IOWA STATE UNIVERSITY
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QUALITY MANAGEMENT FOR SEED ENTERPRISES IN DEVELOPING COUNTRIES

A Reference Manual

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Adelaida Harries

CROP 3070 MAY 2015

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Funding provided by the Seed Science Center at Iowa State University.

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Special thanks to Richard Steckel for the use of his photos that appear on the following pages: Inside cover, 2, 7, 16, 21, 33, 60, 125 and 131. Remaining photos provided by the Seed Science Center at Iowa State University.

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Acknowledgements

First and foremost, we thank Iowa State University and, in particular, the Seed Science Center, for providing us with the time and resources to develop this publication.

Our deepest appreciation to Dr. Manjit Misra, Seed Science Center Director, for his friendship, his inspiration, and for providing us the professional freedom to make the Global Seed Program a reality.

Individually, the first author wants to thank Johnson Douglas of Centro Internacional de Agricultura Tropical (CIAT) and Dr. James Delouche of Mississippi State University for sharing their knowledge and experience, which put him on the path of seed system development, and to Mark Condon of the American Seed Trade Association, who believed in the concept of harmonizing seed regulations that could lead to expanded regional seed trade.

The second author wants to thank Felipe Sola, Former Minister of Agriculture of Argentina, Dr. Bernard Fabre from Groupement National Interprofessionnel des Semences et Plants (GNIS) France, and Norberto Severo from the Argentinean Seed Trade Association, for expanding her understanding of seed business, seed policy and seed industry needs.

The authors are also deeply indebted to DuPont Pioneer experts in process management for providing the initial concept, training, materials and experience in the MERCOSUR[1] region.

There are so many people around the world to whom we are grateful, who contributed information, knowledge, experience and enduring friendship. Many of them belong to the public and private seed sector of all the countries that we had the pleasure and fortune to work with over the years. It is impossible to do an all-inclusive list of these colleagues, so we decided to include the list of countries to which they belong:

America: Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Cuba, Dominican Republic, Ecuador, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, United States, Uruguay and Venezuela.

Africa: Angola, Benin, Botswana, Burkina Faso, Burundi, Cape Verde, Chad, Comoros, Democratic Rep. of Congo, Djibouti, Egypt, Ethiopia, Gambia, Ghana, Guinea, Guinea Bissau, Ivory Coast, Kenya, Lesotho, Liberia, Madagascar, Malawi, Mali, Mauritania, Mauritius, Morocco, Mozambique, Namibia, Niger, Nigeria, Rwanda, Senegal, Seychelles, Sierra Leone, South Africa, South Sudan, Sudan, Swaziland, Tanzania, Uganda, Zambia and Zimbabwe.

Asia: China, India, Indonesia, Kazakhstan, Nepal, Philippines, Russian Federation, Thailand, Uzbekistan and Vietnam.

Special thanks to Stephanie Padilla who edited this manual, to Regina Hendrickson who worked on the layout and to the students of the Seed Policy and Regulations Course BusAd 509, of the Graduate Program in Seed Technology and Business, Seed Science Center, Iowa State University, for their coursework thoughtfulness in the analysis of selected procedures of the quality manual.

Joe Cortes and Adelaida Harries

[1]MERCOSUR member countries include Argentina, Brazil, Paraguay, Uruguay and Venezuela.

Introduction

Most developing countries around the world have concluded that delivering high quality seed of improved varieties through a strong seed industry is a key element to their agricultural growth. This is easily seen in most South American countries and in the recent growth of the seed sector in Africa and Asia. It should be recognized that in most cases, this growth has been initiated by the start-up of small- to medium-sized seed enterprises. Governments in Africa, Asia and Latin America, meanwhile, should continue to support the further development of their local enterprises in reaching ***all*** of their farmers with *all* crop seeds in *all* of their agricultural areas.

All seed enterprises, whether small, medium or large, commonly strive to produce and market high quality seed to farmers. In their efforts to reach this goal, smaller organizations frequently concentrate on technical improvements, and not necessarily on the organizational enhancements that will lead to a truly high quality seed enterprise. One methodology, called *process management*, seeks to identify and make the necessary procedural changes in the organization that are needed to attain this goal.

The principle behind the process management concept is that a high quality organization is essential to ensure a high quality product. In process management, the organization identifies, controls and documents all critical management and operational processes and audits the management and procedures in a structured and periodic manner. Within each process, the critical procedures are identified and developed through a careful write-up in accordance with a standard preparation model, followed by strict adherence by the staff to the established procedure and the recording of all required information in the procedure.

This reference guide is intended to help small- to medium-sized seed enterprises reach that high level of quality by establishing process management in their organization, basing it on a quality manual that must be developed by the individual seed enterprise. This guide provides the information required for developing the quality manual, and illustrates selected procedures through the example of a fictitious seed enterprise: C&H Seeds (Cortes and Harries Seeds), which specializes in rice and maize seeds, and is located in a developing country. C&H Seeds has a General Manager, who is assisted by a Financial Officer, a Marketing Manager and a Production and Quality Manager. They are supported in turn by a Promotion and Sales Leader and a Conditioning Plant Leader. In a smaller company, the General Manager may take the responsibilities of the Financial Officer and the Marketing Manager, and the Production and Quality Manager may cover the responsibilities of the Field Leader and Conditioning Plant Leader until the volumes justify adding a Marketing Manager, a Financial Officer or Operations Leaders.

This reference manual is divided into two parts, *Management* and *Procedures*. The management section (Part A) is further divided into four sub-sections that explain:

1) The management's commitment, the company's quality policy and objectives and how management reviews its operations;

2) The organizational structure, facilities, equipment and other resources available;

3) The enterprise's production standards and critical procedures developed and followed, customer communication, purchasing guidelines of critical inputs and traceability of seed from seed sold to farmer back to basic seed utilized;

4) The measurement of customer satisfaction and control of any non-conformity, either procedural or of seed itself.

The procedures section (Part B) is divided into *Administrative Procedures* and *Operational Procedures*. The preparation model for the procedures in process management always includes the following eight elements, and is the basis for all procedures presented in this guide:

1) ***Purpose:*** describes "why" this procedure is critical.

2) ***Scope:*** identifies where the procedure starts and where it finalizes, e.g., from certified seed planted to seed harvested.

3) ***References:*** lists the documentation required for the procedure, e.g., documents, manual, government regulations, maps, photographs of a plant disease.

4) ***Definitions:*** words, abbreviations or acronyms used in the procedure that may not be readily understood by the responsible staff, e.g. roguing, National Seed Authority (NSA)

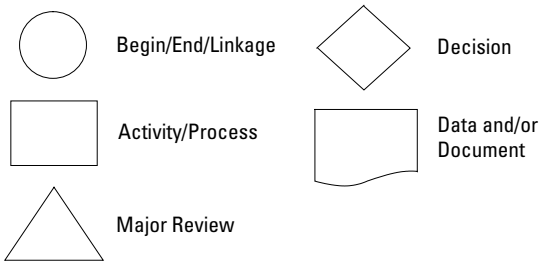
5) ***Responsibility and Authority:*** defines exactly who is responsible for which activities, and the extent of the person's authority, e.g., the Production and Quality Manager is responsible for supervising the calibration of all critical equipment.

6) ***Activities:*** describes all the actions (generally two to eight) that must be followed, defining what needs to be done, when it should be done, and where, if applicable. More than eight actions probably signifies that the procedure may need to be broken down into two procedures.

7) ***Records:*** normally, these are the product of an activity output. Records are critical objective evidence that an activity/procedure has been carried out and the output measured.

8) ***Flowchart and Annexes:*** a flowchart is the graphic representation of a procedure, with each activity linked to another and showing all its inputs and outputs. Flowcharts use the following symbols:

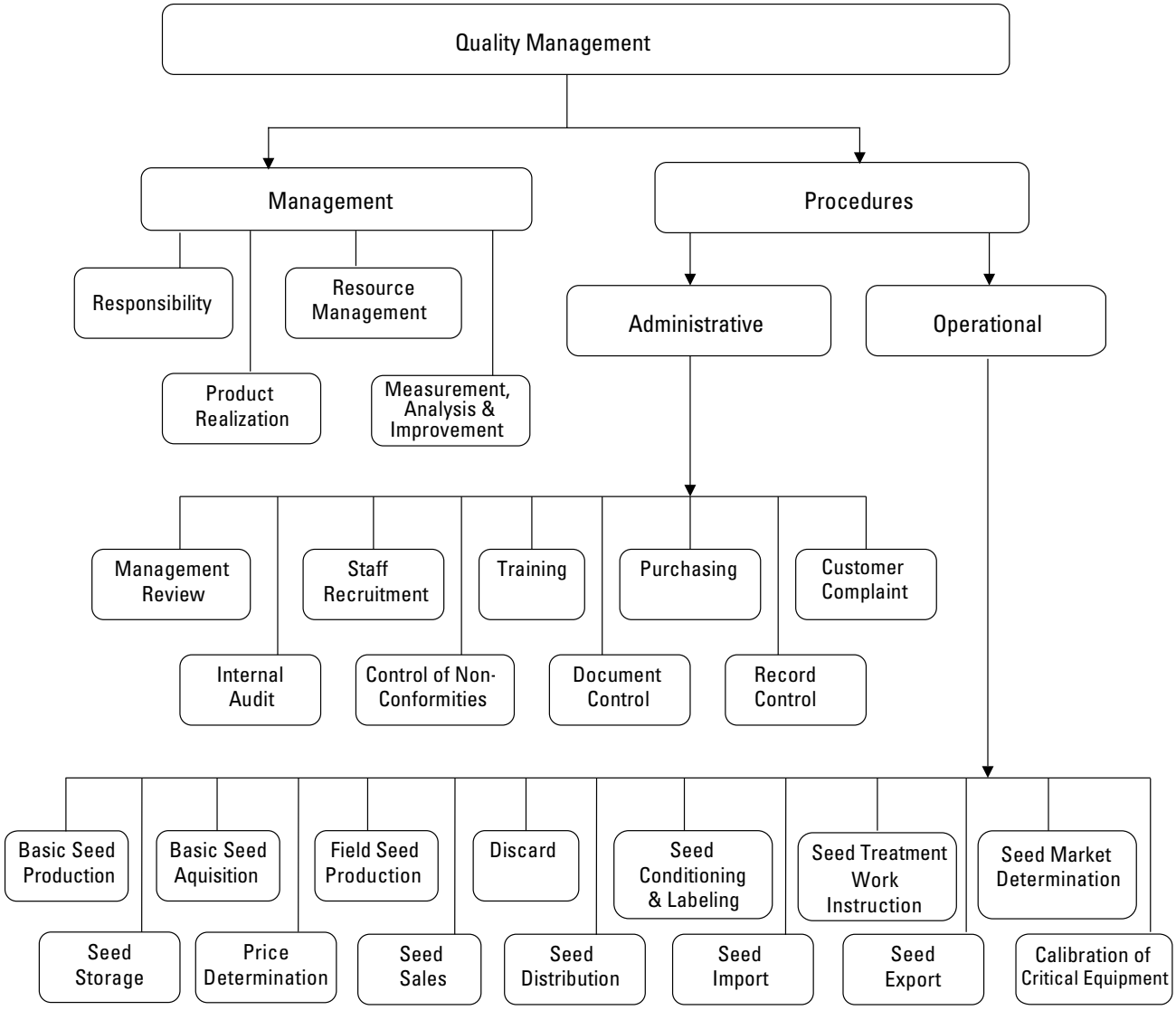
FLOWCHART SYMBOLS



Annexes are generally forms that are completed for the procedure. The procedures are related to tasks that require involvement of more than one person. In some cases, there may be one task/one person and these are referred to as a "work instruction". As an example, this guidebook has included a seed treatment work instruction in the seed conditioning procedure. In each section, subsection and procedure, there is an explanation (in italics) of the importance of the theme, followed by an example from C&H Seeds.

