges
	Coffee	
	Lunch	Desk Audit and Audit plan for Farm Audit
	Tea	Topic presentation and relevance to audits in the industry Practical Audit exercises
Day 2		Working in groups to conduct the Farm Audit Case Study outline overleaf
Day 3		Discussion of Audit outcomes and preparation of individual reports Feedback to management

**Internal Auditing
of
Good Agricultural Practice and Food Safety on the Farm**

**Practical Audit Exercise
NZTT Training Farm**

Introduction

NZTT operates a small commercial training farm producing a range of export vegetables and roses.

The farm operates as a commercial out grower for vegetables with produce going, via York Farm, primarily to supermarkets in Europe and as a direct exporter for flowers the Dutch auction.

Thus the Farm needs to be compliant with various market labels and Codes, ZEGA, MPS, EUREP GAP, ETI, etc.

Income from exports helps to support the cost of training provision for Diploma students. The NZTT farm is a new and developing farm and is working towards achieving EUREP compliance by

Instructions:

1. Please divide as follows:

Visit hosts and facilitators:

Please can you;

Ensure that evidence is available and can be audited with minimum disturbance to routine farm activities.

Act as guides for the audit groups

Remainder of class should divide into three groups.

All three groups should appoint a Lead Auditor and each Group should audit all of the aspects of the EUREP GAP Code. Note that this is a pre-audit and advice and recommendations will be required.

2. Each group should plan and organise their audit and communicate their requirements to the visit hosts before
Copies of the plans, requirements and correspondence should be retained for reference and handed in as part of the assignment report at the end of the course.
3. Each Group should audit all aspects of the Code
Each individual should complete an Audit report form noting the aspects of good practice and corrective actions required.
Findings and recommendations will be discussed at the end of the day and completed audit records should be retained for reference and handed in as part of the assignment report at the end of the course.
4. A Lead Auditor from the class will be nominated to prepare and present feedback and recommendations from the Class for the Managers meeting on

Appendix 1

Documentation from the Quality Manual that is pertinent to Practical Audit Exercises

- Staff organisation and allocation of responsibilities in the Agriflora Small Scale Farmer Scheme
- Farmer commitment to comply with EUREP GAP requirements
- Internal Audit check sheets for Depot and Farm sites
- Risk assessment for new sites
- Use of animal manure Risk assessment
- Environmental policy Advice notice for Farmers
- Management of Pesticide use
- Hygiene risk assessment and Cold chain management
- Traceability
- Production guidelines for Baby Corn
- Farmer files:
 - Procedures for completion
 - Farm resume
 - Farm plan
 - Cropping plan
 - Allocation of responsibility on the farm
 - Planting records
 - Crop scouting records
 - Spraying records
 - Harvesting records
- Depot files:
 - Contents

Note:

1. *This documentation was developed by NZTT in a parallel project involving ZEGA, NZTT and Agriflora and supported by funds from the Private Sector Development Project.*
2. *Documentation is relevant to the old situation where Agriflora operated the scheme and will need to be revised to meet the requirements of the new LACCU, Farmer managed scheme.*
3. *Documentation provided here constitutes the major part of the Quality Manual required for EUREP GAP compliance and used in the practical Audit exercise.*
4. *Actual current documentation used for the Farm and Depot Audit exercises will be extracted from the records at the Farm sites visited and from the Farmer files in the Depot at the time of doing the auditing exercises.*

Agriflora Zambia Ltd.

Quality Manual

Small Scale Farmer Scheme

Draft

1. Design of the Agriflora Small Scale Farmer Scheme and operation of the Scheme as it is relevant to the achievement of EUREP GAP compliance

EUREP GAP requires that there are clear lines of communication and clear definition of who is responsible for implementation, monitoring and control of each aspect of the production that will influence product quality.

Allocation of responsibility for each of these activities is also essential if the standards specified in the Label Performance Criteria are to be achieved at all times.

An understanding of how the scheme operates is also important in a project like this where there are many stakeholders and development of skills and understanding in key stake holders is paramount to the on-going sustainability of achievement of the Label requirements.

Key stake holders in relation to EUREP GAP Compliance by the Small Scale Farmer Scheme include:

Direct Participants

in the scheme	Agriflora Small Scale Farmer Management Team Agriflora Depot and Depot staff Depot clerk, employed by the Cooperative Cooperatives Farmers
Service Providers	Agriflora Agronomy Department staff Agriflora Pack House Management

The interrelationship between these groups and their roles and responsibilities pertinent to activities relating to EUREP GAP, are as follows:

Roles and responsibilities of the various Departments of ‘Agriflora’ in relation to EUREP GAP compliance

• Agriflora Small Scale Farmer Management Team

Key personnel in this department include: Scheme manager
Farmer Trainer
Internal Auditor.

These persons are responsible for:

- The Public profile of the scheme
- Recruitment of farmers
- Management of all aspects of the scheme
- Sourcing finance and technical advice as needed
- Provision of technical advice and training for farmers
- Ensuring that advice remains current
- Sourcing and supplying inputs for farmers for export vegetable production
- Operation of a trial plot
- Conduct of Internal Audits of EUREP GAP compliance
- Collection and transport of produce from depot to pack house
- Operation of each Depot
- Liaison with farmers via the cooperative committee and Agriflora Extension staff

- **Agriflora Depot staff**

Each Cooperative has a Depot comprising short term storage facilities for inputs, an office, grading area and cold room. This facility is provided and run by Agriflora.

Key personnel in this department include: Depot Coordinator/Extension Officer, Produce graders
Spray team.

These persons are responsible for:

- Advice to the farmers
- Liaison between farmers and the scheme management team
- Issue of inputs
- Operation of the cold room
- Compilation in liaison with the Depot Clerk and internal auditing of Farm records
- Receiving, grading and recording produce
- Decisions to spray
- Application and records of application of pesticide
- Weekly internal audit of all farm records

- **Depot clerk**

Employed by the Cooperative but based at the Agriflora Depot

Key responsibilities of the Depot Clerk include:

- Communication between Agriflora and the Cooperative members
- Collection and collation of data

- **Cooperatives**

All farmer participants in the Agriflora Small Scale Outgrower Scheme are required to belong to a Cooperative.

All decisions and business agreements are made between Agriflora and the Cooperative Executive Committee although each farmer has an individual contract with Agriflora

Key responsibilities for the Cooperative Executive Committee include:

- Communication with members and and negotiation with Agriflora
- Collective responsibility to ensure that all production regulations are adhered to by all producers
- Payment of individual farmers for produce, (Agriflora will pay the cooperative)

- **Farmers**

Each farmer has an individual contract with the Agriflora Small Scale Scheme. This contract specifies the commitment to follow rules relating to production methods and standards and as a result of this project a commitment to comply with the EUREP GAP requirements.

Key responsibilities of each farmer include:

- All aspects of production except pesticide spraying
- Collection of records in accordance with instructions from Agriflora
- Collection of crates and delivery of produce to the Depot

- **Agriflora Agronomy Department**

- Provides agronomic advice and assists in the development of Crop Production Protocols
- Liaises with buyers to determine what varieties may be grown and what pesticide products may be used

- **Agriflora Vegetable Pack House**

- Information on the specifications for incoming produce and feedback on the quality of produce received
- Grades, packs, exports and markets produce
- Instigates action if problems are identified with produce prior to export or in response to complaints from buyers

Modality of implementation of procedures and practices leading to EUREP GAP compliance

To facilitate the implementation of EUREP GAP by all active Farmer exporters in all Depots it was decided by Agriflora to work initially with three Cooperatives, Makeni, Buteko and Lusaka South.

These Cooperatives would be used as a pilot for all new procedures and practices which once proved to be acceptable could be transferred to the other cooperatives.

NZTT staff would work primarily with the Small Scale Farmer Trainer, the Internal Auditor, the Extension Officers and farmers in the pilot groups.

Policies and procedures developed by NZTT for the Scheme would be discussed by the Scheme management team, amended to meet practical and EUREP requirements as necessary and then issued to Farmers by the Agriflora Small Scale Scheme management team.

All Farmer training sessions supplied by NZTT to farmers in the pilot groups have been attended by their Extension Officers and these Officers have followed up the implementation of the training on the individual farm sites.

The Small Scale Farmer Trainer has also worked closely with the NZTT Training providers with a view to extending awareness training to farmers in the other cooperative groups.

Development of the capacity of the Agriflora staff is recognised as being essential to the on-going sustainability of achieving and maintaining EUREP GAP standards throughout the scheme.

2. Briefing for Farmers and Commitment to comply with the Scheme requirements and with the EUREP GAP standards

Briefing

If farmers are to comply with the EUREP GAP standards it is important that they are aware:

- That the EUREP GAP standards are a condition of supplying their current export market, not just more Agriflora regulations.
- That the same standards apply to all suppliers of fresh produce into this market place
- Of what they have to do and how to do it
- Of the time frame that they have to achieve compliance
- Of what help will be available to help them to achieve compliance but that nobody is going to do it for them
- What benefits they will accrue if they achieve compliance
- What will happen to their produce if they do not comply
- That compliance is voluntary

It was also felt to be appropriate to raise awareness at this stage of the Roles of ZEGA and NZTT.

To raise awareness therefore a meeting was arranged at NZTT for representatives of each cooperative.

These same topics were then addressed by the Agriflora Small Scale Farmer Trainer at Field Days held in each cooperative.

Farmer commitment

After the briefing meeting, all farmers were given chance to consider what is involved in achieving EUPER GAP.

Then each farmer was asked to state their commitment, in writing, to complying with the Scheme rules and working towards achieving EUREP GAP.

This same letter also made each farmer aware that if at any stage during or after the External Audit he/she fails to meet the required standards then the export market for all other farmers in the same group will be adversely affected and EUREP GAP accreditation may be withdrawn.

A copy of the letter issued by Agriflora is provided overleaf.

**Agriflora
Small Scale Farmer Scheme (Export vegetables)**

Farmer commitment to comply with the Scheme regulations and with the EUREP GAP requirements.

Farmer Name:

Farm No. **Farm Code:**

1. I acknowledge that I have been briefed about the Agriflora Small Scale Farmer Scheme Regulations and have signed a contract indicating that I will abide by the Scheme Regulations
2. I acknowledge that I have been briefed on the requirements for EUREP GAP for Small Scale Farm production sites and that I have received the Audit check sheet for farm production sites in the Export Vegetable scheme.
3. I agree to comply with all the requirements specified in the EUREP GAP Audit check sheet for farm production sites.
4. I agree to attend relevant Field days and training sessions organised by Agriflora and to cooperate with the Agriflora Extension Staff and Auditors.
5. I understand that should my farm production site fail an Internal audit my produce will not be accepted for sale under the EUREP GAP label.
6. I understand that if my farm site fails an External EUREP GAP Audit my produce and that of all other farms in the same cooperative will not be accepted for sale under the EUREP GAP label.

Farmer Name: Witness Name:

Signature Signature:

Address:

Date:

3. Establishment of an Internal Audit Mechanism

Effective Internal Auditing and action in response to the findings is essential if standards are to be maintained between External Audit visits.

EUPEP GAP specifies that the Scheme must have:

- A designated Internal Auditor
- Records of Internal audits to show progress towards compliance and implementation of corrective action when necessary

Each farmer is also required to carry out and document one self audit annually

Effective internal auditing in this situation requires:

- All personnel involved to understand that standards must be maintained at all times not just for the audit
- Auditors receive adequate training and have the opportunity to work with other auditors to establish consistency of standards
- There are clear criteria to specify what must be in place at each site and user friendly paperwork to facilitate recording of findings and actions required

Agriflora have allocated responsibility for Internal Auditing as follows:

Internal Auditor/ Farm inspector:	Based at headquarters and to visit each Depot and five farm sites at each Depot weekly.
Depot Clerk:	To check all farm records of completeness before filing and to ensure that completed crop records are provided by the farmer before produce is accepted for export
Extension Officers:	To check all farm records, protective clothing and Depot facilities weekly
Lead Farmer and Cooperative Committee:	To assist the Extension Officer in persuading farmers to work towards compliance and maintain standards.

Independent internal Audit and Pre-Audit

The PMO model for auditing EUREP GAP

The EUREP PMO Audit model states that sample audits must be carried out on selected farms taken for a homogeneous group of small farm sites. Usually the square root of the number of farms in the group, (i.e. 5 farms from a group of 25 farms), is audited and these are judged to be representative of the whole group.

This significantly reduces the cost but has the major limitation that the whole group is judged on the basis of the farm sites in the sample audited.

Therefore if one site is found to be non-compliant then the whole group fails.

This means that it is essential that all farm sites presented for Audit have been found by the Internal Auditors to be fully compliant with the EUREP GAP requirements.

4. Risk Assessment of New Production Sites

EUREP GAP requires that all new sites to be used for production are assessed before production commences to ensure that the site is suitable for production.

Key issues are:

- The impact of the proposed farming activities on the natural environment in and around the farm
- The impact of the farming activities on the local community
- The suitability of the site for sustainable and safe food production

Risk assessment would apply new farmer who wish to join the scheme and to existing scheme members who were not actively exporting at the time of the External Audit but who may wish to resume production for export later in the season.

Note: Under the EUREP regulations for accreditation via the PMO audit mechanism the number of 'new' farms that may be accepted into each accredited Depot before re-audit is required is restricted to 10%.

Obviously the need to implement risk evaluation of new production sites does not arise until after the first audit and accreditation. However at the time of the first audit, procedures must be in place to show how new sites will be evaluated.

To address these requirements Agriflora have put in place the following:

Procedures for the Risk Assessment of new sites

Criteria for evaluation new production sites

A mechanism to ensure that all new production sites are working to EUREP GAP standards before produce is accepted for export.

These documents are provided overleaf for reference.

Agriflora
Small Scale Farmer Scheme (Export Vegetables)

Policy and Procedure for the Risks Assessment of New farm Production Sites

Policy

Agriflora is committed to the implementation of Good Agricultural Practice, (GAP), worker welfare and the supply of 'safe' food to the market place.

Therefore Agriflora will make a 'Risk Assessment' of each new farmer and farm site prior to the commencement of vegetable production for export under the Agriflora label. Farmers who are not willing to commit to the high standards required or whose farm site is unsuitable will not be accepted into the scheme.

All Risk assessments will be carried out by the Internal Auditor employed by the Agriflora Small Scale Farmer scheme.

Each new farmer and farm site will be visited and assessment will be carried out in accordance with the criteria and control measures specified.

Key aspects of the risk assessment include:

- Site location and neighbouring activities
- Previous and current land use
- Water supply
- Farmer commitment and capacity
- Farm management and production capability

- Impact of proposed farming activity on the surrounding environment
- Impact of the proposed farming activity on people living in the locality

The Internal Auditor will report to the Agriflora Small Scale Scheme Manager who will evaluate the Risks and accept, advise or reject the farm concerned as appropriate.

The decision of the Agriflora Small Scale Scheme Manager is final.

Procedure for Risk Evaluation of new farmers and farm sites.

1. The Farmer must complete an application form and submit evidence as requested to the Cooperative executive committee and then if accepted to the Agriflora Small Scale Ltd.
2. The Farm site must be visited by the Agriflora Internal EUREP Auditor who will meet the farm owner and manager and will check for compliance with the criteria specified for acceptance of new far production sites.

The Internal Auditor will report his/her findings to the Agriflora Small Scale Scheme Manager.

3. The Agriflora Small Scale Scheme Manager will evaluate the report and will accept, advise or reject the farm site as appropriate.
4. Produce from new farmers, who are accepted and who are members of a Co-op and Depot that has already been externally audited and is compliant with EUREP GAP will be exported under the EUPEP GAP label only after the farm site has met all the criteria specified in the Agriflora EUREP Farm Audit and compliance with these requirements has been confirmed by independent auditors, e.g. NZTT
5. The area of production admitted to a cooperative in the period between EUREP GAP audits will not exceed 10% of the area in production and inspected at the EUREP GAP audit.

Note 1: Acceptance to the Scheme is conditional upon the farmer concerned also being accepted by a Farmers Co-operative Group that is already involved with the Agriflora scheme or on the farmer becoming part of a Co-operative Group who apply to participate and are accepted as a new Group.

Note 2: Any farmer who is a Co-op member but has been out of Export Vegetable production for more than 6 months will be considered to be a 'new farmer' and 'new site'.

5. The production area to be used must be clearly demarcated, preferably with vegetation, and not intended for use for the production of other local vegetable crops.
i.e. Local crops and export vegetables should not be mixed in the same production area.

6. The site must have irrigation.
 - Water must be of potable quality
Or
Water must as a minimum be suitable for the irrigation of leafy vegetables
In this case water must be supplied to the crop by drip irrigation after the crop establishment phase and treated before use for washing hands and vegetables.

 - The water source must be free of visible risk of contamination by animals, human sewage and chemicals.

 - The water supply must be sustainable and sufficient for the area to be planted.

7. The site must have suitable storage for seed and fertiliser.

8. The site must have the following:
 - Field toilet and hand washing facility
 - Field shelter for produce
 - Suitable water for farm staff working in the crops and for 'crate washing

9. Farmer and farm staff must have some demonstrated competence to produce arable or horticultural crops.
Consider:
 - Qualifications
 - Experience
 - Quality of crops currently in the ground.

10. Farmer must have the land resources available to produce at least one hectare of export vegetables per year and must commit to producing a minimum of two crops per year

11. Farming activities proposed should not have an adverse impact on neighbouring land use, people living locally and the environment surrounding the farm.

Risk Assessment for new production sites

Topic	Potential Risks Identified	Controls Implemented
<p>Site situation and Neighbouring activities</p>	<ul style="list-style-type: none"> • Rubbish, waste, dust, etc. is blown on to the crop from neighbouring areas • Air pollution from neighbouring activities e.g. Busy roads, rubbish incineration, etc. • Cold chain cannot be maintained during transport of the produce to the Depot • Biological and chemical contamination from flood water 	<ul style="list-style-type: none"> • Farm sites next to waste disposal areas, industrial incinerators or mining activity will not be accepted • Farm site should be up wind of any potential sources of pollution and/or should be separated from potential pollution by a suitable distance of wind break. • Adequate transport should be available to take the produce to the depot. <p><i>Adequate re: Volume</i></p> <p>Low heating risk No contamination</p> <ul style="list-style-type: none"> • Farm sites subject to seasonal flooding will not be accepted
<p>Farm site organisation</p>	<ul style="list-style-type: none"> • Contamination with fresh manure deposited by farm animals and hens roaming freely on the site • Contamination with faecal material deposited in the crop by human activity • Contamination of export vegetable crops by pesticides sprayed on to adjacent crops for the local market or for export. 	<ul style="list-style-type: none"> • Farms that have livestock must fence either the livestock or the production area to exclude livestock from the production area • Adequate Farm toilets are provided and used • Export crops are grown in an identified block of land not intermingled with crops for the local market. • Export crops are grown at a ‘safe’ distance from local crops, (10m minimum). • Export crops are planted up wind of the crops for the local market

Topic	Potential Risks Identified	Controls Implemented
Previous and land use	<ul style="list-style-type: none"> • Pollution from waste disposal and mining • Chemical contamination with pesticide residues used on previous crops, e.g. Cotton or tobacco 	<ul style="list-style-type: none"> • Land used previously for waste disposal or mining will not be accepted. • Land that has been used for crops that are likely to have been treated with pesticide products with long persistence will not be accepted for export vegetable production for 12 months. <p>Note: Records of previous land use must be supplied on application and verified by a site visit.</p>
Soil type	<ul style="list-style-type: none"> • Soil type and chemical analysis may render production to be unprofitable or unreliable 	<ul style="list-style-type: none"> • Soil must be Class A or B and have acceptable levels of pH and EC. pH range 4-7 EC 0-2 m siemens
Water Supply	<ul style="list-style-type: none"> • Water may be contaminated with faecal pathogens or heavy metals, e.g. E. coli or lead • Sustainability of supply may render production to be unreliable or unprofitable • River water may be subject to periodic contamination with faecal or chemical waste • Well water may be subject to contamination from surface run off 	<ul style="list-style-type: none"> • Water must be tested and found to be suitable for irrigation of leafy food crops • Borehole output is measured at 3-4 litres / planted hectare of irrigated crops • River water may only be used with drip irrigation systems • Well sites should be at a suitable distance from animal kraals and manure storage and be protected from surface run off.

Topic	Potential Risks Identified	Controls Implemented
Farmer awareness and commitment	<ul style="list-style-type: none"> • Farmer is not aware of the standards laid down by EUREP GAP and fails to implement adequate procedures • Farmer lacks the commitment to ensure that EUREP GAP requirements are fulfilled at all times: <ul style="list-style-type: none"> - Staff are not trained and supervised adequately - Records are not maintained or are fabricated - Farm services and structures are not provided or maintained, toilets, hand wash, field shelter, etc. 	<ul style="list-style-type: none"> • Farmer must attend a briefing session prior to being accepted as an out grower • Farmer must sign a commitment to comply with the requirements of EUREP GAP • Farmer must agree to cooperate with the Extension staff and the internal and external auditors • Farmer must agree to attend farmer training days and to release staff for training provided by Agriflora. • Farm site is inspected by the Agriflora and NZTT Auditors and must be of an acceptable standard before any produce is accepted for export • Farm records are checked weekly with reference to crops in the ground by the Agriflora Extension staff. • Farm site and crop records are Audited three times per year by the Agriflora Internal Auditor.
Labour management	<ul style="list-style-type: none"> • Farmer is frequently off site and staff are not adequately supervised by suitably skilled supervisors in his/her absence 	<ul style="list-style-type: none"> • A staff organogram must presented and responsibilities for key activities clearly allocated. • Responsibilities must be allocated to suitably skilled and experienced personnel
Farm staff Awareness and skill	<ul style="list-style-type: none"> • Employees are not aware of the requirements for export Vegetable production and lack the necessary skills to perform to an acceptable standard. 	<ul style="list-style-type: none"> • Farmer is required to make a commitment to staff training • When production starts Extension staff visit the site frequently and will report unacceptable practices and provide staff training.

Agriflora
Small Scale Farmer Scheme (Export Vegetables)

**Impact of Proposed Export vegetable Production activity
on the Area around the farm**

**Summary of the general situation to be reviewed in relation to individual sites at
site inspection prior to acceptance of the farm into the Scheme**

Topic	Potential Risks Identified	Controls Implemented
<i>Pesticide use</i>	<ul style="list-style-type: none"> • Spray drift on to neighbouring houses and crops 	<ul style="list-style-type: none"> • Spraying is not carried out when it is windy • Spraying is only carried out with a knapsack sprayer • Crops are not to be planted within 5m of the boundary fence • Vegetation cover is to be retained along the field boundaries. • Planting of wind breaks is encouraged
Soil erosion	<ul style="list-style-type: none"> • Excessive dust released by land cultivation • Soil is washed into rivers and drainage ditches causing blockages and flooding 	<ul style="list-style-type: none"> • Land to be used is already in 'production' therefore no major change in 'dust' blowing is expected • Field surroundings will remain covered in vegetation • Organic mulch is used in many situations • Cultivation is not permitted on the banks of open water courses and where land is adjacent to a water course a vegetation barrier of at least 5m width must be left in place or planted. • Cultivation on slopes will be done across the slope not down the slope. • Planting of Vetiver grass hedges is encouraged
Water consumption	<ul style="list-style-type: none"> • Local aquifer is depleted 	<ul style="list-style-type: none"> • Land to be used is already used for crop production. Therefore no major increase in water use as a result of the change of activity is anticipated.

Topic	Potential Risks Identified	Controls Implemented
Contamination of area with waste, rats and flies	<ul style="list-style-type: none"> • Rubbish blows on to neighbouring land • Rats are attracted to reject vegetables • Children are exposed to pesticide waste water and ‘empty’ containers 	<ul style="list-style-type: none"> • Export vegetable production requires that there is a good standard of rubbish management implemented on the site. Therefore rubbish is not allowed to ‘blow around’. • Export vegetables will be fed to livestock, eaten, sold, composted. • Vermin control must be practised on all production sites • All waste water from sprayer washings will be poured into a soak away. • The Agriflora spraymen will return all empty pesticide containers to the Depot. All pesticide containers are recorded and disposed of in an acceptable manner at the Depot site.
Theft	<ul style="list-style-type: none"> • New people moving in the area may increase the risk of theft from neighbouring farms 	<ul style="list-style-type: none"> • People employed on the farm are likely to come from the neighbouring area. • Increased earnings by these people should reduce the incidence of theft due to need.
Pest population	<ul style="list-style-type: none"> • Population of pests may build up in the area and increase the threat of infection in local crops, e.g. Stalk borers 	<ul style="list-style-type: none"> • Crop rotation and/or periods of fallow are included in the proposed cropping plan • Adequate controls using IPM will need to be achieved in all crops grown for export. Therefore spread of pests from the export crops to the local crops is unlikely.
Home food production is reduced	<ul style="list-style-type: none"> • Land and water resources that have traditionally been used for local food production are now to be used for export crops 	<ul style="list-style-type: none"> • Only a small part of the farmers production resources are used. • Resources used in this scheme are a minute part of the land and water resources available in Zambia • Family income is increased so food security is improved

Positive Impacts of Involving the Small Scale Farming Community in the Production of Vegetable Crops for export.

Potential Benefits Identified include:

- Individual farmer benefits from having a reliable income in ‘hard currency’ on a regular basis
Most farmers already involved in the scheme cite the income from export vegetables as being an important and significant component of their monthly budget.
- Employment opportunities are provided within the local, rural community.
People are able to find employment in the area around their home so migration of people to Lusaka to find work is reduced.
Hours worked by farm staff in the small scale sector are not excessive so people employed to work in the export vegetable crops are also able to continue to raise their own crops on their home farmland and care for their family whilst still earning an income.
- Employment opportunities are provided for female persons.
Many of the employment opportunities in the export vegetable sector are suitable for and take by female staff.
This is particularly important in country where AIDS is pandemic and there are many ‘female headed’ households.
- Employment opportunities are created in the service sector for suppliers and extension workers
Many of these positions require ‘skilled and educated’ people and this creates career opportunities within the Agricultural Sector.
- Training in crop production and health issues is provided
Farm staff involved in the production and harvesting of vegetables for export will receive training in Conservation farming, Integrated Pest Management, Food Safety and many other areas. These topics are directly transferable to the community at large and can be expected to raise standards for home crop production and family health.
- Zambian economy benefits in general from reduced unemployment and increased production and trade.

5. Policy, Procedures and Risk Assessment for the use of Animal Manure

EUREP GAP raises concerns about the use of Animal manure as this is a potential source of faecal pathogens which could pose a risk to the health of consumers.

Farmers who use animal manure are required to conduct a risk assessment and to have in place procedures and practices that remove or reduce the risk to acceptable levels. Many of the Agriflora Small Scale farmers practice mixed farming and Agriflora positively encourages the use of animal manure.

Therefore it is essential that farmers are aware of how to use the manure safely.

NZTT have conducted Risk assessment of the use of manure by Small Scale Farmers in the scheme and have produced a policy and procedures for manure use that should reduce the risk of contamination to acceptable levels.

Practices proposed are based on the principles of how contamination occurs and accepted 'Good Practice' for the use of animal manure.

Contaminant monitoring will not be available in Zambia until the end of 2004 but when the service does become available at the National Institute of Scientific Research produce will be tested to ascertain whether the procedures proposed are adequate.

Documents pertaining to the use of animal manure are presented overleaf.

Agriflora Small Scale Farmer Scheme

Policy regarding the Use of Animal Manure

The Agriflora policy is to encourage the use of animal manure in the production of vegetable crops provided that:

- The type of manure used is acceptable
There must be no use of contaminated animal manure or of Human manure/sewage/effluent
- Manure is only used in amounts and situations where use of animal manure is appropriate
- Manure drying, storage and use does not present a significant risk to the environment
- Manure is applied by approved methods
- Use of manure is recorded, date, type, amount, by whom
- Use of manure is not judged to present a significant risk to human health

Justification for this Policy

1. Contribution of manure to the soil eco-system

Manure makes a positive contribution to the concept of a 'living soil' and to profitable, environmentally friendly crop production.

- Micro-organisms from the manure together with other soil flora and fauna that feed on the manure will facilitate the breakdown of crop residue on the soil surface and organic matter in the soil.
This will release nutrients contained in the organic matter and support and sustain the soil micro flora and fauna.
- The high populations of Micro-flora and fauna present in living soil contribute to the control of nematode pests and soil borne plant diseases.
Nematodes are a particular problem in Zambian soils and the reduced need for use of nematocides in soils that are high in organic matter is significant.

2. Contribution of manure to soil structure and crop nutrition

- Micro-organisms from the manure will facilitate the breakdown of crop residue on the soil surface and in the soil.

Note: African soils are naturally low in organic matter and this results in poor soil structure and erosion.

Regular additions of organic matter, manure and crop residue are therefore needed to maintain adequate soil organic matter content.

- Well decomposed organic matter in the soil, i.e. manure and decomposed crop residue will stabilise the structure and texture of the soil profile in the root zone and contribute to the achievement of an acceptable balance between good aeration, good water holding capacity and good drainage.
- Manure and decomposed organic matter contain many plant mineral nutrients that are slowly released into the soil and will support crop growth. These nutrients are less readily leached and contribute to a reduction in the use of readily soluble inorganic nitrogenous fertilisers. Note: Reduction in the use of inorganic nitrogenous fertiliser, in particular Ammonium nitrogen will also reduce the acidifying effects of fertiliser addition to the soil.