Each seed enterprise, as the following visual summary illustrates, should develop its own procedures, based on its specific requirements, and identify the critical procedures and activities. *In no case should the procedures or work instructions presented in this publication be used verbatim and applied to a specific seed enterprise.*

MANUAL VISUAL SUMMARY



Part A. Management

SECTION 1. MANAGEMENT RESPONSIBILITY

In this section, the quality manual should focus on the commitment of the enterprise's management to preparing and implementing the quality management system, and its continuous improvement toward attaining the status of a quality seed enterprise.

Example:
C&H Seeds has prepared and implemented a quality system that includes management's commitment to adhere to ISO 9001, which defines the quality management principles of an enterprise. C&H further describes, below, the management commitment and responsibilities, the quality policy, the quality objectives and the continuous improvement of the enterprise.

a) Management Commitment

Describe in this section, in general terms, the organization and how this quality manual relates to the seed enterprise.

Example:
C&H Seeds was established in 2014 to provide regional farmers with high quality seeds. The role of C&H Seeds is to contribute to the growth of the agricultural sector of the region through the provision of quality seeds and associated services, as identified and required by each and every value chain link.

This quality manual of C&H Seeds describes the procedures, activities and responsibilities that the company follows in the production and marketing of high quality rice and maize seed.

The General Manager is responsible for ensuring that resources are available to get the required tasks completed, on time and in compliance with the quality objectives.

The company maintains a system of document control and record control embedded in the quality manual, following Part B, Sections 1.h and 1.i.

b) Quality Policy

State the seed enterprise's quality policy and whether the entire company from management to all personnel understands the policy.

Example:
C&H Seeds is committed to offering the highest quality seed of improved varieties of rice and maize to farmers of our marketing areas, through strict control of the different production processes of each generation. Specific standards have been established by C&H Seeds for each crop and variety.

The General Manager and the entire staff of the company are committed to the quality policy through periodic programmed reviews.

c) Quality Objectives

Describe the quality objectives and their consistency with the quality policy to effectively use *company resources, respond to farmers' needs and ensure financial stability. Describe the future steps necessary to measure and improve the quality of the company.*

Example:
C&H Seeds aims to achieve complete customer satisfaction, with the vision of becoming one of the three best seed enterprises in the region.

For continual quality system improvement, the enterprise has selected qualified staff and modern equipment to ensure production of the highest quality seed, as described in Section 2.

d) Management Review

Describe the process that management follows to review the suitability and effectiveness of the quality system in the seed enterprise and to ensure continual improvement. This review shall include assessing opportunities for improvement and the need for changes to the quality management system, including the quality policy and quality objectives.

Example:
The General Manager of C&H Seeds shall conduct management reviews to verify the effectiveness and efficiency of the quality management system. A periodic review is conducted during key times of production and post-sales. The General Manager conducts the management review meetings twice a year, in June and December, following Part B, Section 1.a.

During the review, updated information on the inventory of seed available for sale, and the quantities and qualities by variety, are also made available for the General Manager, in order to determine the competitiveness of C&H Seeds.

Records of management reviews are maintained for future reference and consultation.

SECTION 2. RESOURCE MANAGEMENT

In this section, the General Manager should determine the resources that are essential for the achievement of the seed enterprise objectives. In the quality management system, it is also important to ensure the involvement and support of all seed enterprise personnel.

a) Organization and Resources

This sub-section should include the list of the seed enterprise personnel, responsibilities and activities. A job description should be included for each staff member so that all are aware of their responsibilities and conscious of their importance in the seed enterprise's quality system. The organizational flowchart of the seed enterprise with the description of the management structure should also be part of this sub-section. Identify and list the administrative procedures that, together with the operational procedures, are an integral part of the quality manual.

Example:
C&H Seeds has qualified personnel assigned to perform specific tasks, operations and processes, based on appropriate skills. Training needs are identified and individuals trained following Part B, Section 1.c.

b) List of Personnel and Structure of the Enterprise

This sub-section should present the list of personnel with their name, title, skills and responsibilities assigned, together with an organizational chart that provides a visual representation of the company structure.

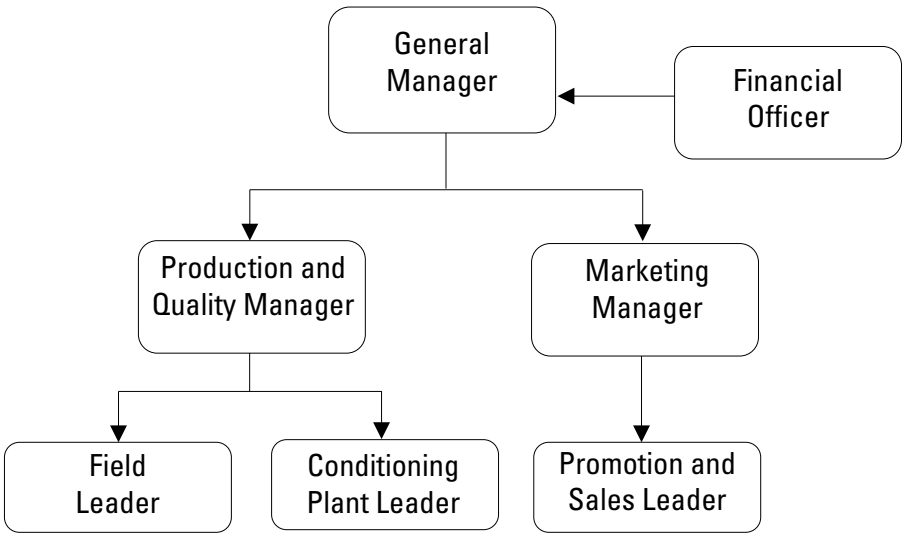
Example:
The following table shows the list of personnel to date of C&H Seeds:

LIST OF C&H SEEDS PERSONNEL

NAME	TITLE	SKILLED IN	RESPONSIBILITIES
Joe Cortes	General Manager	Leadership and customer service	Administrative and financial management
Adelaida Harries	Production and Quality Manager	Company quality and seed quality	Technical operations
Not named	Marketing Manager	Marketing and customer service/ sales	Marketing and sales
Not named	Financial Officer	Accounting	Human resources and financial transactions
Not named	Field Leader	Agronomy and seed production	Field production
Not named	Conditioning Plant Leader	Seed drying, conditioning, storage and quality control	Post-harvest operations
Not named	Promotion and Sales Leader	Sales and seed quality/distribution	Field demonstrations and distribution coordination

The organizational chart below describes the management structure of C&H Seeds.

MANAGEMENT STRUCTURE OF C&H SEEDS



c) Equipment (Ownership of or Access to)

This sub-section should show that the seed enterprise has the critical equipment needed to run a successful seed operation. The seed enterprise should include a list here of the equipment per section either as ***owned by*** *or* ***having access to*** *the equipment.*

Example:

C&H SEEDS EQUIPMENT LIST

SECTION	NUMBER	EQUIPMENT
Seed production	1	Tractor
	1	Planter
	1	Set of soil preparation and crop control machinery
	1	Combine
Seed conditioning plant	1	Platform scale
	2	Sampling equipment
	1	Sheller/thresher
	1	Drying equipment
	1	Cleaner
	1	Seed treater
	1	Bag closing equipment
Seed quality lab	1	Seed divider
	1	Balances
	1	Magnifying lamp
	1	Purity table
	1	Germination room
	1	Moisture meter

d) Map of Work Areas

This sub-section requires the inclusion of a map of owned fields, if all production takes place on land belonging to the seed enterprise. Also include a diagram of the facilities for receiving, drying, conditioning and storage of the seed, and of the laboratory for quality control, if owned by the seed enterprise. If not owned, a clarifying note should be written.

Example:
C&H Seeds does not include a map of the facilities because all seed production is produced utilizing contract farmers, the seed conditioning is serviced through a third party and seed storage is in a rented facility. All seed quality is provided through an accredited seed laboratory, authorized by the National Seed Authority.

e) Administrative Procedures

This sub-section should include a list of the administrative procedures that support the effectiveness of the seed enterprise management in all financial, purchasing, quality improvement and human resources documentation. Each enterprise should carefully select the administrative procedures critical for attaining a quality seed enterprise, together with the operational procedures described later in this document.

Example:
C&H Seeds has planned and developed the processes needed for the continual improvement of the management system.

C&H Seeds has developed the administrative procedures for the company based on the enterprise's quality objectives and standards to ensure an effective and efficient management of human and financial resources.

The following administrative procedures have been identified and prepared by C&H Seeds and are presented in Section B.2:

a) Management Review Procedure
b) Staff Recruitment Procedure
c) Training Procedure
d) Purchasing Procedure
e) Customer Complaint Procedure
f) Internal Audit Procedure
g) Control of Non-Conformities Procedure
h) Document Control Procedure
i) Record Control Procedure

SECTION 3. PRODUCT REALIZATION

Product realization is the series of steps and controls taken to ensure that the final product is of the quality established by the enterprise. In the case of seed enterprises, this includes all aspects of production, harvesting, drying, conditioning, treatment and bagging, storage, labeling, marketing and sales, and distribution. The other elements associated with product realization include designing and implementing communication strategies with customers to provide feedback on the quality of the variety and of the seed, to ensure that any input or purchased product shall not affect the quality of the enterprise's product. This also provides a system to track down the source of any seed-related problems.

Example:
C&H Seeds has established operational procedures, requirements and standards to control the final product, not only related to seed production, but also for communication with customers to verify seed quality, for purchasing to ensure the quality of critical inputs and for traceability to track and identify sources of quality issues.

a) Seed Production

Define and list the procedures needed for product realization (seed production, conditioning, storage and quality control). The following procedures are the over arching procedures for a small- to medium-sized seed enterprise. However, each enterprise should carefully select the operational procedures critical for attaining a quality seed enterprise, together with the administrative procedures.

Example:
C&H Seeds has planned and developed the processes needed for product realization (seed production, conditioning, and storage and quality assurance). C&H Seeds has also defined the procedures, documents, records and resources specific to rice and maize seed production.

C&H has developed operational procedures for seed production based on the enterprise's standards (see following table) reflective of customer requirements and in compliance with national and regional seed regulations.

C&H SEEDS FIELD AND LABORATORY STANDARDS FOR MAIZE AND RICE

MAIZE HYBRID, *ZEA MAYS* L.

FIELD STANDARDS	BASIC SEED	CERTIFIED 1 AND 2
Minimum number of seasons with a different crop	1*	1*
Isolation (m)	400**	300**
Off-types (maximum %)	0.05***	0.1****
Minimum number of inspections	6	6
Diseases (TBD)		
Laboratory standards		
Germination (minimum %)	85	93
Pure seed (minimum %)	99.5	99.5
Moisture (maximum %)	13	13

* Not required if volunteer plants are removed through irrigation/rainfall.

** Time isolation may replace distance isolation. Rows of male plants can reduce distance isolation.

*** The number of female parent plants that have either shed pollen or are shedding pollen exceeds 0.5 percent at any one field inspection, or the total number of female parent plants that have either shed pollen or are shedding pollen exceeds 1 percent for the three inspections carried out on different dates.

**** The number of female parent plants that have either shed pollen or are shedding pollen exceeds 1 percent at any one inspection, or the total number of female parent plants exceeds 2 percent at three inspections carried out on different dates.