3. Use of a natural waste produce
 - Manure is a natural waste product of any form of animal production. In Zambia farm animals for meat or milk or sale are an integral part of many Small Scale Farming operations and where animals are kept in Kraals manure accumulates naturally.
 - If this manure is not used then large heaps build up on the farm, these heaps attract flies and Nitrates are lost to the ground or ground water when it rains. Therefore use of manure in the production of vegetable crops converts a waste material with the potential to cause environmental pollution into a useful resource.
4. Contribution to the farm economy
 - Animal manure provides a source of plant nutrients, particularly nitrogenous nutrients. Thus the use of manure will reduce the need to use the full amount of fertiliser specified in the production protocol. This will reduce production cost and increase farm profitability.
 - Farmers who produce Baby Corn can make additional income/savings by using the crop residue and rejects feed milk or beef cattle.
5. Contribution of the use of manure to the protection of the environment

Provided that manure is used correctly and not in excess, many of the effects of using manure will contribute to the protection of the environment. These effects can be summarised as follows:

 - Reduction in soil erosion
 - Reduced leaching of nitrate into the ground water
 - Reduced use of nematocides
 - Reduction in the use of inorganic fertilisers and the generation of acid and or saline soils

Risk Assessment of the Use of Animal Manure

Whilst Agriflora supports the view that the benefits of using animal manure far out weigh the small risks associated with its use, Agriflora also recognises the need to lay down procedures for use and to monitor the use to ensure that procedures are followed and food safety is not compromised.

Guidance given to farmers and routine monitoring of production activities includes:

- Advice to farmers, prior to acceptance into the scheme and the start of crop production, about the use of manure and the EUREP requirements relating to the use of manure.
- A weekly by a extension officer from the company who will review production in progress and advise as necessary.
- Quarterly auditing of all farm sites in production.

Controls that are in place to ensure that any risk to operator welfare, the environment or consumer health, are outlined in the table below:

Topic area	Potential risks considered	Controls implemented to minimise risk
Operator health	<ul style="list-style-type: none"> • Operators may inhale dust whilst applying the dried manure • Operators may become contaminated with food poisoning pathogens, e.g. Salmonella, whilst handling the manure 	<ul style="list-style-type: none"> • Operators are advised to wash their hands after handling manure • Operators always work in well ventilated conditions <p>Note: Operators are only involved in the application of manure occasionally</p>
Consumer health	<ul style="list-style-type: none"> • Dust from the manure may contaminate produce • Direct contact with manure or water splashed from the soil may result in produce becoming contaminated with various food poisoning bacteria, e.g. E. coli and Salmonella. 	<ul style="list-style-type: none"> • Manure is incorporated into the soil before planting therefore risk of contact with the growing crop is minimal. • Low growing crops, e.g. Peas are trellised to raise the produce off the ground and to minimise the risk of soil contamination. • Manure soup is only applied as a drench to the soil • Any incidence of produce contamination with E. coli or other food pathogens will be traced to the source, investigated and corrective action taken. No further produce will be accepted from that farm until the problem is solved. • In the future samples of produce will be screened at random to detect any contamination with E. coli.

Topic area	Potential risks considered	Controls implemented to minimise risk
Environment	<ul style="list-style-type: none"> • Leachate from kraals and manure heaps may pollute water sources • Nitrate leaching from production areas may contaminate ground water supplies 	<ul style="list-style-type: none"> • Kraals and manure heaps should be at a suitable distance from water sources • Manure heaps should be covered during the rainy season • Recommended application rates will not lead to leaching of significant amounts of nitrate <p>Note:</p> <p>The demand for manure on the farm almost always exceeds supply.</p> <p>Use of manure in crop production is actually using a bi-product/waste material generated by other activities on the farm and in so doing is reducing a potential environmental hazard.</p>
Neighbouring land users	<ul style="list-style-type: none"> • Leachate may contaminate water supplies • Manure heaps may smell and attract flies 	<ul style="list-style-type: none"> • Manure stocks are not stored near to water courses or human habitation • Manure application rates are low
Crop	<ul style="list-style-type: none"> • Manure may scorch the plant roots • Weeds may be introduced into the crop from seeds in the manure 	<ul style="list-style-type: none"> • Farmers are warned not to use fresh manure. • Adequate composting with crop residue is encouraged to reduce the weed seed count in the manure. <p>Note: Weeds do not pose a threat to any of the stake holders but do significantly increase the work load and cost of production.</p>

Guidelines for the Use of Animal Kraal Manure

Farmers who have livestock in enclosures may wish to feed rejects and crop residue to the stock and utilise the manure generated for crop production.

This practice is encouraged due to the beneficial effects of manure on the soil and the desirability of integrating compatible and mutually beneficial activities into the farm programme.

There are some problems associated with animal manure and farmers need to be aware of the following:

- Animal manure may contain small amounts of bacteria that can cause illness in humans, e.g. *E. coli* is found in cow manure and *Salmonella* sp. In chicken manure. Both of these bacteria can cause serious gastric problems in humans. If the manure used is allowed to contaminate produce whilst it is growing these pathogens may be transferred to people who handle or consume the produce. Similarly farm staff who handle the manure at application are at a small risk and should wash their hands after completing the task.
Human manure/sewage/night soil has a much higher probability of being contaminated with significant numbers of human pathogens. Therefore the use of this material or animal manure contaminated with this material is **forbidden**.
- Wet animal manure will leak 'juice' that has a high nitrogen/nitrate content. This is a potential contaminant of water supplies. Human consumption of high levels of nitrate, possibly from contaminated water may be at an increased risk of producing 'blue babies'. Nitrate contamination of ditches and rivers also promotes weed growth in the water and subsequently leads to silting up of the water course and eutrication of the water.
- Animal manure may contain a significant amount of viable weed seed, particularly if the animals diet has included grass, hay or weeds. Weeds do not pose a risk to human health but poor control will reduce yield and high weed population increases the amount of time/labour needed for weeding. Composting the manure before use will reduce the number of viable weed seeds in the manure.
- Fresh animal manure, particularly chicken manure, contains high levels of free nutrient ions and some free ammonia. These are likely to scorch young plant roots. Therefore it is essential to compost or dry the manure for a period of time, 2 weeks minimum, before use.
- Animal manure is of variable nutrient value. The nutrient value of the manure produced will depend on the type of animal and on the diet of the animal.
Hens > Sheep > Pigs > Horses > Cattle
Grain fed > Crop Residue < Grass fed
Therefore it is not recommended that manure should be used as the only source of crop nutrient. Farmers should examine the crop regularly prior to flowering and note the greenness and vigour of growth. Lush green leaves and thick stems

indicate that nutrients are being applied in excess whilst yellow leaves and slow stunted growth indicates that insufficient nutrient is being applied.

Top dressing programmes can then be adjusted accordingly.

All of these problems can be alleviated by use of the correct practices when using manure and it is essential that farmers who wish to utilise animal manure as part of the crop nutrition programme implement the following guidelines:

Preparation and storage

Manure that is removed from the kraal must be placed:

At a site that is not near to open water or to the borehole +/- 20m

At a reasonable distance from human habitation

Fresh Manure may be:

Dried before use 2 – 3 weeks

Placed in a heap to mature before use 2 – 3 months

Mixed with crop residue and composted before use 3 – 4 months

In the rainy season the manure should be covered to prevent leaching of the nutrient content.

Application

Manure should be applied, pre-planting, as part of the land preparation process.

The manure should be spread evenly over the centre of the bed and **incorporated** into the root zone.

It is important that no manure remains visible on the soil surface at planting.

The rate of application to use will depend on the type and amount of manure available.

As a rough guide:

Dried manure up to 4 tonnes / ha or 1 litres / metre length of bed

Wet manure &

Compost manure up to 10 tonnes / ha or 2 litres / metre length of bed

Manure should be measured and recorded in litres.

A 20 litre bucket is ideal for this and the same bucket can be used to carry the manure into the fields for application.

At these application rates the amount of base dressing used can be reduced by 50% in reasonably fertile soils.

Guidelines for the preparation and use of Compost Manure

Introduction

Preparation of compost manure is a method of increasing the volume of active organic matter available for adding to the soil and of speeding up the decomposition of crop residue and other 'green' material.

In addition to this composting will reduce the number of harmful bacteria and weed seeds in the manure.

Materials to use

Almost all types of 'green' vegetation can be used.

Animal manure or live compost from a previous heap

Crop residue

Vegetable rejects

Grass and weeds

Green branches cut from the bush. Those cut from nitrogen fixing plant are particularly useful

Do not use household scraps and meat or meat bones, as these will attract rats.

Dry and woody materials will take longer to decompose than soft green material.

Small pieces of material/chopped material will decompose faster than large pieces of material

Use of a mixture of materials is desirable to achieve an acceptable balance of carbon and nitrogen nutrients for the bacteria involved in decomposing the material.

Construction of compost heaps

- Start by selecting a suitable site that is convenient in relation to the source of materials and where the compost is to be used but is also at a safe distance from water sources.
- Scrape a shallow depression, +/- 10cm to house the base of the compost heap.
- This may be 1m x 1m or 1-2m x 'n' m depending on the amount of material available.
- Lay a base of dry, twiggy material, branches, baby corn stems etc.
- Build on to the base successive layers of green material, manure and dry bushy material until the heap is +/- 1m high.
- Ensure that as each layer is added the whole area of the heap is covered to an even depth and that the material is consolidated.
- Finish the heap with a layer of branches or dry material,
- Water sparingly and cover with plastic to keep the heap moist, to prevent drying out in the dry season and to prevent water logging in the rainy season.
- Insert a stick to be used for temperature measurement.

Management of compost heaps

Temperature control

Monitor the progress of composting.

If the heap becomes very hot, stick to hot to hold/ steam or smoke rising, add water.

If this fails the heap should be opened and rebuilt.

High temperatures will kill beneficial bacteria and slow down the composting process.

High temperatures are a result of using too much green material in the mix.

If the heap becomes too dry add water.

Turning

Turning is essential to ensure that the composting process is carried out thoroughly to the whole heap.

Turning should be carried out 4 – 6 weeks after the heap was built.

Dig a second shallow hole to accommodate the base of the heap.

Place the dry, twiggy material from the top of the original heap into this hole.

Turn the partially composted material on to this base, top to bottom and sides to middle. Consolidate each layer and cover as before.

This will ensure that the outside of the heap becomes thoroughly composted.

Use of compost

Compost prepared in this way will be ready for use in 3 – 4 months from the start of the composting process.

Compost that is ready for use will be brown and crumbly and slightly sticky.

Compost manure should be used in just the same way as animal manure,

i.e. Apply pre-planting and incorporate

Apply up to 10 tonnes / ha or 2 litres / metre length of bed

Reduce the recommended base dressing by half.

Compost manure **should not** be used at this stage for surface application as mulch.

Guidelines for the Preparation and Use of Manure Soup/Tea

Introduction

Manure soup can be used for the top dressing as it supplies a range of nutrients necessary for plant growth. Growers who wish to reduce on the cost of buying fertiliser or to take an organic approach to production should consider this as a potential source of plant nutrients.

Materials needed

The materials needed for the preparation of the manure soup are as follows:

- Manure
- Empty woven sack, e.g. 25kg Mealie Meal sack
- 200 litre Drum
- Pole 1-1.5m
- Wire or string to fasten the sack to the pole

Procedures

- Fill the sack with the manure, leaving a small space at the top for tying
- Close the top of the sack and tie the filled sack to the pole
- Suspend the sack in the drum and ensure that the whole sack can be immersed in the water
- After the bag has been suspended in the drum fill the drum with water and ensure that the sack is fully covered
- Make sure that the manure in the sack is completely wetted by raising and lowering the sack several times
- Cover the drum with plastic and leave it for two days
- Then visit the drum daily and raise and lower the sack several times to release the nutrients from the sack into the water and to aerate the mixture. Continue this process for 15 days and then the soup is ready for use

Application

Before applying the manure soup to the crop it must be mixed with water in the ratio 1 : 3

Then application can be made using a 15 litre knapsack sprayer.

- Put 5 litres of water into the knapsack spray
- Add 5 litres of manure soup and agitate gently
- Fill up the knapsack and agitate thoroughly
- Remove the nozzle from the lance of the knapsack and apply the mixture as a drench, avoiding direct contact with the crop foliage

About 300 –350 litres of dilute soup, (21 –24 knapsacks), will be needed to treat one hectare of crop.

Note: The nutrient content of the soup will vary according to the type and age of manure used.

Several applications, (2-4) will be needed to give the same result as top dressing with inorganic fertiliser, e.g. urea.

6. The Agriflora Environmental Policy

The Agriflora Environmental Policy for Agriflora (Z) Ltd. is a comprehensive and well presented document.

Key areas included in the document include:

- Company commitment to protection of the environment
- The impact of farming activities on the environment in and around the farm site, e.g. pesticide use, water and fertiliser use, depletion of soil fertility, soil erosion, diversity of flora and fauna etc.
- The impact of farming activities on the farm staff and people living in the immediate vicinity of the farm.
- The impact of current farming practices on the long term sustainability of farming activities on the site.
- Procedures implemented to reduce the impact of farming practice on the environment

Implementation of the Policy

The impact of any policy and associated procedures is only significant when implementation occurs. Therefore it is essential that all Small Scale Farmers are made aware of the existence and content of the policy and the need to implement appropriate farming practices.

Good advice on 'Environmentally Friendly' farming practices is already included in the Agriflora Producers Handbook, issued to all Scheme participants.

'Environmentally Friendly' farming practices also are included in many of the Farmer Field Day presentations

To reinforce these activities Agriflora have prepared, for circulation to all farmers in the scheme, an Advice Notice about the Environmental Policy.

This re-emphasises the need to protect the environment and identifies key farming practices that are to be encouraged.

A copy of the Environmental Policy is available at each Depot and the Advice notice for farmers is provided overleaf.

Agriflora Small Scale Farmer Scheme

Advice note: Environmental Policy

Care for the Environment is a legal and moral responsibility of all business enterprises. All Small Scale Farmers who participate in the Agriflora Scheme are asked to manage their farming practices in such a way as to preserve or enhance the environment in and around their farm sites. This is a requirement for the EUREP GAP label and will be of long term benefit to the farm.

Farmers who implement measures to safeguard the environment in and around their farms will experience several benefits including:

- Sustainability of the production systems being used
- Cost savings on inputs
- A secured place in the international market place
- Production of a safe and pleasant environment to live and work in
- Production of a farm site that will be of value to the next generation

In order to implement practical measures to safeguard the environment in and around the farm all farmers are asked to implement the following 10 point plan:

1. Protect trees from damage by indiscriminate collection of wood
2. Preserve vegetation around the farm site and plant vegetation barriers between crop blocks where possible
3. Practice IPM, good farm hygiene and crop rotation
4. Conserve ground water by only irrigating when necessary and with the required amount of water
5. Return or add organic matter to the soil to maintain fertility and stability of the soil structure
6. Conserve soil moisture and prevent soil erosion by using organic mulch
7. Prevent leaching of fertiliser by using the correct amount, applying fertiliser evenly and splitting the application into base and top dressings
8. Only use pesticide when necessary and select pesticide products that are effective, specific and non-persistent
9. Prevent pollution by using acceptable and suitable methods to minimise and dispose of waste materials, e.g. composting, burning, burying
10. Explain to farm staff, neighbours and friends that protection of the environment is important and how this can be achieved around the farm

7. Procedures and Advice to Farmers pertaining to the Use of Pesticides

Management of all aspect of the use of pesticides is a large and significant topic within the EUREP GAP standard.

Key issues are:

- Legality, suitability and quality of pesticide products used
- Prevention of the occurrence of unacceptable levels of pesticide in produce
- Assurance that procedures are in place to monitor use and residue levels
- Protection of staff how 'use' pesticides
- Protection of the environment

Agriflora and/or the Agriflora Small Scale Scheme have put in place several measures to address these issues. These measures include:

- Good links with buyers in the UK to ensure that products used are acceptable
- Access to experienced agronomists to plan suitable pest control programmes
- A policy that forbids small scale farmers from spraying their export vegetable crops and commitment from the farmers to comply with this regulation
- A designate spray team at each Depot to apply pest control as necessary
- Random sampling of produce for residue analysis, (done by buyers)
- Training of personnel involved in crop scouting and pesticide application and storage
- Procedures for issue, inspection and re-issue of protective clothing for spray men
- Procedures for the Disposal of empty pesticide containers
- Advice to farmers about how to minimise the risk of pesticide residues occurring on local and export vegetable produce

Details of staff training and Advice to Farmers on measures that they must put in place to minimise the risk of accidental contamination are provided, for reference overleaf.

Staff training in pest management and the use of pesticides

Buyers, Supermarkets and consumers in Europe are all extremely concerned about the use of pesticides in the Small Scale Sector.

This is because:

- There are significant health risks attached to the consumption of food contaminated with unacceptable levels of pesticides
- There are Laws relating to levels of permitted pesticide residues
- Detection of pesticide residue in produce offered for sale leads to adverse publicity and serious loss of sales
- Banned pesticides are available in many Developing Countries
- Many Small Scale Farmers do not have the equipment or the necessary technical knowledge to be able to apply the correct pesticide in the correct amount when treatment is necessary
- Application of pesticides by Small Scale farmers would expose the farmers to potential health risk due to lack of adequate protective clothing
- Incorrect application and disposal may place local communities and the environment at risk of contamination.

Agriflora have addressed these concerns by taking all responsibility for:

- Sourcing pesticides from recognised , reputable suppliers
- Storing pesticides, prior to use in designated stores at the Depots
- Inspecting crops to ascertain whether treatment is necessary
- Issuing all spray recommendations and instructions
- Application of all pesticides, except Baldock granules.
Baldock granules are a 'green label' product applied for the control of stalk borer in Baby Corn. Granules are supplied by the Depot in the correct amount to treat fields that have been inspected by the Extension staff.
- Recording all pesticide application to all export vegetable crops.

This significantly reduces the risks involved in the use of pesticides provided that the persons making decisions, issuing instructions, spraying etc. have the necessary competence to carry out these tasks reliably and correctly.

Training and assessment of key personnel has been carried out by NZTT staff as follows:

Extension Officers: Crop Scouting

Spraymen: Safe use of pesticides
Effective spraying
Calibration of knapsack spraying equipment
Basic store keeping
Record keeping
Waste disposal

Main Depot
Store keeper Pesticide storekeeping

**Agriflora Small Scale Farmer scheme
Spray Chit**

Co-operative:

Farmer: **Farm Code:**

Crop: **Plant Week:** **Field no.**

Target Pest(s):.....

Reason for spraying: Planned prophylactic Meteorological
 Scouting

Size of plot to be sprayed:

Equipment to Use: Knapsack:
 Nozzle type:
 Nozzle output required:

Chemicals to use: (List in order of addition to the spray tank)

Chemical Name	% Active Ingredient	Application Rate/ha	Amount per 16Lts	Number of tanks to use	Harvest Interval

Mixing instructions: Apply singly Tank mix

Authorised: **Date:**

Extension Officer

To be Completed by the Sprayman

Total chemical used:

Product 1: **Product 2:**

Product 3: **No. of Tanks used:**

Signed: Sprayman:

 Farmer:

Date job completed: **Date of next Harvest :**

Agriflora
Small Scale Farmer Scheme (Export vegetables)

Advice notes for farmers

Procedures to Minimise the Risk of Pesticide Residues occurring in Produce

Introduction

Pesticide residues in harvested produce are a risk to anybody that consumes the produce.

Persons who consume contaminated produce may become sick.

Illness usually happens immediately after consumption but there is also a possibility that the pesticide residues may be retained in body fat and the effect in this case results from pesticide accumulation in the body.

Consumers are concerned about the safety of food that they eat and are seeking reassurance about how pesticides are used in food production.

Therefore it is important that as producers we can demonstrate that we are responsible users of pesticides and vegetables produced on the farm are 'safe to eat'.

Factors that contribute to the incidence of pesticide residue can be divided broadly onto three categories:

- Drift from spraying of adjacent crops
- Incorrect application
- Unnecessary use or over use of pesticides
- Failure to observe the Pre-Harvest Interval

Please:

Remember that you must not apply pesticides to your export crops, this must be done by the designated spray team

Put the measures outlined below into place to ensure that your export crops are not accidentally contaminated with pesticide residues and that your local crops can be marketed and consumed safely.

1. Minimisation of Drift from spraying adjacent crops

Spray drift occurs when spraying is done in windy conditions. Fine droplets are more likely to drift than coarse droplets.

To reduce the risk of spray drifting from one crop block to the next several measures can be implemented.

- **Do not spray when it is windy**
Slight wind, (Force 4) that just moves the leaves slightly is ideal for spraying but when the wind speed is higher spraying must not be done.
If you can see the spray drifting away from the crop and/or the spray man is getting wet it is definitely too windy to be spraying.

- **Try to carry out spraying on local crops in the cool parts of the day when there is almost no wind**
In Zambia there is often less wind early in the morning and later in the afternoon.
These are better conditions for spraying anyway as:
The crop is less stressed
It is more comfortable for the spray men to work
There is less chance that the spray will vaporise and be lost to the atmosphere.
- **Leave sufficient space between crop blocks**
Drift on to adjacent crops is less likely to occur when there is at least 2-3 m between crop blocks.
- **Arrangement of field planting**
Try to arrange the planting dates for different blocks so that the youngest crop is down wind where ever possible.
Try also to avoid mixing different types of crops in the same area of the farm.
The Agriflora scheme requires that export vegetables are ‘separated’ from the production sites of local vegetables.
- **Plant vegetation barriers between blocks**
Barriers to spray drift can be provided by using vegetation:
Tephrosia hedges
Vetiver grass
A few rows of green mealies
These vegetation barriers will also provide valuable habitat for ‘beneficial insects’ that will contribute to natural pest control in the crops.
- **Adjust the droplet size**
Fine droplets are more likely to drift than coarse droplets.
Changing to a fan nozzle or opening the aperture of an adjustable cone nozzle will make the droplets larger and less likely to drift.
Remember however that this will increase run off and will change the application rate so recalibration of the sprayer will be needed.

2. Prevention of the incidence of residues arising from incorrect application of pesticide

Pesticides that are applied to crops degrade over time.

The amount of time needed for pesticide applied during spraying to reach safe limits will depend on:

- The type of crop
- The type of pesticide applied
- The amount of pesticide applied
- The rate of crop growth and the weather conditions prevailing

Pre-harvest intervals are determined for individual crop/pesticide combinations and are based on the correct amount of pesticide, i.e. that specified on the label, being applied.

Therefore any deviation from the label recommendations or any application practice that results in over application of pesticide may result in pesticide residue exceeding legal residue limits at harvest.

When spraying crops for local sales on the farm please ensure that:

- You only use products that are recommended for the crop to be sprayed and the pest problem experienced.
- You follow the label recommendations
- The pesticide is measured accurately and mixed thoroughly in the tank
- The spray man applies the correct amount to the area to be sprayed
- A mark is placed in the crop at the end of a tank so areas of crop are not sprayed twice
- The sprayer is adequately maintained to prevent leaks and drips
- You observe the pre-harvest interval.

When the Agriflora spray men spray your Export vegetables please ensure that:

- You receive a copy of the spray instructions
- The amount of product used by the spray man is the same as the amount specified in the instructions.
- The pre-harvest interval is clearly indicated on the spray record given to you
- A notice is placed in the field indicating that the crop has been sprayed and when harvesting may commence/recommence
- You report to the Depot coordinator, in writing, any aspect of the spraying practice used on your farm that gives cause for concern.

Please remember that all spraying of export vegetable crops must be carried out by the Agriflora staff.

3. Prevention of the overuse of pesticides

Just as applying too much pesticide at one application can lead to a residue problem at harvest so can the frequent application of pesticide lead to a similar build up of pesticide in the plant.

Overuse can be prevented in several ways:

- Observing the recommended time between applications
- Ensuring that application is done correctly so that re-treatment is not necessary
- Rotating chemicals used to prevent the development of resistance and the build up of residues of one product
- Implementing good crop husbandry and farm hygiene:
 - e.g. Remove crops that are finished to prevent pests spreading to new plantings
 - Burn or bury heavily infected crop residue
 - Rotate crops
 - Select resistant or tolerant varieties where possible
- Selection of organic alternatives to pesticides, e.g. chilli powder, garlic extract, wood ash, etc.
- Encourage beneficial insects by planting wind breaks, trap crops, predator banks, etc.

4. Observation of the pre-harvest interval

Observation of the pre-harvest interval is essential.

Farmers must show that they understand the importance of the pre-harvest interval and that they have measures in place to ensure that the pre-harvest interval is observed.

These measures will include:

- Notices in the field that indicate when spraying has taken place and when the next harvest can happen.
- Training harvesting supervisors about the importance of observing the pre-harvest interval
- Keeping records of all spraying activities

Auditors and buyers will check that the pre-harvest interval has been observed by:

- Chatting to the farm staff about the procedures that are used
- Looking at notices in the field
- Cross referencing harvest data with spraying records and label recommendations
- Periodic random sampling and chemical analysis of exported produce.

5. Permitted pesticide use and residue levels

Pesticide products that can be used on export vegetable crops are restricted by a number of laws and organisations:

- Pesticides that can legally be used in Zambia must be registered with the Environmental Council of Zambia
- Pesticides used on edible crops for export under the EUREP GAP label must be suitable for the purpose for which they are used, i.e. there must be a label recommendation for the crop and pest problem being treated and must be legally registered in the producer country.
- Pesticide residue levels that are acceptable in harvested produce are set in the receiving country.

Acceptable residue levels are set for named crop/pesticide combinations.

These are known as the Maximum Residue Levels or MRL's.

Permitted MRL's are currently different in different European Countries but are in the process of being harmonised to facilitate free movement of produce across country borders within the European Economic Community.

Permitted residue levels for all other crop/pesticide combinations are set at the Limit of Detection or LoD. This effectively means that no residue is allowed.

Commercial Buyers of export produce may also wish to impose restrictions on which pesticide products may be used and producers such as Agriflora will liaise with the Buyers to ascertain what pesticide produces are acceptable.

- Agriflora as the small Scale Scheme manager and buyer of produce from small scale farmers will consider the risks involved in using individual products on the buyer approved list and may also wish to place additional restrictions on what products can be used in the small scale sector to minimise the risk to operator and consumer safety.

Memo:

To: All Agriflora Small Extension Officers

From: Agriflora Head Office **D. Harvey**
Clyd Muunza

Date: 27th October 2003

Subject: Protective Clothing for Spraymen

Introduction

This memo serves to introduce to you the requirement to check protective clothing for spraying and to record the number and condition of items provided together with the actions needed and actions taken.

This will ensure that all spray men are provided with the necessary protective clothing and that the protective clothing provided remains in working condition.

Each spray man should be provided with:

One pair of gum boots	Intact
One spray overall	Intact and with buttons
One pair of spray gloves	Intact
One pair of goggles	
One respirator	A1B1E1 filters
	Filter life approx. 3 months

Requirements

1. Please inspect all the protective clothing used by the spray men at your Depot and complete the monthly inspection form attached. You should do this each month starting this month.
2. Return the completed form together with a requisition for any replacement or additional items of protective clothing required.
3. Instruct the spray men based at your Depot to report, to you, any problems with their protective clothing as they arise and to carry out minor repairs as necessary.
4. Check weekly to ensure that the protective clothing is being kept clean and is stored correctly.

Note: Lockers for this purpose are being prepared but until these arrive, clean protective clothing should be stored in the office not in the general store with pesticides and not taken home.

Thank you for your co-operation.

EUREP GAP Advice Note Extension Officers 1. October 2003

Agriflora Small Scale Out Grower Scheme

Protective Clothing for use when applying Crop Protection chemicals

Monthly inspection Report

Co-operative:

Month:

Number of Spraymen: Names:

.....

.....

.....

	Number	Condition	Inspected by	Action needed
Gum Boots				
Overalls				
Gloves				
Respirator				
Goggles				

Action taken:

Depot Coordinator: **Date:**

Follow up/Response

Depot Coordinator: **Date:**

Agriflora Small Scale Farmer Scheme

Disposal of Pesticide Containers

Monthly Reconciliation

Co-operative: **Month:**

Pesticide Spray man responsible:

Date	Type	Number Received	Number Destroyed	Balance at Depot	Signed
	Paper bags				
	Plastic Bags				
	Cardboard boxes				
	1 litre bottles				
	5 litre bottles				
	20 litre drums				
	Others				

Checked by
Depot Coordinator: **Date:**

8. Hygiene Risk Analysis and Associated Policies and Procedures

Hygiene risk assessment is needed to demonstrate that consideration has been given to the safety of the vegetable produce at all stages of production.

Components of risk analysis include:

- Identification of the risks to the safety of the vegetable produce at all stages of production, harvesting, handling and transportation to the pack house.
- Explanation of how risks are minimised and /or controlled at each stage
- Setting of tolerance limits at each stage
- Outline of the action to be taken in the event of tolerance being exceeded
- This process is a precursor to a full HACCP analysis and preparation of a HACCP plan.

Risk analysis is carried out by:

- Site visits to determine current practice at each stage
- Preparation of a produce flow chart
- Discussion with stake holders about practical solutions to problems identified
- Selection of appropriate solutions
- Setting limits of tolerance
- Outlining action to be taken when tolerance limits are exceeded
- Documentation of the risks considered and procedures and practices put in place to minimise risk

Documentation of the Risk assessment and cold chain management are provided overleaf. Documentation includes:

- Typical Flow Process diagram
- Hygiene risk management strategy
- Work instruction for harvesting and handling produce on the farm
- Work instructions for grading and handling produce at the Depot
- Guidance notes for Farmers and Depot staff on the practical management of the Cold Chain

The Agriflora Training and Extension staff has taken responsibility for ensuring that practices implemented on all farms and at the Depot are as specified in the Risk Management Document although there is obviously considerable overlap with the Food Safety training programme described in the next section.

Action to be taken in the event of tolerance limits being exceeded obviously has significant commercial implications for the farmer and for the EUREP GAP status of the produce from the whole scheme. Therefore the Agriflora Small Scale Scheme Manager has taken responsibility for discussing this with the Farmer representatives and determining appropriate actions.