RICE, *ORYZA sativa* L. (varieties)

FIELD STANDARDS	BASIC SEED	CERTIFIED 1ST
Minimum number of seasons with a different crop	1	1
Isolation (m)	3	3
Off-types (maximum %)	0.01	0.1
Number of inspections	5	5
Diseases (TBD)		
Laboratory standards		
Germination (minimum %)	80	90
Pure seed (minimum %)	99.5	99
Moisture (maximum %)	13	13

The following procedures have been identified and prepared for product realization and are presented in Part B, Section 2:

- Basic Seed Production Procedure
- Basic Seed Acquisition Procedure
- Field Seed Production Procedure
- Seed Discard Procedure
- Seed Conditioning and Labeling Procedure
- Seed Market Determination Procedure
- Seed Storage Procedure
- Seed Price Determination Procedure
- Seed Sales Procedure
- Seed Distribution Procedure
- Seed Import Procedure
- Seed Export Procedure
- Calibration of Critical Equipment Procedure

b) Customer Communication

This sub-section should explain how the seed enterprise communicates (verbally and written) with the customer. Describe the communication system within the company for brand recognition, presentation of new and existing varieties, post-sales follow-up, technology packages, customer complaints and supporting documentation.

Example:
C&H Seeds has developed a communication strategy with our customers as follows:

- Brand name: the name of C&H Seeds is routinely exposed to the public through local radio, local and regional civic participation, road signs and sponsorships with enterprise logos creating a relationship between the community and C&H Seeds
- Post-sales assistance, with field visits after the planting season
- Design and conducting of field days
- Immediate answers to customer complaints to verify and solve all claims
- Supporting documentation for improved communication includes reports of visits, commercial brochures, records of claims received and actions taken, newsletters and evaluation surveys for customer feedback.

c) Purchasing

This sub-section should describe how the purchasing system ensures that a purchased product conforms to specified requirements for materials and other finished inputs that are critical to the product realization, i.e. seed packaging, chemicals. Also, describe the system of control that ensures suppliers are periodically evaluated for product conformity to enterprise standards.

Example:
C&H Seeds evaluates and selects suppliers based on their ability to provide the specified product in accordance with C&H Seeds quality requirements or standards at a competitive price.

C&H Seeds has developed a software system to control and check the materials that are purchased under the responsibility of the Production and Quality Manager.

The enterprise has designed and follows the purchasing procedure described in Part B, Section 1.d.

d) Identification and Traceability

This sub-section should indicate how the seed enterprise identifies the product (seed) by suitable means throughout the product realization process. Describe the manner in which seed is identified and tracked, and the records and documents that allow and ensure the traceability of the product.

Example:
C&H Seeds identifies the seed through the different elements included in the following

table. Records are maintained for review of operations at any time.

Each manager is responsible for registering the identification of the seed with the Quality Manager, while Section Leaders are responsible for informing their managers of their traceability records.

ELEMENTS FOR TRACEABILITY

Code or number:	Grower:
Location:	Map/Field:
Crop:	Variety:
Class/Category:	Identity of seed planted:
Planting date:	Field report number:
Field approved by:	Date:
Lot number:	Weight:
Lot approved by:	Date:
Lot stored at:	Date:
Lot distributed to:	Date:

SECTION 4. MEASUREMENT, ANALYSIS AND IMPROVEMENT

This section explains the monitoring, measurement, analysis and improvement mechanisms needed to demonstrate product conformity, evaluate the quality management system and ensure its continuous improvement and effectiveness. To this end, a seed enterprise may establish the procedures of customer satisfaction, internal audit and control of non-conformities.

Example:
C&H Seeds has implemented a monitoring system with customers to ensure the quality of the seed and the enterprise, internal audits to flag potential non-conformities and improvements and specific measurement mechanisms to correct any non-conformity.

a) Customer Satisfaction

This sub-section describes the elements and measurements that determine customer satisfaction with the quality of the seed and of the seed enterprise. All procedures associated with customer satisfaction should be listed here.

Example:
C&H Seeds monitors customer satisfaction by collecting information through grower visits or surveys to determine if the organization has met customer requirements and expectations.

C&H Seeds measures customer satisfaction through the quantity of customer complaints, the number of claims resolved and unresolved and time period for resolution. Information is recorded and maintained in the quality system. Response to a customer complaint follows the customer complaint procedure detailed in Part B, Section 1.e.

b) Internal Audit

This sub-section explains the utilization of internal audits as tools to evaluate the strengths and weaknesses of the seed enterprise's quality system. It is used to obtain objective evidence that the seed enterprise's established requirements are being met. All procedures associated with customer satisfaction should be listed here.

Example:
C&H Seeds prepares, conducts and follows-up on internal audits to assess the quality management system of the enterprise. Internal audits are conducted on C&H Seeds' management or operational processes and/or procedures, randomly selected by the General and Quality Managers once a year. The internal audit is conducted following the internal audit procedure described in Part B, Section 1.f.

c) Control of Non-Conformities

As a result of an internal, external or compliance audit, there may be non-conformities that require resolution. This sub-section explains the commitment and mechanisms utilized by the seed enterprise to resolve non-conformities. In this section, the seed enterprise should describe the action, control and responsibilities taken to eliminate any detected non-conformities.

Example:
The principal purpose of C&H Seeds is to deliver high quality seeds of improved varieties of maize and rice to farmers in our marketing areas. Any and all non-conformities, arising through poor quality of our enterprise or our seed products, adversely affect our customers. Therefore, all non-conformities identified as a result of an audit are immediately addressed, possible solutions implemented and evaluated and final modifications endorsed and incorporated into the corresponding procedure of the quality manual. The control of non-conformities procedure is described in Part B, Section 1.g.

Part B. Procedures

SECTION 1. ADMINISTRATIVE PROCEDURES

a) Management Review Procedure

This first administrative procedure describes the manner in which a management review should always be prepared, conducted and evaluated. The General Manager should conduct this activity to verify the effectiveness and efficiency of the quality management system of the whole company.

1. **PURPOSE**
   - 1.1 The purpose of this procedure is to define the actions, interfaces and responsibilities for scheduling, conducting and recording management reviews of the quality management system.
2. **SCOPE**
   - 2.1 From the preparation of documents for management review to the recorded results of the management review.
3. **REFERENCES**
   - 3.1 Management review notes from previous meeting
   - 3.2 Corrective and preventive action reports
   - 3.3 Customer complaints
   - 3.4 Training records
   - 3.5 Schedules and work orders, instructions, samples
   - 3.6 Communications from customers, suppliers
   - 3.7 Internal audit reports
4. **DEFINITIONS**
   - 4.1 GM: General Manager
   - 4.2 FO: Financial Officer
   - 4.3 PQM: Production and Quality Manager
   - 4.4 MM: Marketing Manager
   - 4.5 FL: Field Leader
   - 4.6 CPL: Conditioning Plant Leader
   - 4.7 PSL: Promotion and Sales Leader
   - 4.8 CA: Corrective Actions
5. **RESPONSIBILITY AND AUTHORITY**
   - 5.1 GM is responsible for scheduling the meeting and preparing the Management Review Template (MR01 Annexe B).
   - 5.2 GM is responsible for chairing the meeting.
   - 5.3 A designated member is responsible for recording meeting notes.
6. **ACTIVITIES**
   - 6.1 Schedule meeting

6.1.1 GM shall prepare the schedule of the meeting twice a year and communicate to all staff.

6.1.2 Based on special conditions or situations, the GM may call for an extra meeting.

6.1.3 PQM shall prepare the agenda with the GM for the meeting (MR01 Annexe A), and distribute to the staff.

6.2 Conduct meeting

6.2.1 Management review meeting is chaired by GM and attended by designated staff.

6.2.2 During the meeting, the agenda should cover all items listed as "review input".

6.2.3 A designated employee shall record the meeting notes.

6.2.4 A Management Review Template is completed (MR01 Annexe B).

6.3 Review inputs

6.3.1 Based on the agenda prepared, management reviews input information.

6.3.2 The Quality Manager shall present:

- Status of action items from last meeting.
- Results of audits, including internal and third party.
- Status of corrective and preventive actions.
- Customer feedback: communication and satisfaction.
- Status of training programs.
- Progress on continual improvement goals, and review of current projects.
- Any product, process, capacity or operational changes that could affect the quality management system.

6.3.2.1 If any modification is needed, continue with 6.4.

6.3.2.2 If not, continue with 6.6.

6.3.3 Other issues that relate to the quality management system may be presented by other management members.

6.4 Review quality policy and objectives

6.4.1 The management reviews include evaluating progress toward fulfilling the quality policy and reaching quality objectives, to ensure their continuing relevance.

6.4.2 During the meeting, quality objectives will be compared in an effort to establish not only their completion, but whether the achievements met or exceeded expectations. In this way, management can decide whether to drop or change them.

6.4.3 New objectives may be established to improve performance.

6.5 Review output(s)

6.5.1 Management reviews are concluded with actions related to:

- Improving the effectiveness of the quality system
- Improving performance quality
- Improving products and/or services to meet customer requirements and satisfaction
- Resource needs

6.5.2 The improvement actions are formulated as quality objectives with measurable targets, due dates, responsibilities and resources for their implementation.

6.6 Record of the meeting

6.1.1 Management review output is documented in the minutes of the meeting, and action items are placed under special heading to ensure their identification.