Agriflora Small Scale Farmer Scheme (Export vegetables)

Hygiene Risk Management

Typical Flow Process Diagram

Crates	Harvesters	Crop in Field
Crates at Agriflora pack house	Arrive from home	Harvested and put into picking bag or crate
Transported to Depot Cold Truck	Wash hands & hands inspected	Transported to end of field and sorted.
Stored at Depot until required	Collect and wash Crates	Rejects and export grade placed in separate crates
Collected by farmer and transported to the farm site	Crates carried to field	Produce placed in the field shelter
Stored on the farm	Commence Harvesting	Produce carried to farm 'store' to await transport to the Depot
Washed		Export Produce transported to Depot
Carried to the field for harvesting		Produce recorded and graded in the receiving area
		Export grade produce placed in the cold room
		Produce transported to the Agriflora pack house

1. Hygiene Risk Management:

Crop in the field pre-harvesting

Risk Category	Potential Risks Identified	Risk Reduction Strategy	Actions & Controls	Person Responsible
Physical	<ul style="list-style-type: none"> • Soil splash • Contamination with dust and rubbish 	<ul style="list-style-type: none"> • Soil is covered with organic mulch • Peas are trellised • Site rubbish is managed 	<ul style="list-style-type: none"> • Produce that is visibly contaminated with soil will not be harvested • Sites where dust and rubbish is blown in from outside are not used for production of export vegetables 	<p>Site management: Farm owner</p> <p>Supervision of harvesting: Farm supervisor</p>
Chemical	<ul style="list-style-type: none"> • Pesticide contamination 	<ul style="list-style-type: none"> • All spraying of export crops is done by the Agriflora team • Only acceptable pesticides are used • Spray men are trained • Pesticide issue and applications are recorded and farmers notified of the harvest interval • Notices are placed in the field after spraying • Farmers are warned of the need to minimise drift from adjacent crops • Spraying of local crops is not done in windy conditions • Vegetation barriers are used between production blocks • Export crop production blocks are not mixed with local crop blocks 	<ul style="list-style-type: none"> • Application is in accordance with the label recommendation • Equipment is maintained and calibrated • Spray men are assessed annually • Records are checked at the Depot • Produce known to be contaminated, e.g. harvested before the PHI has expired will be rejected 	<p>Recommendations: Scheme manager</p> <p>Equipment maintenance and calibration Spray instructions Checking records Rejection of produce: Depot coordinator</p> <p>Application, application records and notification of farmers: Spray man</p> <p>Minimisation of spray drift from adjacent crops: Farmer</p>
Biological	<ul style="list-style-type: none"> • Faecal contamination 	<ul style="list-style-type: none"> • Field toilets are provided and maintained • Farmers receive guidance on how to use manure safely 	<ul style="list-style-type: none"> • Land subject to flooding is not used for production • Animals are 'excluded' from the site • Animal manure is composted or incorporated not left on the surface • Manure soup is only applied to the soil • Staff receive training in basic food hygiene 	<p>Site acceptability; Scheme manager</p> <p>Provision and maintenance of toilets Use of manure: Farmer</p>

2. Hygiene Risk Management:

Harvesting

Risk Category	Potential Risks Identified	Risk Reduction Strategy	Actions & Controls	Person Responsible
Physical	<ul style="list-style-type: none"> • Soil and rubbish • Jewellery, plasters and finger nails • Food • Cigarette ash 	<ul style="list-style-type: none"> • All harvesters receive training in basic food hygiene • Crates and harvesting bags are washed before use • Clean wet pads are used to cover produce • Eating and smoking in the field are forbidden • Harvesters are instructed to harvest only clean produce 	<ul style="list-style-type: none"> • Rules for harvesters are implemented • Visibly dirty crates are returned for re-washing • Crates for produce are placed on clean grass or cloth • Clean crates/bags are used for harvesting • Produce is transferred to clean crates for transport to the depot • Harvesters hands are inspected and hand washing supervised before harvesters start work • Visibly dirty produce is not harvested or is rejected 	<p>Implementation of rules for harvesters Rejection of dirty crates and produce: Farmer</p> <p>Overseeing harvester behaviour: Farm supervisor</p>
Chemical	<ul style="list-style-type: none"> • Disinfectants • Pesticides 	<ul style="list-style-type: none"> • Only food grade products are used for cleaning • Notices are placed in fields that have been sprayed 	<ul style="list-style-type: none"> • Label recommendations are followed on all cleaning materials • PHI is observed • Crates are only used for produce 	<p>Purchase of disinfectants Observation of PHI: Farmer</p> <p>Use of crates: Farm supervisor</p>
Biological	<ul style="list-style-type: none"> • Faecal contamination 	<ul style="list-style-type: none"> • Potable water is used for all washing activities • All harvesters receive training in basic food hygiene • Clean toilet facilities are provided • Hands are washed with soap and rinsed prior to harvesting • Frequency of Toilet use is monitored • Produce is kept as cool as possible 	<ul style="list-style-type: none"> • Water supply is tested annually • Rules for harvesters are implemented • Hand washing is supervised • Harvesters hands are inspected and open wounds covered • People who are or appear to be 'sick' are moved to other jobs or sent to the clinic • Harvesting is done in the morning and produce is removed promptly from the field to the field shelter • Produce that becomes dehydrated is rejected 	<p>Water testing: Agriflora</p> <p>Implementation of rules for harvesters: Farm Supervisor</p> <p>Rejection of produce: Farmer</p>

3. Hygiene Risk Management:

Produce pre-grading and storage in the field and field shelter

Risk Category	Potential Risks Identified	Risk Reduction Strategy	Actions & Controls	Person Responsible
Physical	<ul style="list-style-type: none"> Organic 'foreign bodies' 	<ul style="list-style-type: none"> Produce is covered with wet pads 	<ul style="list-style-type: none"> Visible foreign bodies will be removed and the source controlled 	Checking produce Farm Supervisor
Chemical				
Biological	<ul style="list-style-type: none"> Faecal contamination. Existing faecal contamination multiplies Dog cocks it's leg 	<ul style="list-style-type: none"> Hand washing as described above Length of time produce is exposed to high temperatures is kept to a minimum 	<ul style="list-style-type: none"> Produce is removed from the field and placed in a field shelter within two hours Pre-grading is carried out in the field shelter Field shelter floor is 'clean' and /or covered with a 'clean' sack Produce in crates in the field is covered with a wet pad Animals are excluded from the area 	Monitoring and control of hand washing Monitoring and control of the cold chain Exclusion of animals Farm supervisor

4. Hygiene Risk Management:

Transport of produce around the farm

Risk Category	Potential Risks Identified	Risk Reduction Strategy	Actions & Controls	Person Responsible
Physical	<ul style="list-style-type: none"> Contamination with Soil/Dust 	<ul style="list-style-type: none"> Produce is covered with wet pad 	<ul style="list-style-type: none"> Provision and use of wet pads is monitored and controlled 	Use of wet pads Farm supervisor
Chemical				
Biological	<ul style="list-style-type: none"> Existing faecal contamination multiplies Crate contact with head 	<ul style="list-style-type: none"> Length of time produce is exposed to high temperatures is kept to a minimum Head is covered 		Transport monitoring and control; Farm supervisor

5. Hygiene Risk Management:

Storage in the farm shed whilst awaiting transport to the Depot

Risk Category	Potential Risks Identified	Risk Reduction Strategy	Actions & Controls	Person Responsible
Physical	<ul style="list-style-type: none"> Dust 	<ul style="list-style-type: none"> Produce is placed in a suitable clean area 		Farmer
Chemical	<ul style="list-style-type: none"> Fumes and dust from other items in the store 	<ul style="list-style-type: none"> Produce is placed in a suitable clean area 	<ul style="list-style-type: none"> Produce is not stores in the same store as fertiliser or pesticides 	Suitability of storage area: Farmer
Biological	<ul style="list-style-type: none"> Existing faecal contamination multiplies 	<ul style="list-style-type: none"> Cool shed is used for temporary storage 	<ul style="list-style-type: none"> Length of time produce is kept on the farm is less than 24 hours 	Arrangements for transport of produce: Farmer

6. Hygiene Risk Management:

Transport to the Depot

Note: transport may be by Bicycle, wheelbarrow, bus, open truck or closed vehicle

Risk Category	Potential Risks Identified	Risk Reduction Strategy	Actions & Controls	Person Responsible
Physical	<ul style="list-style-type: none"> Contamination with dust 	<ul style="list-style-type: none"> Produce is covered during transit 		Arrangement o transport: Farmer
Chemical	<ul style="list-style-type: none"> Unknown chemicals in same transport 	<ul style="list-style-type: none"> Produce is placed in a separate area to any chemicals in the load 		Suitability of transport: Person transporting the produce
Biological	<ul style="list-style-type: none"> Faecal contamination Existing faecal contamination multiplies 	<ul style="list-style-type: none"> Produce is covered with wet pads during transit Produce is not exposed to the sun or left in hot vehicles for longer than is necessary 	<ul style="list-style-type: none"> Produce is supervised in transit so handling by unknown persons is prevented Excessively hot & dehydrated produce is rejected at the Depot 	Supervision of transport: Farmer or Farm supervisor Rejection of produce on arrival: Depot grader

7. Hygiene Risk Management:

Handling and grading at the Depot

Risk Category	Potential Risks Identified	Risk Reduction Strategy	Actions & Controls	Person Responsible
Physical	<ul style="list-style-type: none"> • Dust and soil • Finger nails and jewellery 	<ul style="list-style-type: none"> • Grading table and the grading area is kept 'clean' • Hygiene rules for harvesters and graders are implemented 	<ul style="list-style-type: none"> • Field crates are not placed on the table • Grading table is cleaned after each batch of produce • Grading area has a cleaning schedule in place • Access is restricted • Dirty produce is rejected and the farmer informed of the nature of the problem 	Cleaning Access: Depot grader
Chemical	<ul style="list-style-type: none"> • Pesticides • Disinfectants 	<ul style="list-style-type: none"> • 'Suitable' facilities are provided for the storage and handling of pesticides and fertilisers • Staff are trained to handle pesticides safely 	<ul style="list-style-type: none"> • Pesticides and disinfectants are stores in a separate area • Scales used for weighing produce are not used for pesticides and fertilisers • Pesticides and fertilisers are not brought into the grading area • Grading staff do not handle pesticides • Only food grade chemicals are used for disinfection of crates and grading table 	Purchasing suitable materials: HQ Waterfalls Management of pesticide and fertiliser stocks: Depot coordinator
Biological	<ul style="list-style-type: none"> • Existing faecal contamination multiplies • New faecal contamination is introduced during handling 	<ul style="list-style-type: none"> • Produce is inspected on arrival • Field heat is removed as rapidly as possible • Graders receive training in basic food hygiene • Clean toilet and hand washing facilities are provided • Hygiene rules for harvesters and graders are implemented 	<ul style="list-style-type: none"> • Very hot and dehydrated produce is rejected • Produce is graded immediately on arrival or is placed in the cold store on arrival until the grading table is free • Graded produce is placed immediately into the cold store • Potable water and chlorine are used in all cleaning processes • Grading table is covered with plastic and cleaned between each batch of produce • Visitors are not allowed to handle produce 	Implementation of hygiene rules and practices: Depot coordinator Depot grader

8. Hygiene Risk Management: Cold storage at the Depot

Risk Category	Potential Risks Identified	Risk Reduction Strategy	Actions & Controls	Person Responsible
Physical	<ul style="list-style-type: none"> • Soil from other crates 	<ul style="list-style-type: none"> • All crates used for storing export produce are washed 	<ul style="list-style-type: none"> • Crates are inspected before use • Produce in cold store is in clean crates 	Crate hygiene: Depot grader
Chemical	<ul style="list-style-type: none"> • Contamination from disinfectants and other products in the store 	<ul style="list-style-type: none"> • Cleaning procedure is in place • Use of store is controlled 	<ul style="list-style-type: none"> • Store is only used for vegetable produce • Store is only cleaned with food grade chemicals • Chemicals are used in accordance with label recommendations 	Use of cold store: Depot coordinator
Biological	<ul style="list-style-type: none"> • Multiplication of existing faecal contamination 	<ul style="list-style-type: none"> • Store temperature is set at 6^oC • Store door is only opened for depositing or removing produce 	<ul style="list-style-type: none"> • Produce does not remain in the store for more than three days • Temperature is checked and recorded daily • Maintenance technician is available in the event of a breakdown 	Operation of cold store: Depot coordinator Depot grader

- Notes: 1. Identification of ‘critical control points’ is not possible due to the nature of the process.
 In practice ‘Control’ of risk is achieved by a combination of factors which have a cumulative effect. These factors include:
 Development of procedures to reduce the risk of contamination or to prevent existing problems becoming worse
 Provision of adequate materials and equipment to facilitate the production of ‘Safe Food’
 Staff training and supervision to ensure that procedures and rules are implemented at all times
 Routine monitoring of farm activities by the Agriflora Extension staff and Internal Audit team
 Visual examination of produce at each stage of the process
2. End testing to ensure that the procedures and rules implemented are adequate are currently conducted after the produce has left the Depot and the Small Scale Scheme notified if problems arise. End tests include:
 Quality control checks at the pack house
 Shelf life testing at the pack house
 Random testing for the presence of E. coli by the Importers, suppliers are not informed of the tests only when problems are identified.
3. Routine testing for the presence of E. coli will be undertaken when local facilities become available and are able to offer reliable service at reasonable cost.

Procedure to be followed if produce is not judged to be Acceptable or Safe for Human Consumption

The Depot Clerk/grading Officer is the person responsible for accepting produce and must therefore:

- 1. Check that produce is from a registered farmer and that the crop records are in place in the farmer file**
Produce for which adequate records are not available should be returned to the Farmer with the person who have delivered the produce
- 2. Check that the produce is correctly labelled**
Produce which is not adequately labelled should be returned to the Farmer with the person who have delivered the produce
- 3. Check that the Harvest Interval has been observed**
If this is not the case the produce must be rejected, placed to one side within the Depot receiving area, and the Scheme manager and Farmer notified immediately.
Disciplining the Farmer for Breach of Regulations is the responsibility of the Scheme Manager and will usually involve removal of the Farmer from the supplier base.
- 4. Check for obvious signs of contamination**
Look for evidence of dirty/muddy crates, rat contamination, obvious foreign bodies
Produce that is contaminated should be placed to one side within the Depot receiving area, and the Scheme manager and Farmer notified immediately.
Disciplining the Farmer for Breach of Regulations is the responsibility of the Scheme Manager and will usually involve a caution for a first offence and removal of the Farmer from the supplier base for subsequent offences.
- 5. Check the produce temperature, appearance and the produce grade out**
Produce that is too hot, dehydrated, or too big/small must be rejected, returned to the farmer and a note sent to the Farmer and to the Extension Officer indicating the nature of the problem and the action taken.

Farmers are required to accept these conditions as part of the agreement signed when joining the Scheme.

Agriflora
Small Scale Farmer Scheme (Export Vegetables)

Guidance Notes for Farmers and Depot Coordinators

Cold Chain Management

Introduction

Management of the cold chain has two stages:

- Initial cooling of the produce, (removal of field heat)
- Keeping the produce cool as it moves from stage to stage in the harvesting to sale period.