6.1.2 PQM shall complete and sign the management review form and distribute to all the attendees.

7. RECORDS

7.1 Record of the Agenda

7.2 Records of the Management Review Meeting

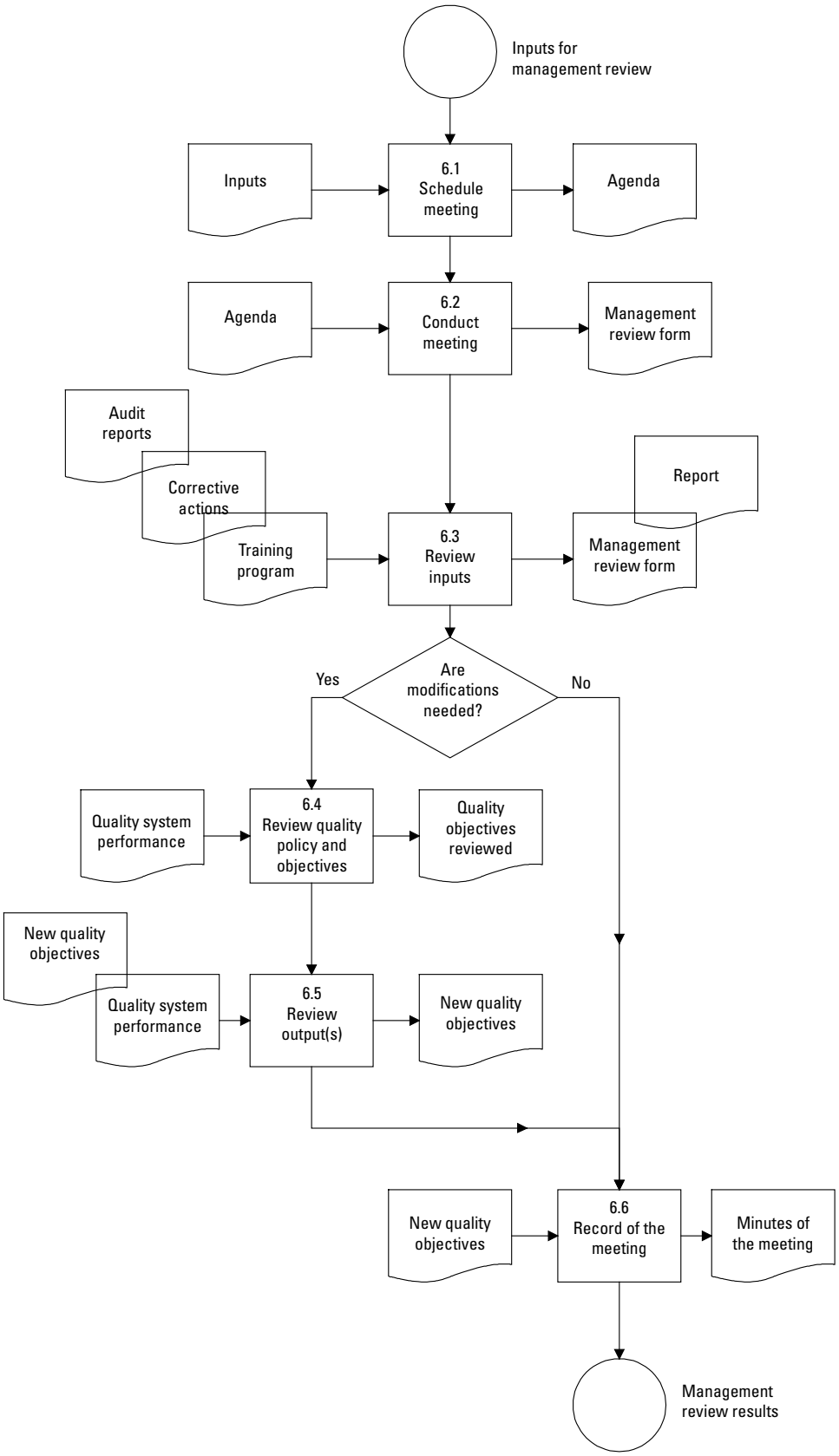
8. FLOWCHART AND ANNEXES

8.1 Flowchart: Management Review Procedure

8.2 MR01 Annexe A: Management Review Meeting Agenda Template

8.3 MR01 Annexe B: Management Review Template

FLOWCHART: MANAGEMENT REVIEW PROCEDURE



MR01 ANNEXE A. MANAGEMENT REVIEW MEETING AGENDA TEMPLATE

Meeting date: Meeting location:	Attendance:

Status of action items from last meeting:
1.
2.
3.

Results of audits, including internal, compliance and third party:
1.
2.
3.

Status of corrective and preventive actions:
1.
2.
3.

Status of training programs:
1.
2.
3.

Progress on continual improvement goals and review of current projects:
1.
2.
3.

Product, process, capacity or operational changes that could affect the quality management system:
1.
2.
3.

Actions taken to improve the quality management system and customer requirements:
1.
2.
3.

Other issues related to the quality management system:
1.
2.
3.

MR01 ANNEXE B. MANAGEMENT REVIEW TEMPLATE

Form number: Date:	Version number:
Activities to review:	
Follow-up issues from previous review:	
Corrective actions:	
Required follow up:	
New issues:	
Training needs:	
Schedule next meeting:	
Other remarks:	
Production and Quality Manager signature: General Manager signature: Date:	

b) Staff Recruitment Procedure

The quality of a seed enterprise starts with the quality of the staff in the organization. The careful selection of the enterprise's employees is crucial, not only in determining the technical abilities of the candidates, but in determining his or her commitment, which is equally important. This procedure is intended to streamline the hiring of new staff based on a well-developed job description, a wide advertising mechanism and an unbiased application and evaluation methodology.

1. PURPOSE

1.1 The purpose of this procedure is to define the actions, interfaces and responsibilities for hiring of new staff based on the company needs.

2. SCOPE

2.1 From identification of a hiring need to hiring quality staff.

3. REFERENCES

3.1 Company's organization structure
3.2 List of personnel and structure of the company
3.3 General Manager's report of staff needs
3.5 Job description
3.6 Application evaluation procedure
3.7 Company's advertising format

4. DEFINITIONS

4.1 GM: General Manager
4.2 FO: Financial Officer
4.3 PQM: Production and Quality Manager
4.4 MM: Marketing Manager

5. RESPONSIBILITY AND AUTHORITY

5.1 GM is responsible for determining the needs for new staff in consultation with MM and PQM.
5.2 FO is responsible for preparing the position description, advertising the position and organizing the selections and interviews.
5.3 FO, with PQM and MM, is responsible for conducting the interviews and presenting the report to GM.

6. ACTIVITIES

6.1 Identify staffing needs
  6.1.1 Based on the business directions of the company, the GM, in consultation with the MM and PQM, shall decide the needs for new staff.
  6.1.2 The FO shall be informed of this decision and authorized to proceed with the job description.
6.2 Advertise staff positions
  6.2.1 FO shall set up a meeting with the GM, MM and PQM to review the proposed job description for advertising.
  6.2.2 FO shall determine the appropriate advertising resources for the new position.
  6.2.3 After the deadline for applications, FO shall compile the applications received and conduct a first screening, complete the Internal Application Summary Template (SR01 Annexe A) and the List of Applicants Template (SR01 Annexe B).

6.3 Evaluate applications

6.3.1 FO shall discuss the result of the applications' first screening with the MM and PQM. Based on the result of the meeting, FO shall set up interviews with selected applicants as potential candidates.

6.3.2 FO shall complete interviews with the relevant manager and evaluate candidates to complete the Evaluation Final Report Template (SR01 Annexe C).

6.3.3 FO with Section Leaders shall review evaluation report to select a candidate for the position.

6.3.4 FO and GM shall review cost(s) associated with potential new staff member to determine if the hiring process can continue, or if FO needs to renegotiate.

6.4 Reject applications

6.4.1 FO is responsible for compiling a list of unsuccessful applicants for designated position.

6.4.2 FO shall inform the unsuccessful candidates through a letter of rejection (SR01 Annexe D).

6.5 Recruit new staff

6.5.1 Based on the hiring decision, FO shall prepare the notification letter for the selected applicant within 24 hours after the decision is made and proceed to hire.

6.5.2 FO shall update the list in the quality manual to include the new staff.

7. RECORDS

7.1 List of Applicants (Selected, Approved, Rejected)

7.2 Letter of Rejection

7.3 List of New Staff

7.4 Staff Needs Report

7.5 Evaluation Report

8. FLOWCHART AND ANNEXES

8.1 Flowchart: Staff Recruitment Procedure

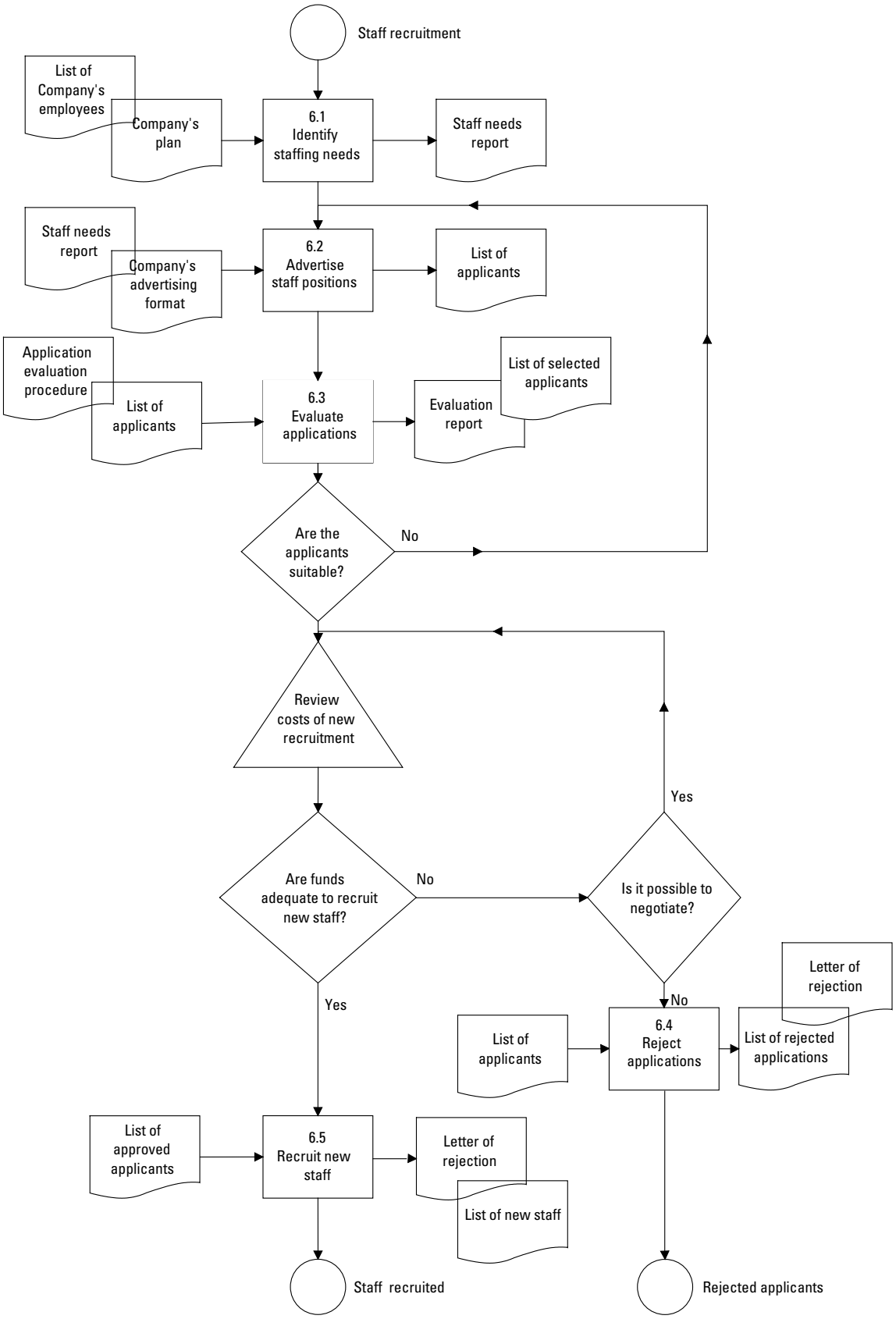
8.2 SR01 Annexe A: Internal Application Summary Template

8.3 SR01 Annexe B: List of Applicants Template

8.4 SR01 Annexe C: Evaluation Final Report Template

8.5 SR01 Annexe D: Letter of Rejection Template

FLOWCHART: STAFF RECRUITMENT PROCEDURE



SR01 ANNEXE A. INTERNAL APPLICATION SUMMARY TEMPLATE

Application number: _____

Date: _____

Last name: _____

First name: _____

Mailing address: _____

_____

Permanent address: _____

_____

Phone number: _____

Email address: _____

Current employer: _____

Current position: _____

Experience: _____

Expected salary: _____

Position applying for: _____

Key qualifications: _____

_____

_____

_____

CV included:

_____

_____

SR01 ANNEXE B. LIST OF APPLICANTS TEMPLATE

Application number:	Applicant name:	Application date:
	Position applied for:	
	Skills:	
	Evaluation results:	
	Responsible:	
	Notification date:	
Application number:	Applicant name:	Application date:
	Position applied for:	
	Skills:	
	Evaluation results:	
	Responsible:	
	Notification date:	
Application number:	Applicant name:	Application date:
	Position applied for:	
	Skills:	
	Evaluation results:	
	Responsible:	
	Notification date:	
Application number:	Applicant name:	Application date:
	Position applied for:	
	Skills:	
	Evaluation results:	
	Responsible:	
	Notification date:	

SR01 ANNEXE C. EVALUATION FINAL REPORT TEMPLATE

Application number:	Applicant:		
Position applied for:			
Demonstrated credentials and responsibility	Yes	No	Observations
Adaptability			
Collaboration			
Communication			
Continuous learning			
Decision making			
Stress tolerance			
Other comments			
Recommendation: □ Hire □□ Candidate for future consideration □□ Do not hire Signature: Date:			

SR01 ANNEXE D. LETTER OF REJECTION TEMPLATE

Date:

Applicant name and address: Application number:

Dear ,

Thank you for your interest in the [title] position in our seed enterprise, and for taking the time to speak with us during the interview.

We were fortunate to have many well-qualified applicants apply for this position. Although we were impressed with your high level of qualifications, we regret to inform you that we have chosen another candidate whose skills, background and education are more closely matched to the requirements for the position.

Your qualifications are quite interesting and we may have further discussions with you in the future. If and when a similar position opens up, we shall certainly review your application again and contact you.

Sincerely,

General Manager Signature Date

c) Training Procedure

The success of a seed enterprise is highly dependent on the competency of the staff that is a part of it. A formal and continuous skills evaluation and training procedure is an integral part of a quality seed enterprise. A good training procedure includes the identification of training needs for each and every staff member. Training is then planned, conducted in-house or externally, evaluated upon completion and its effectiveness measured. This investment in a well-identified skill and the subsequent training will always translate into a more efficient seed enterprise.

1. PURPOSE

1.1 The purpose of this procedure is to define the actions, interfaces and responsibilities for the training of all staff in the skills expected in their job functions.

2. SCOPE

2.1 From identifying training needs for each person to personnel trained.

3. REFERENCES

3.1 Training materials
3.2 Matrix of required training
3.3 Crop production guidelines
3.4 Seed certification standards and regulation

4. DEFINITIONS

4.1 GM: General Manager
4.2 FO: Financial Officer
4.3 PQM: Production and Quality Manager
4.4 MM: Marketing Manager

5. RESPONSIBILITY AND AUTHORITY

5.1 PQM and MM are responsible for identifying training needs in their respective sections.
5.2 Section leader is responsible for defining the specific training programs.

6. ACTIVITIES

6.1 Identify training needs
- 6.1.1 PQM and MM shall evaluate the personnel to determine training needs and complete the Matrix Needs for Training Template (TR01 Annexe A). The GM shall identify any training needs required of the PQM and MM, also completing TR01 Annexe A.
- 6.1.2 PQM shall identify specific training programs focused on increasing the level of skills in seed production, conditioning, rules and regulations, quality system and/or internal audit.
- 6.1.3 MM shall identify specific training programs focused on increasing the level of skills in sales, marketing, distribution and/or logistics.

6.2 Plan training
- 6.2.1 PQM shall ensure that each employee receives training.
- 6.2.2 PQM and MM shall designate the type and location of training in their respective sections.
- 6.2.3 PQM shall maintain training matrixes and keep records of all internal and external training completing the Personnel Training Record Template (TR01 Annexe B).

6.3 Evaluate training

6.3.1 PQM and MM shall evaluate the effectiveness of the training provided by observing staff in their respective sections.

6.3.2 If re-training is necessary, go to 6.1.

6.3.3 If retraining is not necessary, continue with 6.4.

6.4 Measure training effectiveness

6.4.1 GM shall evaluate personnel on basis of internal audits, yearly employee evaluations and corrective actions.

7. RECORDS

7.1 Record of Personnel Training Needs

7.2 Records of Training

7.3 Records of Evaluation

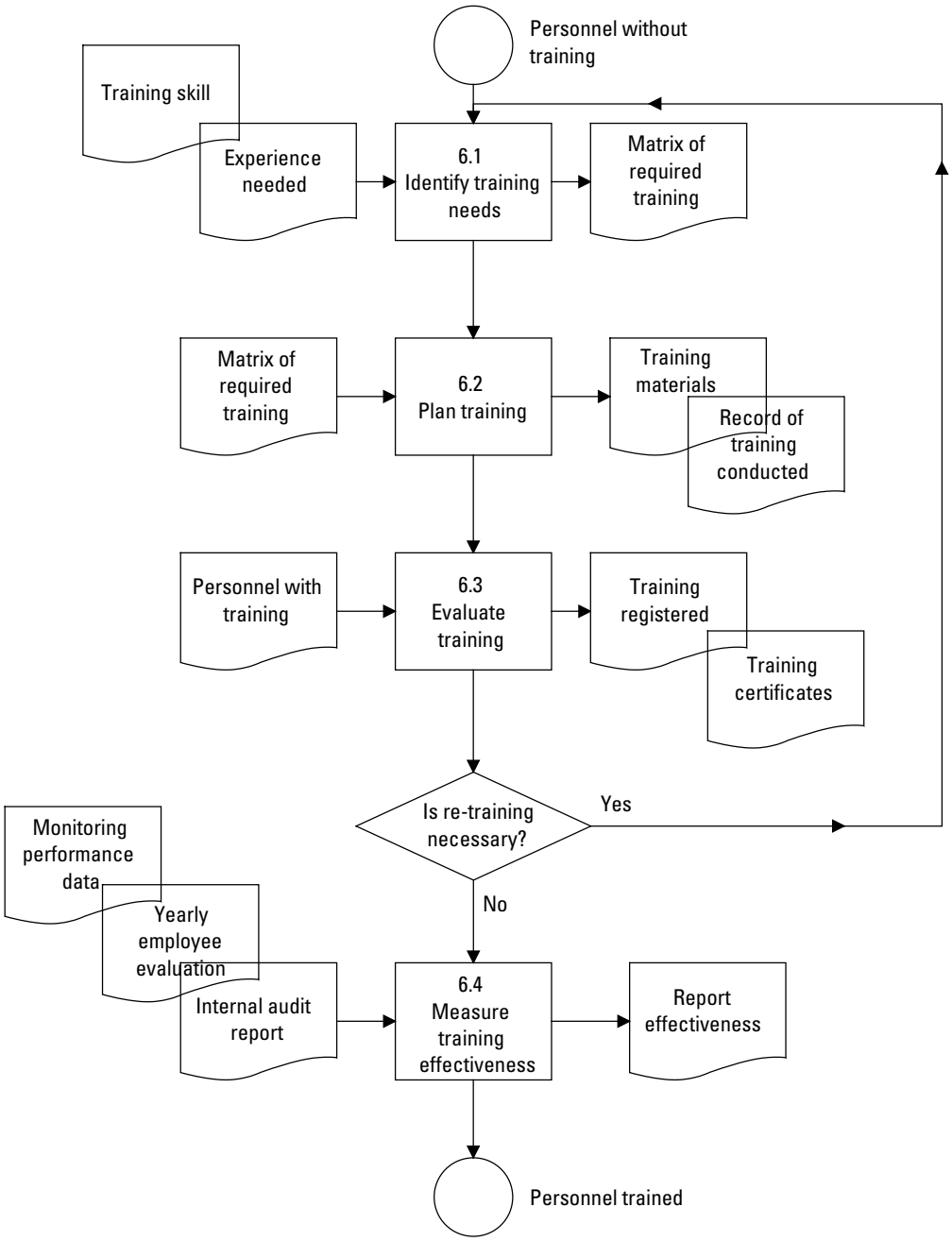
8. FLOWCHART AND ANNEXES

8.1 Flowchart: Training Procedure

8.2 TR01 Annexe A: Matrix Needs for Training Template

8.3 TR01 Annexe B: Personnel Training Record Template

FLOWCHART: TRAINING PROCEDURE



TR01 ANNEXE A. MATRIX NEEDS FOR TRAINING TEMPLATE

Name:	Area/Section:	
Position duties:		
RESULT OF ASSESSMENT	KNOWLEDGE RATE	REQUEST ADDITIONAL TRAINING
Section Leader:	E: Excellent AA: Above average A: Average N: Needs improvement	Y: Yes N: No
Training request:	Recommendation:	Signature: Date:

TR01 ANNEXE B. PERSONNEL TRAINING RECORD TEMPLATE

C&H Seeds	Area/Section:		Form number:	
			Revised by:	

PERSONNEL NAME	DATE OF HIRE	DUTIES	TRAINING TOPICS	DATE COMPLETED

d) Purchasing Procedure

This procedure safeguards the seed enterprise by controlling the purchase of critical elements that may affect the quality of the seed and of the seed enterprise. Examples of these elements may be seed bags that do not have the appropriate thickness or stitching, out of date or fake chemicals used for insect or disease control and seed treatment material with insufficient or unknown amounts of active ingredients. The purchasing agent should ensure the effective and efficient process for product purchasing based on the seed enterprise's quality requirements, through the judicious application of this procedure. In the process, the suppliers are identified and evaluated based on the seed enterprise needs.

1. PURPOSE

1.1 The purpose of this procedure is to define the sequence of events, actions, interfaces and responsibilities to ensure that critical products purchased and received comply with specific requirements of the seed enterprise.

2. SCOPE

2.1 From product ordering to purchased supplies received and approved.

3. REFERENCES

3.1 Product requirements
3.2 Quality standards
3.3 National and international suppliers

4. DEFINITIONS

4.1 GM: General Manager
4.2 FO: Financial Officer
4.3 PQM: Production and Quality Manager
4.4 MM: Marketing Manager
4.5 List of Suppliers: suppliers registered with seed enterprise

5. RESPONSIBILITY AND AUTHORITY

5.1 FO is responsible for obtaining the list of registered suppliers.
5.2 Each Section Leader is responsible for assisting FO in the evaluation and selection of suppliers.
5.3 FO is responsible for documenting the supplies required and the specifications and requirements.
5.4 Each Section Leader is responsible for reviewing the purchase.
5.5 FO is responsible for verifying receipt of the product.

6. ACTIVITIES

6.1 Evaluate and select suppliers
- 6.1.1 FO shall evaluate and select suppliers based on their ability to supply products that conform to the specific requirements established by the company.
- 6.1.2 FO shall prepare a list of suppliers per product (PU01 Annexe A).

6.2 Review purchase
- 6.2.1 Each Section Leader shall document the description of the product requested with identification, quality and quantity requirements.
- 6.2.2 Purchasing documents shall be presented to the GM, who shall approve the purchase and an order form prepared by the FO.

6.3 Order purchase

6.3.1 FO shall prepare the purchase order, place the order and notify the supplier. (PU01 Annexe B)

6.3.2 He/she shall inform the managers of the estimated date of receipt.

6.4 Verify purchased supplies

6.4.1 Upon product receipt, the Section Leader shall check the product to verify compliance with requirements.

6.4.2 If supplies are ok, continue with 6.6.

6.4.3 If supplies are not ok, continue with 6.5.

6.5 Reject supplies

6.5.1 FO shall check the supplies received, and in consultation with PQM, shall refuse the order if non-compliance with requirements is found. (PU01 Annexe C).