Successful management of the cold chain will help to ensure that:

- Produce stays fresh for longer
- Eating quality is maintained
- Multiplication of food poisoning bacteria and rotting due to spoilage organisms is kept to a minimum
- Incidence of dehydration is reduced
- Shelf life is maximised

Cold chain management on the Farm

Farmers are asked to note and implement the following recommendations

1. Produce must be harvested in the early morning
At this time of the day the produce is cool and the risk of heating in the field and dehydration is less than when harvesting is done in the hottest part of the day.
2. Harvesters must not hold produce in their hands for long periods
Produce that is held in the hand becomes warm.
Harvesters should be instructed to place produce in the picking crate at frequent intervals and not to move with produce in their hands.
3. A clean wet pad must be placed over produce, (peas) whilst it is being harvested in the field
This will provide some shade for the produce and evaporation of water from the wet pad will provide some cooling and help to prevent dehydration.
Wet pads will need to be re-wetted frequently on hot days.
4. Harvested produce must not be left exposed in the field, suggest 2 hrs. max.
Filled crates should be removed promptly to the field shelter.
Care should be taken when 'fly picking' as it will take a long time to fill a crate. In this case partially filled crates should be removed from the field after two hours.
5. Pre-selection of produce and trimming must be done in a cool shady place, not on the side of the field where the produce is exposed to the sun.

Cold chain management in transit, Farm – Depot

1. Produce must be covered with a clean wet pad during transport.
This will help to keep the produce cool but will also help to prevent dehydration and contamination with dust.
2. Produce must be transported to the depot within 24 hours of harvesting.
Cool conditions provided by field shelters and farm sheds are not sufficient for long term storage so prompt removal to the depot cold store is essential.
3. Transport to the depot must be by the most suitable method and shortest route.
Produce must not be left in the sun or in a hot car whilst the owner takes refreshments etc.

Cold chain management at the Depot

1. Produce must be checked on arrival and the farmer notified if the produce is unacceptably hot or dehydrated.
Note should be made on the GRN to ensure that the farm owner receives the message.
2. Produce must be process immediately on arrival or placed in the cold store to await attention.
Produce must not be left in the sun.
3. Produce on the grading table must be handled quickly.
Produce must not be left on the table whilst the grader chats and takes tea, etc.
4. The cold store door must be opened only when necessary to deposit or remove produce.
Do not leave the door open for longer than is necessary.
5. Crates must not be over filled and produce must be stacked so that there is good air circulation around the crates.
Rapid and complete cooling throughout each crate is important.
6. Cold store temperature must be checked and recorded daily and a maintenance schedule must be in place to ensure that the correct cold temperature is provided reliably.

Agriflora
Small Scale Farmer Scheme (Export vegetables)

Work Instructions for Harvesting Produce

Tasks

1. Washing hands

Hands must be washed:

After using the toilet

Before entering the field to harvest produce

Hands must be washed with soap and rinsed in clean water

Nails must be clean.

2. Hand inspection

Hands must be checked before produce is harvested or handled.

Key issues are: Nails must be short and clean

Jewellery, except the wedding ring, must be removed

Open wounds must be covered

Hands must be washed and clean

3. Washing crates

Crates must be washed before use, even if they appear clean.

Crates must be washed with detergent (washing up paste or liquid) and rinsed in clean potable or chlorinated water.

Remember to wash carefully in the corners

Place crates in a clean area to dry

4. Crate management

Peas: should be harvested into a clean crate and put into a separate clean crate when pre-graded in the field shelter.

Baby corn: should be harvested into a clean picking bag and put into a clean crate when pre-graded in the field shelter.

Crates that have been taken into the field for harvesting should not be used for storage and transport of produce without further washing.

Crates must not be used for seating, rubbish collection and holding personal Belongings.

5. Use of picking bags

Picking bags should be made from new polypropylene sacks or from Mealie meal sacks.

The use of old fertilised bags is not permitted.

Picking bags should be washed thoroughly and well rinsed at least once a week.

6. Management of wet pads

Wet pads must be used to cover produce in crates in the field and on top of each crate of produce during storage and transport to the Depot.

Wet pads should be made from clean Hessian sack and should be of a sufficient size to fully cover harvested produce in a crate.

Wet pads must be washed in clean chlorinated water before use.

Wet pads must only be used for covering produce in crates

Wet pads must be dried when not in use and rewetted as necessary when in use.

7. Harvesting produce

Harvesters are asked to:

Harvest the size and quality of produce indicated by the 'Harvesting Supervisor'

Handle the plants carefully to avoid breakages

Examine plants thoroughly and pick all of the produce of the correct size

Place produce in the picking bag or crate immediately; not to hold lots of produce in the hand for a long time

Cover produce in the picking crate with a wet pad

Avoid picking produce that is contaminated with soil

Report incidence of pests and diseases, e.g. caterpillars

8. Removal of produce to the field shelter/shade

Produce must be taken to the field shelter within two hours of starting to fill a crate.

9. Pre-grading and labelling

Pre-grading must be carried out in a cool, shady area or in a field shelter.

Export grade produce should be transferred from the picking crate to a clean crate that is placed on a clean surface.

Produce should not be tipped out on to the ground for sorting.

Reject produce may be put back into a picking crate.

Each crate of export produce must be labelled with the plant week, the farm code and the date of harvest.

Crates of graded produce must be covered with clean, wet, wet pads and removed to the farm store or Depot as quickly as possible.

10. Harvester behaviour

Harvesters are asked to:

Follow their instructions carefully and ask questions when the instructions are not clear

Report sickness

Refrain from picking their nose, coughing over the produce or scratching their head whilst harvesting in the crop in the field or handling the produce in the field shelter.

Smoking, eating and drinking in the crop and in the field shelter area are forbidden.

Agriflora
Small Scale Farmer Scheme (Export Vegetables)

Roles of the person responsible for supervising harvesting

1. Introduction:

The Harvesting Supervisor/farm owner is responsible for:

- Implementation of harvesting hygiene rules
- Produce handling during the harvesting phase
- Training harvesting staff
- Organising and controlling the harvesting of vegetables
- Organising and controlling the work and behaviour of the harvesters
- Keeping harvesting records

The Harvesting Supervisor should typically be:

- | | | |
|---------------|----------------------------|---------------------|
| Mature | Responsible and respected | Honest and reliable |
| Firm but fair | Educated to Grade 12 (min) | Well organised |

The responsibilities of the Harvesting Supervisor are usually defined in the 'Job description' and it is essential that Harvesting Supervisors are aware of what is expected and understand their responsibilities.

2. Training for Harvesting Supervisors:

The 'Harvesting Supervisor' will probably have started work as a harvester. This ensures that the Harvesting Supervisor has good practical skill and can meet the quality and productivity targets set for the harvesting team. Many Harvesting Supervisors are selected and promoted to the post as a result of good performance and responsible behaviour whilst they were a member of the harvesting team.

Harvesting Supervisors will initially receive 'On the Job' training about the requirements of the position.

This training will include:

- What targets are to be met
- Procedures to use for organising materials and labour
- Procedures to use for harvesting and handling produce
- Record keeping
- Lines of communication

After some time it is desirable that Harvesting Supervisors receive some formal training which may be provided by NZTT or an equivalent organisation, e.g. the Agriflora Small Scale Training team.

This training should include:

- Basic food hygiene
- Introduction to Supervision or Supervision Skills
- Supervision of Vegetable Harvesting

These courses provide knowledge and understanding of the supervision of people and technical knowledge of the procedures and practices of harvesting and handling fresh vegetable products.

3. Typical Job Description for a Harvesting Supervisor

The Harvesting Supervisor will report directly to the Farm owner/manager.

The Harvesting Supervisor will be expected to:

- Organise the work of the Harvesting team in the field. This includes the organisation of crates and wet pads, washing and dipping equipment, allocation of work to individual harvesters and transport of produce from the field
- Supervise the work of the harvesting team throughout the day
- Ensure that adequate standards of due diligence in relation to food safety are implemented. This involves monitoring staff personal hygiene and the cleanliness of crates, dipping water, wet pads, hand dips and the field shelter
- Ensure that the cold chain and wet chain are maintained as instructed and problems are brought to the attention of the Farm owner/manager
- Provide the initial training for new harvesters
- Guide, coach, encourage, praise or reprimand experienced harvesters as necessary
- Explain the quality standards required for work and produce and the consequences of not harvesting product of acceptable quality or in an acceptable manner
- Explain harvesting targets and piece work arrangements to harvesting staff including methods for recording and calculation of payment for work done
- Sample produce, grade produce, conduct reject analysis and report findings
- Provide feedback to the Farm owner/manager on individual harvester performance
- Ensure that harvesting targets are met and standards of harvesting are maintained or improved
- Supervise the activities in the 'Field Shelter' area, dipping, weighing, segregation of produce and transport of produce to the pack house
- Liaise with the Crop Manager and Pack House management regarding levels of production and quality of produce harvested
- Supervise the work of the Grader/Recorder and check that all harvesting records are accurate and kept up to date
- Keep attendance records for the harvesting team
- Provide encouragement and maintain the motivation and moral of the Harvesting team
- Maintain discipline in the harvesting team
- Contribute to solving problems with organisation, harvesting staff and product quality as these arise
- Carry out other tasks as directed by the Farm owner/manager

Note: The Harvesting Supervisor is not usually responsible for the 'Hiring and Firing of permanent, seasonal or casual farm labour. The Supervisor will however be asked to report on the performance of members of the Harvesting Team and this information will be considered when decisions regarding continued employment and promotion are made by the Farm owner/manager.

4. Communication of information by the Harvesting Supervisor

Whilst the Harvesting Supervisor reports directly to the Farmer/Crop Manager there are many other people who will need information from the Harvesting Supervisor or who will need the Harvesting Supervisor to present their concerns.

Harvesting Supervisors need a clear picture of who needs to know what.

Staff	What the supervisor needs to know from	What the supervisor need to report to
Harvesters	<ul style="list-style-type: none"> • Problems and queries 	<ul style="list-style-type: none"> • Today's target and payment for work done • Report from the depot/pack house • Relevant changes in farm or company policies and practices
Owner/Manager	<ul style="list-style-type: none"> • Which Blocks to harvest • Spray programme re. Harvest Interval • Target for the day and agreed piece work rate • Staff allocated to the task • Relevant changes in company policies and practices 	<ul style="list-style-type: none"> • Progress with today's harvest and will target be met • Today's yield and predictions for tomorrow's yield • Number of crates and harvesters needed tomorrow • Problems noted in the crop, e.g. caterpillars • Problems with the performance of individual harvesters • Queries from harvesters that need management attention
Depot/Pack House	<ul style="list-style-type: none"> • Quality report for yesterday's harvest • Priorities for produce for today 	

Posters and notices should also be used to reinforce messages and remind people about what has been said.

Effectiveness of these is increased in the presentation is eye catching and pictures and vernacular languages are used to draw attention to the message and improve understanding.

Useful topics to be displayed at the field shelter include:

Rules for harvesters

Produce specifications

Targets and rates of pay for day work and piece work

Simple disciplinary rules and procedures of raising problems, e.g. 'Who to report to' and 'What is the consequence of

Agriflora
Small Scale Farmer Scheme (Export Vegetables)

Work Instructions for Depot Produce Graders

Description of Tasks

1. Cleaning the table

The table should be cleaned by wiping with a clean cloth and chlorinated water.

Chlorine should be added to the water at the rate ofgm/10 litres
The water should be changed when it is 'too dirty to drink'

The table should be cleaned at the start of the day
And
Before starting to grade produce from each farm

The bucket and cloth should be washed and dried at the end of each day.

The plastic covering on the table should be replaced when it becomes damaged

2. Cleaning crates

Crates should be washed with clean water and detergent.

Be careful to clean the corners thoroughly.

After cleaning with detergent the crates should be rinsed in clean running and stacked in a clean area to dry.

3. Receiving produce

Check the label on each crate of produce

If the label is not completed correctly do not accept the produce until it is correctly labelled.

Check the condition of the produce, note if it is too hot or visibly dehydrated

Record the number of crates delivered and the Total weight of produce net of crate weight

If there is no other produce awaiting grading, grade the produce immediately.

If there is already produce on the grading table, place the produce in the designated area of the cold store until you are able to attend to the produce.

4. Grading produce

Clean the table before putting produce on to the table.

Empty the produce on to the table **without placing** the field crate on to the table.

Grade the produce carefully and quickly, in accordance with the grading specifications.

Place the graded produce into a clean crate and transfer the produce label from the field crate. Leave space at the top of the crate for air circulation when the crates are stacked.

Weigh the export grade produce and complete the Goods Received Note
Place the produce in the cold store.

Place the rejects into a 'field crate for collection by the farmer.

Clean the table before starting the next batch of produce.

5. Recording and feedback to the farmer

Check that the record of the produce received is accurate and complete before moving to the next batch of produce.

Your record should include:

- Farmer name and farm code
- Nature of produce and Plant week
- Weight of produce received
- Weight of produce accepted for export

The record should be signed by yourself and the farm representative
You should issue a copy to the farm representative and retain a copy for reference at the Depot.

Feedback should be sent to the farmer about areas of concern:

- Produce on arrival is too hot or dehydrated
- Major reasons for rejection are that the produce is immature or overgrown

6. Placement of produce in the cold store

Place the produce in the cold store in orderly stacks with the labels hanging on the 'path side' so that they can be read easily.

Leave a gap of 5-10cm between the crates and the wall of the cold store to allow air circulation around both ends of the crates.

Leave adequate space along the middle of the cold store for access.

Keep the cold store door closed unless produce is being moved in or out.

Sequence of events:

1. Check the produce label
2. Record the weight of produce delivered and note the condition of the produce
3. If there is no produce on the grading table proceed with grading.
If there is already produce awaiting grading place the new produce in the cold store to await attention
4. Clean the table
5. Empty the produce on to the table without placing the 'field' crate on the table
6. Grade the produce carefully and quickly, and in accordance with the grading specifications
7. Place the graded produce into a clean crate
8. Transfer to produce label to the new crate
9. Weight the export grade produce and record the weight
10. Place the export grade produce in the cold store
11. Complete and sign the GRN
12. Place the rejects into the field crate for collection by the farmer
13. Prepare a note for the farmer if you have concerns about the condition of the produce on arrival or if you have rejected a large percentage of the consignment
14. Clean the table and move on to the next batch of produce.

Food Safety Training

EUREP GAP requires that:

- All persons who handle the vegetable produce must receive training in Basic Food Safety
- There is evidence at all stages of production that training is put into practice and adequate standards of Food Safety are achieved at all times.

To meet this requirement in the Small Scale Sector it is necessary that:

Each farmer understands that he/she must have suitable facilities in place and trained staff to ensure that adequate standards are met
Suitable training is made available for Farmers and farm staff.

Training requirements for the Scheme have been set as follows:

- All farmers should attend a briefing session and receive Basic food safety training
- All Extension Officers are to receive training in Basic Food Safety, delivery of Extension messages on this topic and how to audit related practices on the farm
- Each farm must have at least one senior worker who has passed the Basic Food Safety Level One examination and who is given responsibility for seeing that all the staff on the farm are given basic instruction in the Food Safety Rules for handling produce.