6.5.2 Supplier shall be notified of the rejection by the FO.

6.6 Approve and receive supplies

6.6.1 FO, after checking the supplies, shall approve the purchase.

6.6.2 FO shall prepare a record of supplies received and notify the approval and reception. (PU01 Annexe D).

7. RECORDS

7.1 Record of List of Suppliers

7.2 Record of Purchase Orders

7.3 Record of Notification of Rejection of Supplies

7.4 Record of Supplies Received

8. FLOWCHART AND ANNEXES

8.1 Flowchart: Purchasing Procedure

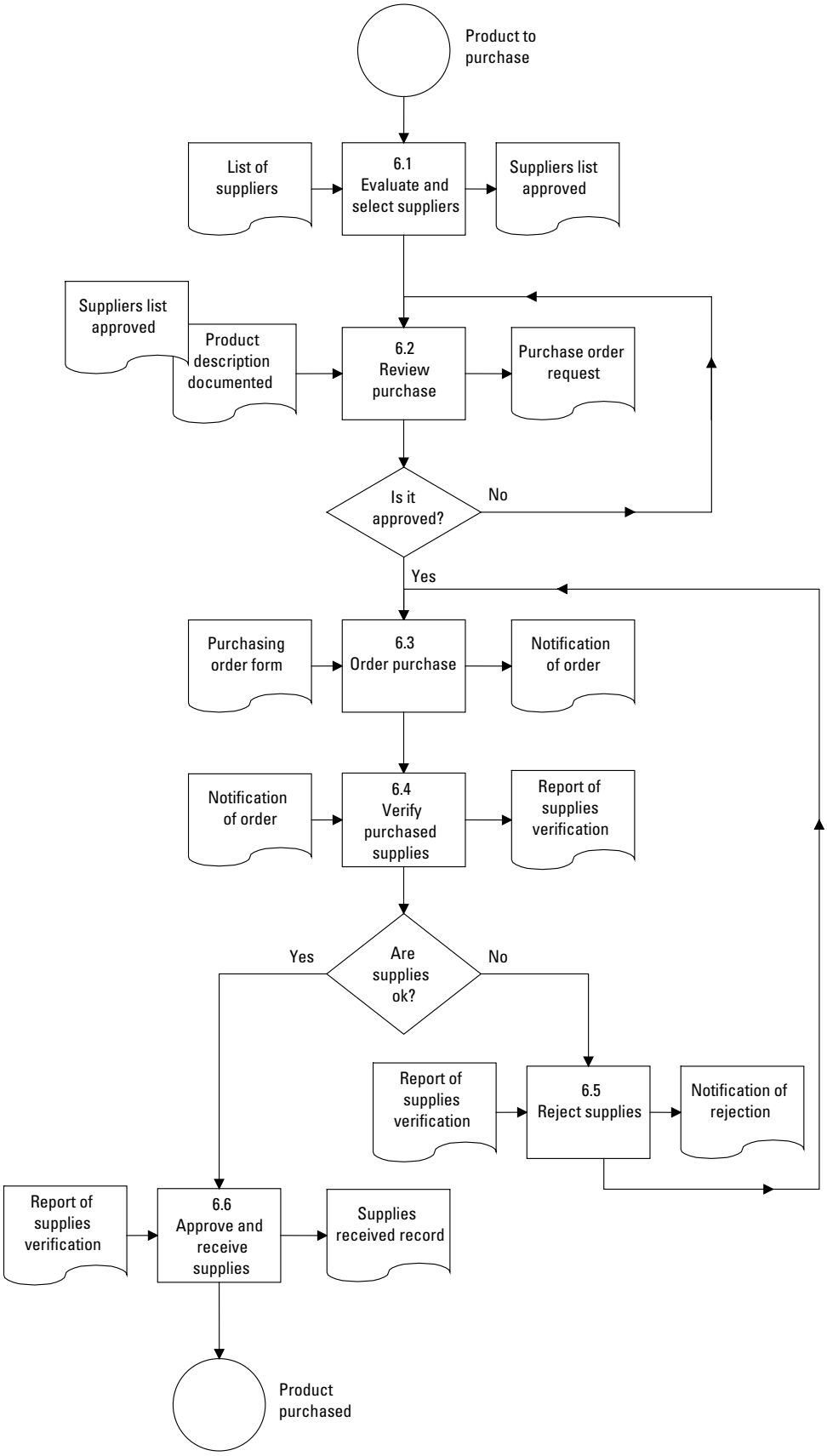
8.2 PU01 Annexe A: List of Suppliers Template

8.3 PU01 Annexe B: Purchase Order Template

8.4 PU01 Annexe C: Purchase Order Rejection Template

8.5 PU01 Annexe D: Supplies Received Template

FLOWCHART: PURCHASING PROCEDURE



PU01 ANNEXE A. LIST OF SUPPLIERS TEMPLATE

PRODUCT/ SERVICES	SUPPLIER NAME	CONTACT NAME	CONTACT TITLE	STREET ADDRESS	CITY/ZIP CODE	STATE	PHONE/ FAX NUMBER	EMAIL ADDRESS	PAYMENT TERMS	NOTES

PU01 ANNEXE B. PURCHASE ORDER TEMPLATE

PURCHASING ORDER

C & H Seeds
2302 Greenhouse Rd.
Ames, Iowa 50010
Telephone: 515-555-5555
Fax: 515-555-4444
Email: C&H@gmail.com

Purchase order number:
Date:

Ship to:

REQUESTED BY	SHIPPING DATE	SHIP VIA	FOB	BUYER	TERMS	TAX ID

QUANTITY	ITEM	UNITS	DESCRIPTION	% DISCOUNT	TAXABLE	UNIT PRICE	TOTAL

Subtotal	
Tax	
Shipping	
Miscellaneous	
Balance due	

Financial Officer Signature:

Date:

PU01 ANNEXE C. PURCHASE ORDER REJECTION TEMPLATE

Date _____

Supplier name: _____

Supplier address: _____

_____

Re: Rejection of Order

Order number: _____

Dear _____,

On the _____day of _____ , we received order number_____ for (description) _____ in the amount of $ _____.

We hereby reject this order for the reasons stated below, and request immediate reimbursement of the amount paid by us: $ _____.

Reasons for rejection: _____

_____

_____

_____

We are returning the rejected order at your expense.

Sincerely,

_____

Financial Officer Signature Date

PU01 ANNEXE D. SUPPLIES RECEIVED TEMPLATE

C&H SEEDS ENTERPRISE DATE:

ORDER NUMBER:

VENDOR	REQUEST BY	SHIP DATE	SHIPPING SERVICE	TERMS	PRODUCT/ SERVICE
QUANTITY ORDERED	**QUANTITY RECEIVED**	**STOCK NUMBER DESCRIPTION**	**UNIT PRICE**	**TOTAL AMOUNT**	**ORDER RECEIVED BY**

e) Customer Complaint Procedure

Another key element of a quality system is the responsiveness of the organization to complaints, not only from customers, but also from distributors, vendors, neighboring communities and even peers. In a seed enterprise, it can be expected that most of the complaints will come from unsatisfied customers, whether they are correct in their claim or not. Independent of the validity of the claim, a systematic approach to resolution is in the best interest of the organization. Therefore, a procedure should be designed to receive and respond in a timely manner to any complaint from a customer.

1. PURPOSE

1.1 The purpose of this procedure is to define the sequence of events, actions, interfaces and responsibilities to ensure that customer complaints are handled promptly and with the utmost courtesy.

2. SCOPE

2.1 From the time the customer complaint is received until the complaint is resolved.

3. REFERENCES

3.1 List of complaints received and solved

3.2 Quality policy

4. DEFINITIONS

4.1 GM: General Manager

4.2 FO: Financial Officer

4.3 PQM: Production and Quality Manager

4.4 FL: Field Leader

4.5 CPL: Conditioning Plant Leader

4.6 MM: Marketing Manager

5. RESPONSIBILITY AND AUTHORITY

5.1 All employees are responsible for forwarding any complaint, verbal or written, to the GM in a written form and keeping a copy of the forwarded complaint in their files.

5.2 The GM is responsible for logging it into the customer complaint records and assigning the complaint to the appropriate section.

5.3 GM is responsible for overseeing and reviewing customer complaints, communication with customers and any corrective actions.

5.4 PQM and MM are responsible for conducting root cause analyses and following up on timely corrective action closure.

6. ACTIVITIES

6.1 Receive complaint

6.1.1 Customer complaints may come in many forms such as a telephone call, email, letter or verbally. All complaints should be reported to GM by completing CC01 Annexe A.

6.1.2 Once a complaint is received by the GM, he/she shall log the complaint and assign a number to it.

6.2 Verify complaint

6.2.1 GM shall review the complaint and collect any required additional information needed to file an investigation report, which shall be conducted by the appropriate section manager.

6.2.2 After reviewing the investigation report, the GM shall decide whether the customer complaint is valid. If the complaint is valid, go to 6.4. If the customer complaint is not valid, go to 6.3.

6.3 Communicate with the customer

6.3.1 If the investigation report indicates that the customer complaint is not valid, the GM shall compose a letter to the customer explaining the results of the investigation. Any additional comments/correspondence from the customer shall be logged in the book and a copy of the letter attached to the entry in the database.

6.4 Take remedial action

6.4.1 If it is apparent from the investigation report that the customer complaint is valid, the GM shall elevate the customer complaint to a corrective action status.

6.4.2 The GM shall compose a letter to the customer and agree with the customer on an appropriate compensation and the customer complaint shall be stated as "closed".

6.5 Take corrective action

6.5.1 Corrective action shall be determined by the GM, with the section manager involved, and registered in a database with a link to the original customer complaint number. The corrective action shall be composed of a description of the problem, containment actions, root cause analysis, long-term corrective action, review of the process and an evaluation of effectiveness.

6.5.2 The PQM shall conduct a root cause analysis to determine the reason that instigated the customer complaint.

6.5.3 The entire corrective action procedure should be completed within 90 days from the time the complaint was first logged, to the final review by the GM following the corrective action procedure.

7. RECORDS

7.1 Customer Complaint Record

7.2 Corrective Action Record

7.3 Letters To Customers

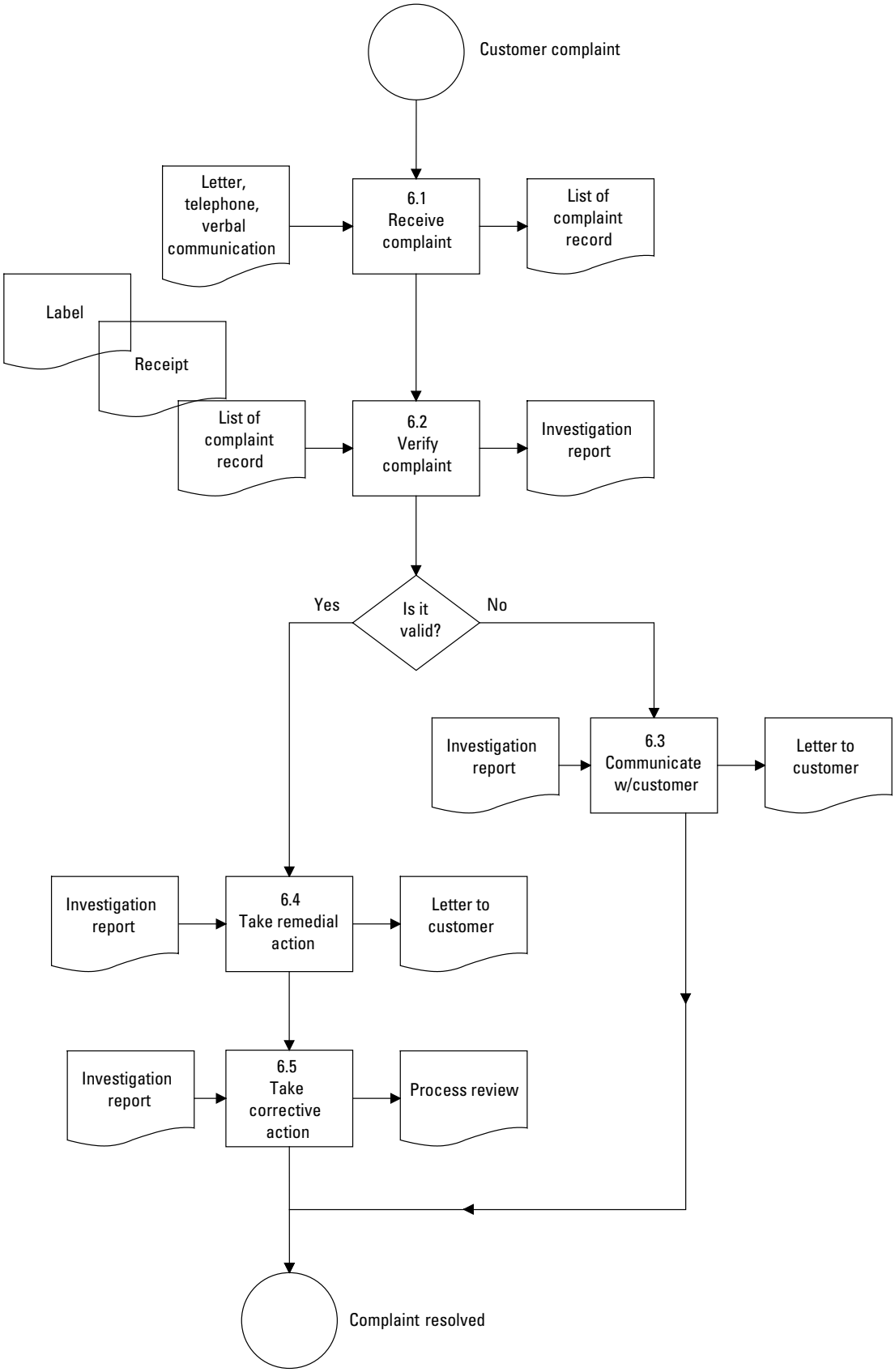
7.4 Investigation Reports

8. FLOWCHART AND ANNEXES

8.1. Flowchart: Customer Complaint Procedure

8.2. CC01 Annexe A: Customer Complaint Template

FLOWCHART: CUSTOMER COMPLAINT PROCEDURE



CC01 ANNEXE A. CUSTOMER COMPLAINT TEMPLATE

C&H SEEDS ENTERPRISE

Name of customer:	Address:	City, State:
Crop and variety:	Seed lot number:	Total units:
Customer issue (accurately describe in detail the nature of the complaint):		
Date complaint reported:		
Name and position of person who received the complaint:		
Date received:		
Describe actions that have been taken and measures to avoid a repeat of the complaint:		
Signature:	Date:	
Signature of supervisor:	Date:	

f) Internal Audit Procedure

This procedure provides objective evidence through an internal audit that the seed enterprise is following the requirements to be a quality company. An internal audit is conducted by the organization's staff, which is selected by the General Manager and the Production and Quality Manager to assess other sections different from their own. The audit has the same structure, strictness and methodology as an external or compliance audit, providing the General Manager and the Production and Quality Manager with critical information for improvement of the seed enterprise.

1. PURPOSE

1.1 The purpose of this procedure is to define the sequence of events, actions, interfaces and responsibilities in implementing an internal quality audit to determine that the quality system is working correctly, and to provide information for potential improvement opportunities.

2. SCOPE

2.1 From internal quality audit requirements to audit completion.

3. REFERENCES

3.1 Approved list of potential internal auditors
3.2 Internal audit checklist
3.3 Quality manual

4. DEFINITIONS

4.1 PQM: Production and Quality Manager
4.2 Corrective Action: action to eliminate the cause of a detected non-conformity
4.3 Corrective Action Follow-Up: evidence verifying that effective corrective action has been implemented
4.4 Internal Audit: independent activity to verify, through examination and evaluation of objective evidence, if the processes and elements applicable to the quality system have been developed, documented and implemented
4.5 Internal Auditors: independent and trained person(s) who conduct the internal quality audit
4.6 Non-Conformity: any situation that differs from the organization's quality standards
4.7 Objective Evidence: proof of completion of activity

5. RESPONSIBILITY AND AUTHORITY

5.1 The PQM shall:
- 5.1.1 Ensure that internal quality audits are programmed, planned and recorded according to the procedure.
- 5.1.2 Designate the internal auditor(s).
- 5.1.3 Be responsible for giving the auditors access to documentation, the work place and company staff involved in the audit.
- 5.1.4 Ensure that the documentation of corrective actions is filed with their audit record.
- 5.1.5 Ensure that the audit reports and any other corrective actions are reviewed and followed up.

5.2 The auditor(s) shall:
- 5.2.1 Conduct the internal quality audit.
- 5.2.2 Change the audit program as necessary.
- 5.2.3 Publish an audit report.
- 5.2.4 Notify the staff of the audit date.

6. ACTIVITIES

6.1 Establish an audit plan
- 6.1.1 GM shall establish an audit plan and schedule for areas where the quality system is implemented, at least once a year.

6.2 Designate internal auditor(s)

6.2.1 GM and PQM shall designate the auditor(s) who shall carry out internal audits one month prior to the audit programmed dates. Assigned personnel are independent of those having direct responsibility for the audited activity.

6.2.2 PQM shall accompany the internal auditor on his/her first audit if the internal auditor was trained by the PQM.

6.3 Prepare internal audit

6.3.1 Internal auditor(s) shall prepare the checklist and the internal audit agenda (IA01 Annexe A).

6.3.2 Internal auditor(s) shall familiarize himself/herself with quality manual and relevant procedures and prepare the questions for the audit.

6.4 Inform the auditee

6.4.1 Internal auditor(s) shall inform the audited about the internal audit at least ten days before the audit is conducted and agree on a date.

6.5 Conduct internal audit

6.5.1 Internal auditor(s) shall conduct the initial meeting, introducing the agenda and checklist to auditee.

6.5.2 Internal auditor(s) shall conduct the audit, looking for objective evidence that demonstrates that the audited activities conform with requirements of documented quality systems and whether they are effectively implemented and maintained. This information shall be recorded in the Verification List Template (IA01 Annexe B).

6.5.3 If a non-conformity is noted, it shall be discussed and documented in the audit report.

6.5.4 Auditor shall conduct the closing meeting.

6.6 Propose corrective action

6.6.1 Upon receiving the report, the section manager investigates the cause of any item noted as a non-conformity, proposes a corrective action and reports the date by which the corrective action shall be fully implemented.

6.6.2 Internal auditor(s) shall review and approve the action proposed.

6.7 Prepare internal audit report

6.7.1 Internal auditor(s) shall prepare the final audit report with the following content: area/activities audited, participants, objective and scope of the audit, written documents, summary of activities and non-conformities. If there are non-conformities with corresponding corrective actions, go to 6.8. If not, go to 6.9.

6.8 Follow-up of corrective action

6.8.1 Internal auditor(s) shall verify the implementation and efficacy of the corrective actions during the stipulated time through either document verification or on site observation.

6.8.2 Internal auditor(s) shall close the corrective action follow-up and submit the report to the Quality Manager, completing the Request for Corrective Actions Template (IA01 Annexe C).

6.9 File and distribute report

6.9.1 GM shall file and distribute the internal audit final report.

6.9.2 All non-conformities and results of corrective actions are compiled and presented at the management review meeting by the PQM.

7. RECORDS

7.1 Internal Audit Program/Agenda

7.2 Internal Audit Final Report

7.3 Record of Corrective Actions and Follow-up Report

8. FLOWCHART AND ANNEXES

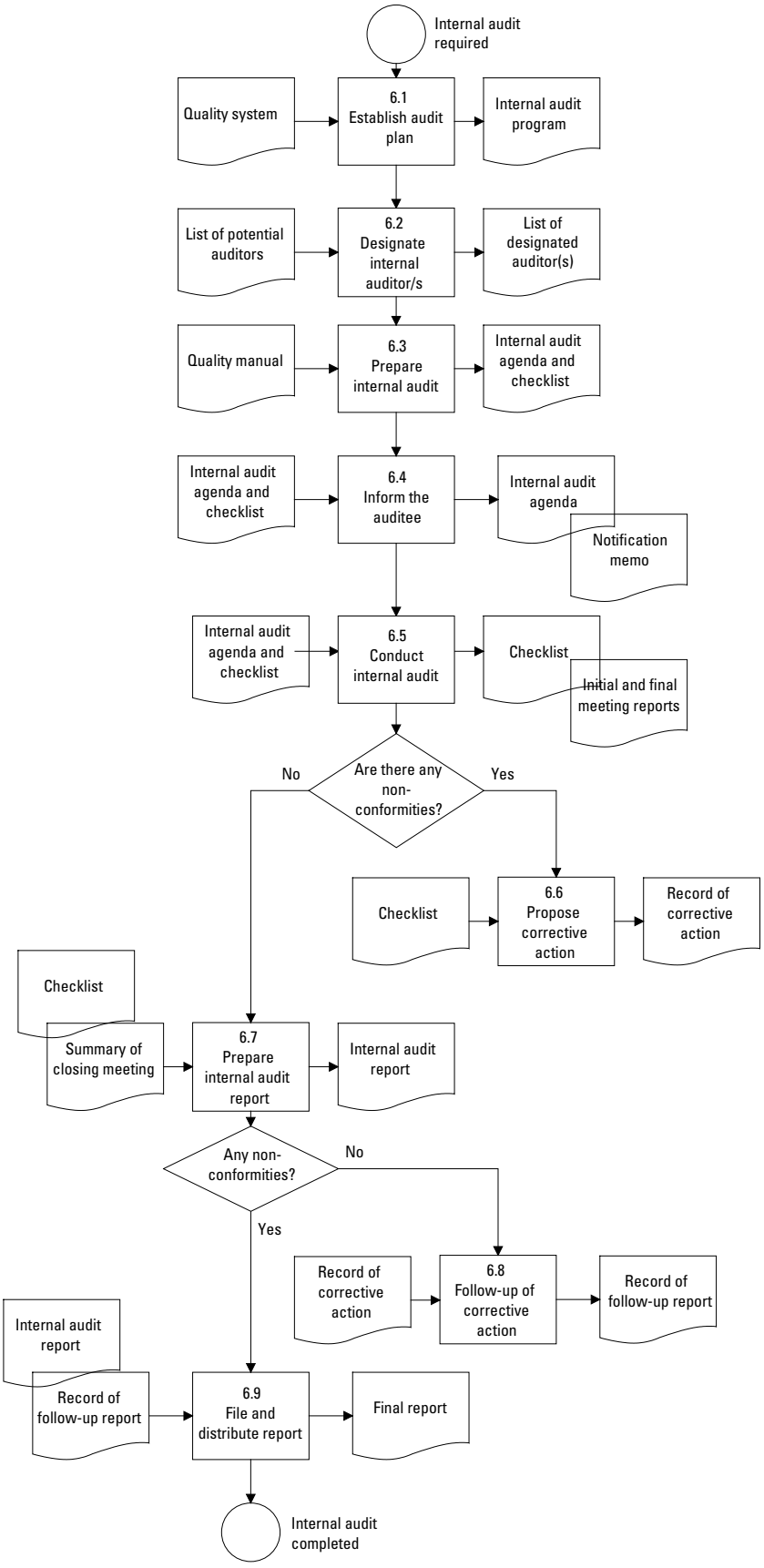
8.1 Flowchart: Internal Audit Procedure

8.2 IA01 Annexe A: Audit Agenda Template

8.3 IA01 Annexe B: Verification List Template

8.4 IA01 Annexe C: Request for Corrective Actions Template

FLOWCHART: INTERNAL AUDIT PROCEDURE



IA01 ANNEXE A. AUDIT AGENDA TEMPLATE

Objective:
Scope:
Date:
Audit team:

SCHEDULE			
DATE	TIME	AUDIT TEAM	ACTIVITIES

IA01 ANNEXE B. VERIFICATION LIST TEMPLATE

Audited:			
Activity:			
Date:			
REFERENCE	REQUIREMENTS	RELATED QUESTIONS	COMMENTS

IA01 ANNEXE C. REQUEST FOR CORRECTIVE ACTIONS TEMPLATE

Entity:	Date:
Accredited register number:	
Area/Activity: Description of non-conformity: Non-conformity with (standards/regulation):	
Date to conduct corrective action:	
Audit Team Leader: Signature: Date:	Auditee: Signature: Date:
Adopted action to correct non-conformity and prevent repetition: Auditee signature: Date:	
Verification of adopted corrective action: Audit Team Leader signature: Date:	

g) Control of Non-Conformities Procedure

A non-conformity is not only the product of an audit, but also of a casual observation of a product realization event that can negatively impact the quality of the seed or the seed enterprise. Examples of this may range from identifying an incorrect seed variety being planted in a field, to a repeated customer complaint without resolution. Every staff member of the seed enterprise has a responsibility and obligation to report and record any non-conformity observed to his/her immediate superior in a timely manner. It is also important, as part of this process, to record all audit and non-audit non-conformities for the improvement of the quality system.