NZTT have developed a training programme in 'Basic Food Safety for Farm Staff' as part of the CPHP project and this has been used for training Farmers and Farm staff.

All participants received the same training on the following topics:

The need to produce safe food
Due diligence
Sources of contamination
Principles and practices of prevention and control of food contamination in a farm setting

Farmers then received additional instruction on:

The facilities that must be provided to enable implementation of adequate standards of Food Safety
The need to ensure that all staff are aware of the food safety rules and are trained to implement these rules at all times
How food safety procedures and practices will be audited.

Senior farm staff receive extra emphasis on the need to:

Train all farm workers
Check that procedures and practices are followed at all times

Training for Extension Officers, Depot staff, Farmers and Farm staff has been provided by NZTT and the training messages followed up by the Agriflora staff in Field Days and routine farm visits.

9. Traceability

Adequate traceability is a EUREP GAP requirement and from January 2005 also becomes a Legal requirement for Produce exported to Europe.

Horizontal Traceability, i.e. pertaining to all the activities that happen to an individual Block of crop, (same crop, same planting date, same field), is achieved by:

- Labelling each production block

- Recording all activities that are carried out on each crop

- Noting the production block and planting date on each record form

Auditing is facilitated by collating all these records, by individual crop, in the Farmer File at the end of each crop.

Vertical Traceability, i.e. one stage up the chain and one stage down the chain is achieved by:

- Recording the source, identity and issue of inputs, (Stock records and GIN/GRN notes)

- Labelling of individual crates of produce, (Farm, field, plant week, crop type) and issuing an inventory of produce when it is delivered to the pack house

Procedures

All Record proformas are produced by Agriflora and are issued to each Depot free of charge.

Each Farmer keeps a copy of all crop records for crops in the ground

Spray records are made in triplicate, one to the farmer, one to the Depot, one left in the book

At the start of harvesting all crop records are checked, collated and transferred to the farmer's file at the Depot

Harvesting records are compiled at the Depot from the copy of the GRN issued to the farmer each time produce is delivered to the Depot

Observation of Harvest interval is checked at each delivery by cross referencing the Spray records with the produce delivery notes.

Details of the record trail and instructions issued to farmers regarding field and crate labelling are provided overleaf.

Management of Inputs

All inputs for the Export vegetable crops are sourced by the Agriflora Procurements Department and are issued to the Depots for release to the farmers on request.

Inputs are supplied on credit and the cost recovered, at source, from sales of produce.

In this way it is possible to control the quality of inputs used as Agriflora take responsibility for checking the reliability, authenticity and purity analysis.

Records of the nature and source of inputs are kept at the Agriflora Head Office.

Memo:

To: All Small Scale Farmers (Export Vegetable)
From: Agriflora Head Office D. Harvey
Clyd Muunza
Date: 22nd October 2003
Subject: Labelling of Fields

Introduction

As you are aware all Agriflora commercial and small scale production will need to be EUREP GAP compliant by the end of 2003 or at the latest by early 2004.

One of the requirements for this standard is that produce can be traced to an individual block of land.

Therefore it becomes essential that each unit of land has an individual identity.

Requirements

1. Each field / 'Unit' of planting must be given an identity
2. The field / 'Unit' of planting identity must be shown on a label at the corner of each field or planting unit
3. The field / 'Unit' of planting identity must be recorded on the Crop History Record
4. A plan showing the following information must be submitted to the Agriflora Small Scale Office for reference and EUREP GAP Auditing.

Data required on the plan: Overview of cropping area
Identity of each field/production unit
Size of each field/production unit

5. Ongoing changes to the plan and field identity should be reported to Agriflora to enable plans to be up dated.

Agriflora Small Scale Staff thank you for your co-operation.

EUREP GAP Advice Note 2. October 2003

Agriflora
Small Scale Farmer Scheme

Guidelines for producing Field Labels

1. Minimum requirements

Wooden board: approx. 30cm x 30cm

Mounted on a stake at the corner of the field

Information to be painted on to the board: Field name or number
Field size

In this case a separate notice should be used to indicate when spraying has been carried out and harvesting may resume.

2. Alternative

Wooden board, approx. 45cm x 45cm

Mounted on a stake at the corner of the field

Information to be painted on to the board: Field name or number
Field size

Crop
Variety
Plant week

Sprayed: *Date*
Harvesting may resume: *Date*

Field:	1 0.2 ha
Crop:	Baby Corn
Variety:	Panar 61
Plant week:	46
Sprayed:	12/01/04
No Harvest until:	15/01/04

This section should be left for the spray man to write on after spraying

Memo:

To: All Small Scale Farmers (Export Vegetable)
From: Agriflora Head Office D. Harvey
Clyd Muunza
Date: 27th October 2003
Subject: Completion of the Crop History Record

Introduction

As you are aware all Agriflora commercial and small scale production will need to be EUREP GAP compliant by the end of 2003 or at the latest by early 2004.

One of the requirements for this standard is that all production activities carried out on vegetable crops exported under this market label are recorded. Therefore it becomes necessary to introduce a new form to record essential production activities.

Information recorded in the 'crop History Record' will be added to the spray chits for each individual crop and the records of produce received at the Depot.

Completed crop records will then be stored for two years in individual farmer files in the Depot Office.

Requirements

1. A new crop history records must be started for each planting.
2. Information required includes:

Seed	Variety	Source	Amount used	
Fertiliser	Date applied	Type used	Amount used	Signature of operator
Manure or compost	Date applied	Type used	Amount used	Signature of operator
Manure soup	Date applied	Type used	Amount used	Signature of operator
Mulch	Date applied	Type used	Amount used	Signature of operator

All 'Amounts used' should be quoted per area planted not per hectare. Application rates per hectare can be calculated at a later date if required.

Please ensure that you crop supervisor knows what is required and that all this information is recorded in a clear and accessible way.

Your Extension Officer will initially help you to complete the Crop History Record each week and will check that the records are being kept up to date.

Note: Agriflora will not be able to export produce that does not have a complete set of records under the EUREP GAP label.

Agriflora Small Scale Staff thank you for your co-operation.

EUREP GAP Advice Note 3. October 2003

**Agriflora
Small Scale Out Grower Scheme**

Crop History Record

Co-operative: **Farmer Code:**

Farmer Name: **Signed:**

Crop: **Plant Week:**

Field: **Area Planted:**

Land Preparation:

Please record all tillage activities, e.g. Spread base dressing by hand and formed raised beds using a hoe. Carried out 12 -14 / 10 / 03

Planting:

Date	Variety	Seed Supplier	Quantity sown

Fertiliser Used:

Basal Dressing				Top Dressing			
Date applied	Type	Total used	Applied by	Date applied	Type	Total used	Applied by

Organic manure/compost, soup and mulches used:

Organic Manure/Compost				
Date applied	Type	Amount	Method of Application	Applied by

Mulch used				Soup used				
Date applied	Type	Amount	Applied by	Date applied	Type	Amount used	Method of appl ⁿ	Applied by

Memo:

To: All Small Scale Farmers (Export Vegetable)
From: Agriflora Head Office **D. Harvey**
Clyd Muunza
Date: 10th October 2003
Subject: Labelling of Produce

Introduction

As you are aware all Agriflora commercial and small scale production will need to be EUREP GAP compliant by the end of 2003 or at the latest by early 2004.

One of the requirements for this standard is that produce can be traced to an individual block of land and that records show clearly when individual crops were sprayed and harvested.

Therefore it becomes essential that each unit of crop has an individual identity.

Requirements

1. Each planting should be identified by the 'Plant Week' and field no..
2. The 'Plant Week' should be shown on a label in the Block concerned and on all crates and boxes of produce that are delivered to the Depot.
3. Labels should be written clearly on strong paper or card and attached firmly to each crate or box of produce.
4. Produce from different plant weeks must be kept separate.
5. The 'Plant week' should be included on all the produce labels starting from mid October 2003.

<p>Farmer Code:</p> <p>Type of Produce:</p> <p>Variety:</p> <p>Harvesting Date:</p> <p>Plant Week:</p>

Please Note: Produce that is not fully labelled will not be accepted at the Depot

Agriflora Small Scale Staff thank you for your co-operation.

EUREP GAP Advice Note 1. October 2003

Record Trail

**Agriflora
Head quarters**

Stock Records		
What, When, Who to, What for, How much		
Seed	Fertiliser	Pesticides

Requisitions

Goods Received Notes

Depot

Stock Records		
What, When, Who to, What for, How much		
Seed	Fertiliser	Pesticides

**Pesticide labels
Pesticide stock records**

Goods Issued Notes

Farm

Seed	Fertiliser
Crop History	
Manure & Manure soup	Mulch

Crop Recommendations From farmer handbook	Crop Scouting Records
Spray Instructions	
Spraying Record	

Depot

Farmer File
Collated per crop Crop History Crop Scout Records Spray Records Harvest Records

Produce Received
Harvesting Record

GRN
Delivery to
Pack House

10.Guidelines for the production of Baby Corn

Land Preparation.

All seed beds produced must be of a good quality with an open subsoil and a fine textured seeding area. The soil must not be too loose and puffy in the seeded area as this will result in uneven planting depth.

Where possible the crop can be planted directly into the previous crops seed bed.

Fertilisers.

Basal:

Compound W/V (6 : 18 : 12 4 % S, 0.5 % Zn, 0.1 % B) @ 300 kg / ha applied as a broad band (10-15cm) in the middle of the bed at 10 cm deep.

Checks must be made on soil analyses as the removal of nutrients will differ dependent on whether or not the crop stover is removed.

Top dressing:

A total of 115 kg/ha of Nitrogen is required.

Urea is used at a total rate of 250 kg / ha, given at the following times;

Rate/ha (kg)	Weeks after emergence.
150	2
100	4

This can all be applied through the drip irrigation or by top dressing.

The timings are indicative of say April or September and not absolute and may need to be altered according to the growth of the plants and the weather conditions prevailing at the time.

Planting.

The seeds must be dressed with Gaucho at a rate of 250gm / 100 kg of seed.

At all stages of seed handling it must be treated very carefully and not dropped as this will damage the seed coat and affect germination.

Seeds are planted at a depth of 25 to 50 mm at a spacing in the row of a 11.5 cm which on an average row spacing of 0.8 m row will give a plant population of 110,000 /ha .(A quick check for this is to measure 10 m and there should be 8 to 9 plants / m of row measured.

The rows are 450 mm apart on the beds which have 1600 mm centres. It is most important to make sure the seeds are planted at the correct depth and at a uniform depth. It is also important that the seed bed surface is fine and friable to facilitate rapid emergence.

The seeds must not be planted into dry soil.

Dripper lines should be moved to ensure that the area to be planted is thoroughly wet before planting and that there remains adequate moisture in the germination area around the seed until there is sufficient root run to place the dripper line centrally.

It will be necessary to examine the soil and root run to establish when the line can be left in a central position.

The ZS 206 seed used at present has a seed count of around 2000 seeds per kg.

Irrigation.

The soil must be brought to field capacity before planting and allowed to dry sufficiently to allow planting.

Immediately following planting the individual lines must be irrigated with the dripper lines to bring the soil back up to field capacity in the planting lines. Thereafter the lines must be irrigated at least every other day to maintain a damp (not wet) environment around the seed. After full emergence the dripper line must be moved to the centre of the bed and irrigation reduced to a suitable level and to encourage the roots into the centre of the bed.

Careful monitoring of the soil moisture status by digging inspection sites must be carried out to ensure the correct amount of irrigation is applied to allow optimum plant growth without wasting water.

In addition to the above, immediately following the herbicide application the crop must receive 12 mm of overhead irrigation to move the residual herbicide to its activity site.

During the growing season it may be necessary to 'wash' the crop with overhead irrigation either for dust removal or to help in the control of Red Spider Mite.

Irrigation must be applied after emergence in accordance with the amount indicated by the class A pan and as confirmed by the tensiometers

To ensure accurate application and recording the water should be applied by volume, 10 cu.m. = 1 mm/ha.

Chemicals.

There are two standard treatments to the Baby corn crop.

1. At around 45 cm high the crop must receive 2 kg/ha of Zinc Sulphate.
2. At around waist high but before the flag leaf covers the funnel the crop must be treated with granules (see list) for the control of stalk borer.

Within a day of planting the crop must receive a herbicide which must be irrigated in immediately as described in the irrigation section.

NB:

Scout the crop from one week after germination to assess any secondary infections / infestations of *Rhizoctonia*, wire worm or cutworm.

The scout should dig up +/- 20 plants per hectare **complete** with all their roots. These samples should be stored in damp newspaper in a cold box until inspection is made by the relevant manager. This sampling should be done weekly from the first week after germination until week 4 or 5 depending on the severity and persistence of disease and insect infestations. On this basis the crop may receive a second dose of chemical.

The other crop protection products available are given on a separate sheet but the following guidelines / rules must be adhered to.

The use of pesticides must follow a practical rationale taking into account crop stage, weather conditions and the results of crop scouting to give an integrated pest management system which gives good quality produce at optimum yields with minimum pesticide use.

Harvesting.

The aim of the harvesting group is to harvest the crop at the correct specification with the minimum of damage in the shortest possible time to allow for maximum heat removal before the produce enters the cold chain.

The specified sizes for Baby Corn are as follows,

Cob length 90 - 100 mm

Cob diameter 15 - 20 mm

The cob should be straight and have no broken tips.

The harvesters must be trained to remove the cob from the plant by holding onto the stalk with one hand whilst gripping the cob firmly with the other and peeling it off the plant. For this she will require a satchel to allow her to put each cob in it.

The sack carriers will move around in the plot and will transfer cobs from the harvester's satchel into one sack (the aim is to reduce the time which the remain uncooled) and this will be carried to the shelter where it will be soaked in clean water before being placed on a pallet in the shelter .

The shelters will be covered with shade cloth, thatching grass and hessian sacking or, if possible the walls will be constructed of charcoal in between chicken wire. The latter system is best but due to theft is normally not practical. The shelters will be kept clean and tidy with no personal effects or children in the immediate area. The shelters will be kept damp to ensure further hydrocooling whilst the product is awaiting collection.

The produce will be collected at no more than one hour intervals and will be transported to the cold room/pack shed.

The transport will be cleaned on a regular basis. This must be at least once per day but may be more often depending on the prevailing conditions.

Sacks must be washed on a daily basis, initially in clean water then dipped in a solution of chlorine or Sporekill.

The productivity of the harvesters must be monitored to ensure that they are harvesting an agreed rate of product (130 to 150 kg/day) of the correct quality in the agreed way. This is obviously an area where the supervisors need thorough training and clear instructions to enable them to carry out their duties properly. This will entail training in the correct stages to pick and how to check their workers by checking both in their crates and on the plant.

Rotation;

There does not appear to be any problem with continuous growing of Baby Corn. However there are several factors which must be considered.

- The amount of trash involved when a crop is chopped and deposited on the ground is considerable . This can be beneficial in that it provides an excellent mulch if it can be left on the soil surface.
- If this is left on the soil surface it will have the benefits of stopping weed growth whilst will conserving moisture and will give an environment which will be conducive to beneficial insects. The disadvantages are that modifications will be needed to the planters to allow them to plant through it , and it may lead to rotting around the stems if it is in contact with them , it may also harbour harmful insects.
- If it is to be incorporated, care must be taken to distribute it through the soil profile which may be difficult depending on the time of the year and the machinery employed.
- With the build up of Grey leaf spot as a major maize disease care must be taken in the scouting for this disease. Initial information is that on commercial maize crops it is often not a problem until later in the season, implying wind borne infection. If it is transmitted through infected trash field infection is earlier.
- The former infection should not be of major concern to us, but the latter must be watched for as if any crops do have small infections this could lead to a build up of the problem for the baby corn.

11. Emergency Procedures and First Aid training

First Aid provision and appropriate emergency procedures were discussed by the Agriflora Small Scale Scheme management team and NZTT staff during the needs analysis phase of the project and the following division of responsibility was agreed:

- Each farmer to be informed of:
 - The need to have a simple first aid kit on site
 - The need for staff to know what to do in the event of an accident or emergency
- Each farmer to provide, for on site use a simple First Aid box to deal with minor injuries
- Each farmer to nominate a person to be responsible and take appropriate action in the event of a serious accident on the farm
- Each Depot to have a comprehensive field First Aid Box
- One Depot member of staff, Clerk or Grader and the Extension Officer to receive First Aid training.
- Accidents that cannot be dealt with at a local clinic should be brought to the attention of the Depot staff who will radio to Waterfalls Pack House to request assistance.
- Procedures for action to be taken in the event of personal contamination with pesticides are to be provided for each Depot and included in the training for all Agriflora spraymen

Agriflora Small Scale Management team will:

- Liaise with farmers regarding the need for first aid provision on the farm and for emergency procedures to be put in place
- Provide a First Aid Box for the each Depot
- Arrange for emergency procedures to be displayed prominently in each Depot.

NTZZ will:

- Organise First Aid Training
- Arrange for procedures for action in the event of pesticide contamination to be provided for each Depot

First Aid Training

NZTT has an arrangement with the Zambia Red Cross for the delivery of Basic First Aid training.

Zambia Red Cross provide trainers and the Basic First Aid course is adapted to include practical examples of accidents that may occur in a farm situation, e.g. cuts, burns, heat stress, pesticide poisoning, insect and snake bites, etc. A member of the Trust staff attends all courses to ensure that sufficient attention is given to relevant examples and practice of appropriate treatments.

Two courses were arranged in November 2003 and January 2004.

A list of Trained personnel is provided overleaf and displayed in each Depot

12. Farmer Files and Depot Files

Agriflora Small Scale Farmer Scheme (Export Vegetables)

Farm Records

Records are essential as a farm management tool and as evidence for tracability and auditing exercises.

All records must be retained for reference for 2 years:

Each farm must have, at the Depot, an individual file containing all records pertinent to the product accepted for export.

- Farm site summary sheet
- Farm map
- Annual cropping programme
- Staff organogram, inc. Key names and allocation of key responsibilities

- Quarterly internal audit report
- Training records

Per crop

- Planting summary sheet
- Scouting records
- Spraying records
- Collated harvest record

Some of this information is required directly for the External Audit and all information, when placed on a spread sheet for analysis will provide the External Auditor with an overview of the scope and homogeneity of each farmer group that will assist with the selection of which farm site to include in the Audit on this occasion.

These files are kept at the Depot for reasons of security and easy access but are available to each farmer should he/she wish to see what is on file at any time.

Data to complete each farm profile has been collected by the Extension officers during their routine farm visits and is filed in each farmer file by the Depot Clerk.

Procedures for Farm Records

Record	Procedure for collection	Person responsible
Farm site summary	<ul style="list-style-type: none"> • Updated annually during routine internal audit • Start date: October 	<ul style="list-style-type: none"> • Farmer to supply information • Internal auditor to record • Depot clerk to file
Farm map	<ul style="list-style-type: none"> • Updated annually during routine internal audit • Start date: October 	<ul style="list-style-type: none"> • Farmer to supply information • Internal auditor to record • Depot clerk to file
Annual cropping plan	<ul style="list-style-type: none"> • Updated at each planting • Produced annually during routine internal audit • Start date: October 	<ul style="list-style-type: none"> • Farmer to supply information • Internal auditor to record • Depot clerk to file
Farm staff organogram	<ul style="list-style-type: none"> • Updated when changes occur • Produced annually during routine internal audit • Start date: October 	<ul style="list-style-type: none"> • Farmer to supply information • Internal auditor to record • Depot clerk to file
Crop history (Planting summary sheet)	<ul style="list-style-type: none"> • Start at each planting • Record production activities when carried out 	<ul style="list-style-type: none"> • Farmer to complete • Extension officer to check at each visit • Extension officer to check before filing • Depot clerk to file • Internal auditor to audit monthly
Crop scout records	<ul style="list-style-type: none"> • Start Two weeks after each planting date • Inspect crops weekly and record findings 	<ul style="list-style-type: none"> • Extension officer or spray man at the request of the Extension officer • Depot clerk to file • Internal auditor to audit monthly
Spray record	<ul style="list-style-type: none"> • At each spraying 	<ul style="list-style-type: none"> • Extension officer to prepare spray instructions • Spray man to record chemical issue and actual spraying done • Depot clerk to check and record pesticide issues and to file completed spray record. • Internal auditor to audit monthly
Produce Delivery (Harvest records)	<ul style="list-style-type: none"> • At each delivery to the Depot 	<ul style="list-style-type: none"> • Depot clerk to record, check PHI is observed, collate harvest record and file in the farmer file • Internal auditor to audit monthly
Complete crop record	<ul style="list-style-type: none"> • Farmer to submit planting record and Depot clerk to collect and collate all other data when each Block is closed 	<ul style="list-style-type: none"> • Depot clerk to check completeness and present to the Extension officer to check when block is closed and before crop file is closed • Internal auditor to audit monthly

Agriflora Small Scale Farmer Scheme (Export vegetables)

Farm Site Summary

Farmer Name: **Farm Number:**

Depot: **Farmer Code:**

1. Land

Total area of production on the site:

Area used for export vegetables:comprising:

Field No.	Field area	Soil type

Land is subject to seasonal flooding Yes No

Site is fenced Yes No

Activities on neighbouring land/farms include:

Native bush Livestock Cotton Maize

Tomatoes Onion Cabbage sp. Coffee

Other
.....

2. Crops grown

Export crops: Baby Corn Plant months

 Mange Tout Plant months

 Coffee: Area:

Other crops: Maize Cotton Tomatoes Cabbage sp.

 Onion Others:

3. Livestock on site

Type	Enclosed	Free	Type	Enclosed	Free
Hens			Goats		
Cows			Rabbits		
Pigs			Other		

4. Water Sources and application methods

Water Source(s) used

Bore hole

Depth Output

Well

River

Irrigation methods used

Overhead Drip

Furrow/flood

5. Use of Manure

Animal manure is used

Yes No

Type(s) used

Cow Pig Hen Goat

Used

Fresh Dried Composted

Incorporated

Yes No

Manure soup is used

Yes No

Crops treated	Age at application	Applied by drench/spray	Crops treated	Age at application	Applied by drench/spray

Human sewage is used

Yes No

6. Handling and Transport

An adequate field shelter is in use Yes No

Produce is pre-graded before delivery to the Depot Yes No

Produce is delivered to the Depot by:

Head wheelbarrow Bicycle Bus Cpen Vanette Closed car

Distance to the depot is:

7. Site Facilities

Field toilets are provided Male Female Mixed

Hand washing is provided at the toilet site Yes No

Hand washing is provided in the field Yes No

Potable drinking water is provided in the 'field' Yes No

First Aid equipment is available on site Yes No

A person trained First Aid is available on site Yes No

Distance to the nearest clinic is:

8. Comments

PRODUCTION: Site plan

Homestead / Farm Site Plan

Please complete the table below and draw on the next page a sketch of site showing:

Approximate size
Wind direction
Locations of items specified in table below

Items for consideration	Distance from horticultural plot [m]	Slope and relative direction of plot ¹
Sanitary facilities (family household toilets)		
Field toilets		
Communal toilets (e.g. schools)		
Water sources, rivers, boreholes etc.		
Animal kraals		
Stored manure		
Rubbish disposal pit		
Activities on neighbouring land		

¹ 1 = uphill of plot; 2 = downhill of plot; 3 = same level as plot

Agriflora Small Scale Farmer Scheme (Export vegetables)

Farm Cropping Plan

November 2003 – 2004

Farmer:

Cooperative: **Farmer code:**

Field Name	Field size	Predicted		Actual	
		Crop	Plant date	Crop	Plant date

Signed: **Farmer** Date:

Agriflora Small Scale Farmer Scheme (Export vegetables)

Depot:

Farm Code:

Farm Owner:

Season 2003-4

Summary of Job Allocation

Topic	Task	Owner	Farm Supervisor	Permanent	Casual
Planning	Field naming & demarcation				
	Cropping plans				
	Planting dates				
Land Preparation	Supervision				
	Practical land prep.				
Application of fertiliser & manure	Decision: what, when, how much				
	Supervision				
	Practical application				
Irrigation	Decision: when, how & how much				
	Supervision				
	Practical application				
Crop history record	Completion of crop history records				
Crop scouting	Scouting & recording				
	Report to Extension Officer				
Spray' local crops	Decision: What, when, how much				
	Practical application				
	Records				
Weeding	When to weed				
	Supervision				
	Practical weeding				
Harvesting	Supervision of rate of work, work quality, and hygiene practices				
	Washing crates & wet pads				
	Practical harvesting				
	Transport to farm store				
	Transport to depot				
Site hygiene	Removal of old crop				
	Cleaning toilets				
	Hand wash provision & use				
	Waste disposal				
Staff management	Hiring				
	Allocation to tasks				
	Emergency help and First Aid				
Staff training	Land preparation				
	Application of fert. and manure				
	Use of irrigation				
	Harvesting				
	Hygiene				
Liaison with Agriflora	Liaison with Extension staff				
	EUREP GAP requirements				
	Technical training/Open Days				
	Inputs/planting/spraying/produce				

Agriflora Small Scale Farmer Scheme

Job Descriptions

Farm Supervisor

The Farm Supervisor reports directly to the farm owner and is required to:

1. Liaise with the farm owner regarding work to be done
2. Allocate tasks and issue instructions to farm staff
3. Supervise the work done by all permanent and casual farm staff
4. Ensure that targets are met and that work is done to the required quality standards
5. Assist with training farm staff
6. Keep records of farm activities
7. Report to the owner all aspects of work done, produce harvested, problems that have occurred or need attention
8. Carry out production activities as required, e.g. scouting, spraying of local crops
9. Liaise with the farm owner regarding implementation of safe working practices on the farm
10. Undertake all other duties as directed by the Farm Owner

Farm Staff, permanent and casual

Farm staff report directly to the Farm owner/Supervisor

.....

Farm staff are required to:

1. Carry out practical farm work and harvesting as directed by the Farm Owner/Farm Supervisor
2. Follow instructions given by the by the Farm Owner/Farm Supervisor
3. Meet production targets and the standards for quality and hygiene specified by the Farm Owner/Farm Supervisor
4. Bring any problems, queries and concerns, relating to crop production and harvesting to the attention of the Farm Owner/Farm Supervisor
5. Work with due regard to their own safety and that of fellow workers
6. Undertake all other duties as directed by the Farm Owner/Supervisor

Crop Records

Collated and filed per crop

Planting Record

Crop Scout records (+/- weekly) as necessary

Spray instructions and spray chits

Harvesting records

**Agriflora
Small Scale Out Grower Scheme**

Crop History Record

Co-operative: **Farmer Code:**

Farmer Name: **Signed:**

Crop: **Plant Week:**

Field: **Area Planted:**

Land Preparation:

Please record all tillage activities, e.g. Spread base dressing by hand and formed raised beds using a hoe. Carried out 12 -14 / 10 / 03

Planting:

Date	Variety	Seed Supplier	Quantity sown

Fertiliser Used:

Basal Dressing				Top Dressing			
Date applied	Type	Total used	Applied by	Date applied	Type	Total used	Applied by

Organic manure/compost, soup and mulches used:

Organic Manure/Compost				
Date applied	Type	Amount	Method of Application	Applied by

Mulch used				Soup used				
Date applied	Type	Amount	Applied by	Date applied	Type	Amount used	Method of appl ⁿ	Applied by

Agriflora Small Scale Farmer Scheme (Export Vegetables)

Collated Harvest Records

Farmer: **Farm Code:**

Field No: **Field Area:**

Crop: **Plant Week:**

Date Delivered	GRN No.	Gross Weight delivered	Export Weight Accepted	
Total				

Gross yield per hectare:

Export yield per hectare:

**Agriflora Small Scale Farmer scheme
Spray Chit**

Co-operative:

Farmer: **Farm Code:**

Crop: **Plant Week:** **Field no.**

Target Pest(s):.....

Reason for spraying: Planned prophylactic Meteorological
 Scouting

Size of plot to be sprayed:

Equipment to Use: Knapsack:
 Nozzle type:
 Nozzle output required:

Chemicals to use: (List in order of addition to the spray tank)

Chemical Name	% Active Ingredient	Application Rate/ha	Amount per 16Lts	Number of tanks to use	Harvest Interval

Mixing instructions: Apply singly Tank mix

Authorised: **Date:**

Extension Officer

To be Completed by the Sprayman

Total chemical used:

Product 1: **Product 2:**

Product 3: **No. of Tanks used:**

Signed: Sprayman:

Farmer:

Date job completed: **Date of next Harvest :**

Agriflora
Small Scale Farmer Scheme (Export Vegetables)

Depot Reference File(s)

Each Depot should have available for reference:

- Staff records
 - Staff organogram
 - Job descriptions
 - Staff training records
 - Crop husbandry
 - Basic food hygiene
 - Pesticide application
 - First aid
 - List of trained First Aiders
 - List of key holders
 - List of people who may handle and apply pesticides

- Pesticides
 - List of permitted products for each crop grown
 - List of products currently in store
 - Copies of the label for each of the products in store
 - Approved application rates for each produce and each crop
 - Inspection and issue of protective clothing
 - Receipt and disposal of pesticide containers

- Advice to farmers
 - Advice notes: Field labelling
 - Crop history records
 - Pesticide residue management
 - Fertiliser application
 - Use of manure
 - Harvesting rules
 - Cold chain management
 - Product labelling

- Crop husbandry
 - Advice
 - Production Handbook
 - Synopsis of presentations at field days

- Risk evaluations
 - New production sites
 - Use of manure
 - Hygiene

- EUREP GAP
 - Farm check sheets
 - Depot check sheets
 - master
 - Quarterly Audit reports
 - EUPEP GAP Requirements

- Emergency
 - Procedures
 - Who to contact in the event of
 - How to make contact