1 PURPOSE

1.1 The purpose of this procedure is to define the sequence of events, actions, interfaces and responsibilities to ensure the identification of the non-conformities, and the corrective and preventive actions that have been taken in order to prevent recurrence.

2. SCOPE

2.1 From non-conformity detected to implementation of solution and correction of said non-conformity.

3. REFERENCES

3.1 Certification standard

3.2 Quality standards of the seed enterprise

4. DEFINITIONS

4.1 GM: General Manager

4.2 PQM: Production and Quality Manager

4.3 MM: Marketing Manager

4.4 Corrective Action: action to eliminate the cause of a potential non-conformity or other undesirable potential situation

4.5 Non-Conformity: non-fulfillment of a requirement

5. RESPONSIBILITY AND AUTHORITY

5.1 All personnel are responsible for recording and reporting any non-conformity.

5.2 PQM is responsible for detecting the cause of non-conformity and implementing corrective actions.

5.3 Each Section Leader shall complete the corrective action form and maintain a record.

6. ACTIVITIES

6.1 Identify non-conformity

6.1.1 All personnel should report identified non-conformities to their supervisor.

6.1.2 Whenever a non-conformity is identified, it shall be documented in the Non-Conformity Identification Template (CN01 Annexe A).

6.2 Define and implement corrective action

6.2.1 The Section Leader involved and the section manager shall define and implement the corrective action in a maximum of six working days.

6.2.2 The section manager shall complete the Corrective Action Report Template (CN01 Annexe B) and submit to the PQM.

6.3 Notify results

6.3.1 The section manager shall communicate the result of the corrective action to PQM.

6.3.1.1 If the corrective action is satisfactory, the PQM shall add it to the procedure.

6.3.1.2 If the corrective action is not deemed appropriate by the section manager, continue with 6.2.

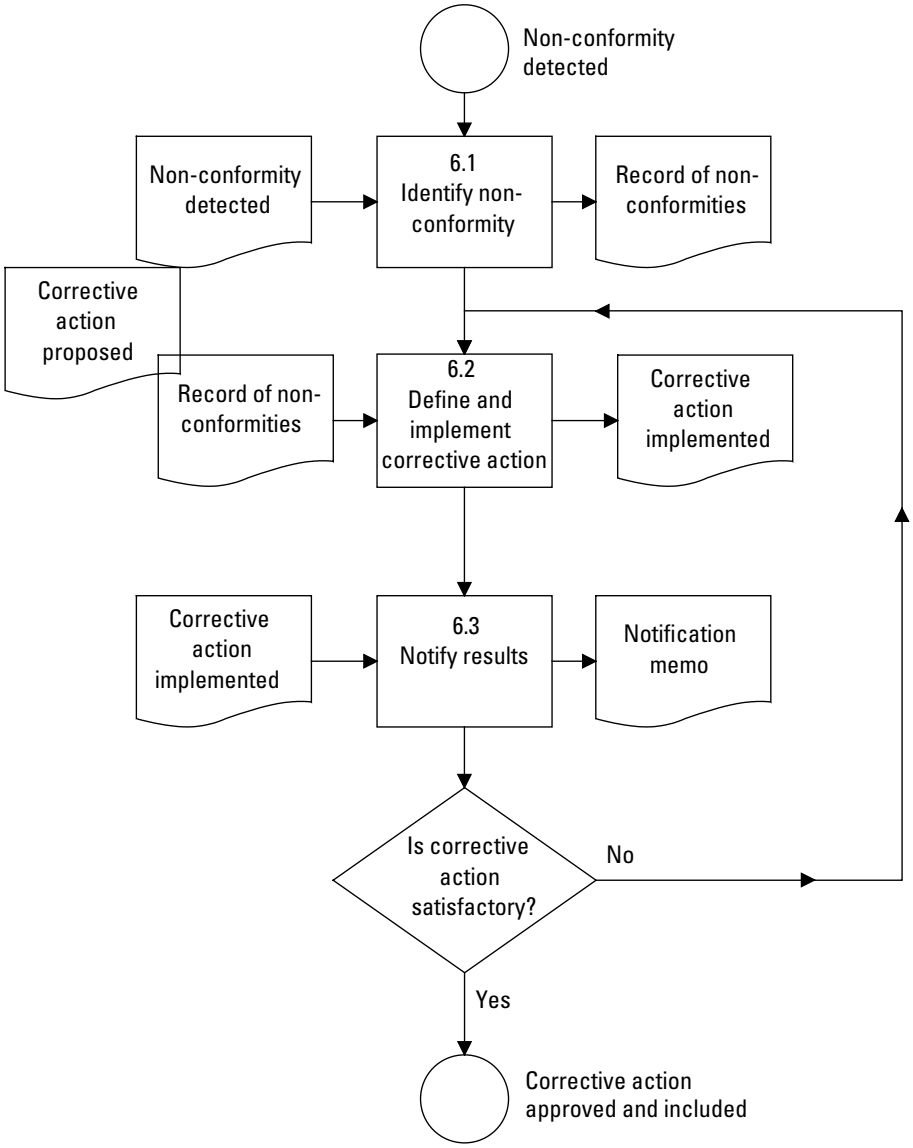
7. RECORDS

7.1 Record of Non-Conformities
7.2 Record of Corrective Actions

8. FLOWCHART AND ANNEXES

8.1 Flowchart: Control of Non-Conformities Procedure
8.2 CN01 Annexe A: Non-Conformity Identification Template
8.3 CN01 Annexe B: Corrective Action Report Template

FLOWCHART: CONTROL OF NON-CONFORMITIES PROCEDURE



CN01 ANNEXE A. NON-CONFORMITY IDENTIFICATION TEMPLATE

Non-Conformity:		File number:
Section/Area/Process:	Site:	Responsible party:
Details of non-conformity:		
Description:		
Grade of non-conformity: minor/major		
Action plan proposed:		
Description: How and why did this happen?		
Responsible party: Date:		
Section Leader: Signature: Date:		

CN01 ANNEXE B. CORRECTIVE ACTION REPORT TEMPLATE

REPORT CONTROL ID NUMBER	SECTION	NAME
Description of the problem:		
Reason/s for corrective actions:		
Location of affected material, area and actions:		
Suggested corrective action:		
Corrective action plan: Approved: _____ Signature Date Completed: _____ Signature Date		
Preventive actions plan: Completed: _____ Signature Date		

h) Document Control Procedure

The document control procedure ensures that critical seed enterprise documents have a standard method for their creation, identification, approval, distribution and storage, and that they are available to authorized staff. This control process provides the necessary documents in the most appropriate form for all critical procedures and ensures the effective performance of the quality system.

1. PURPOSE

1.1 To identify events, actions, activities and responsibilities involved in the creation, identification, approval, distribution and storage of controlled documents of the seed enterprise.

2. SCOPE

2.1 From the document and data identification to the implementation of their control. This scope applies only to documents and data related to the quality manual.

3. REFERENCES

3.1 Model for document generation.

4. DEFINITIONS

4.1 GM: General Manager

4.2 PQM: Production and Quality Manager

4.3 Controlled Document: a document that is formally identified. Controlled documents are registered and maintained; any change, as well as any implementation, is regulated

4.4 Controlled Documents Master List: list of all documents, containing relevant information such as documents titles, revision number and document codes

4.5 Data: quantified information in documents

4.6 Document: procedures, work instructions, references, specifications or regulatory material for the administration of the system

4.7 External Document: document generated outside the limits of the administrative system; for example, a regulatory document that is referred to in a procedure or work instruction

4.8 Procedure: document that describes, "who does the job", "when", "where" and "why"

4.9 Work Instruction: document that identifies the procedure(s) for performing a task or activity

5. RESPONSIBILITY AND AUTHORITY

5.1 GM shall ensure that control of all documents is maintained by following this procedure.

6. ACTIVITIES

6.1 Identify documents

6.1.1 Any staff member of the seed enterprise who sees the need for a new controlled document shall inform the PQM, who shall determine whether or not to proceed with the request.

6.1.2 The PQM shall create the Controlled Documents Master List (DC01 Annexe A).

6.2 Create document

6.2.1 If the document does not exist and the PQM determines that it is needed, the PQM shall ensure that the document is created. The procedures and work instructions shall be prepared following the model approved by PQM.

6.3 Review document

6.3.1 If the document already exists, PQM shall review it to assure that the information is current and achieves the needs of the system, and that it is on the Controlled Documents Master List. If the document is not adequate, PQM shall modify the internal document according to activity 6.5.

6.3.2 The new document shall be reviewed by the PQM before it is approved by the General Manager.

6.4 Approve documents

6.4.1 Changes in the procedures, work instructions and identification of responsibilities are all allowed.

6.4.2 PQM shall review and approve the new document to verify its precision.

6.5 Request document change

6.5.1 Any staff member can request a change to a document through the Document Change Application Template (DC01 Annexe B). The PQM shall evaluate the application as well as its consequences and shall either authorize it or not.

6.5.2 The modified document shall be controlled through activity 6.6.

6.6 Control documents

6.6.1 PQM shall assure that:

6.6.1.1 The Controlled Documents Master List is kept in both hard copy and electronically.

6.6.1.2 The controlled documents are available and identified in the master list.

6.6.1.3 These documents are stamped as "Controlled Document".

6.6.1.4 When the elements of the system are kept electronically (in red), obsolete documents shall be identified and removed from the electronic system to prevent use.

6.6.1.5 Confidential documents shall be identified with the stamp and be handled by authorized personnel who are pre-identified in the work instructions.

6.6.2 The PQM shall annually identify documents that are no longer needed:

6.6.2.1 Obsolete documents will be filed or discarded by the PQM. The word "Obsolete" shall be stamped on the cover page or diskette, and they shall be filed in the section of obsolete documents.

6.6.2.2 Photocopies and printouts of controlled documents shall be made only for internal training and revisions. Photocopies of confidential documents are not allowed under any circumstance.

6.7 Distribute documents

6.7.1 PQM shall determine a date for the document to become valid.

6.7.2 PQM shall distribute the new document.

6.8 Inform concerned personnel and institutions

6.8.1 PQM shall ensure that the personnel concerned understand the content of the new document or any change made to the original document(s).

6.8.2 PQM shall provide training to the personnel when necessary to achieve the new requirements.

6.9 Ensure access

6.9.1 PQM shall ensure that documents of reference are available as needed.

7. RECORDS

7.1 Controlled Documents Master List

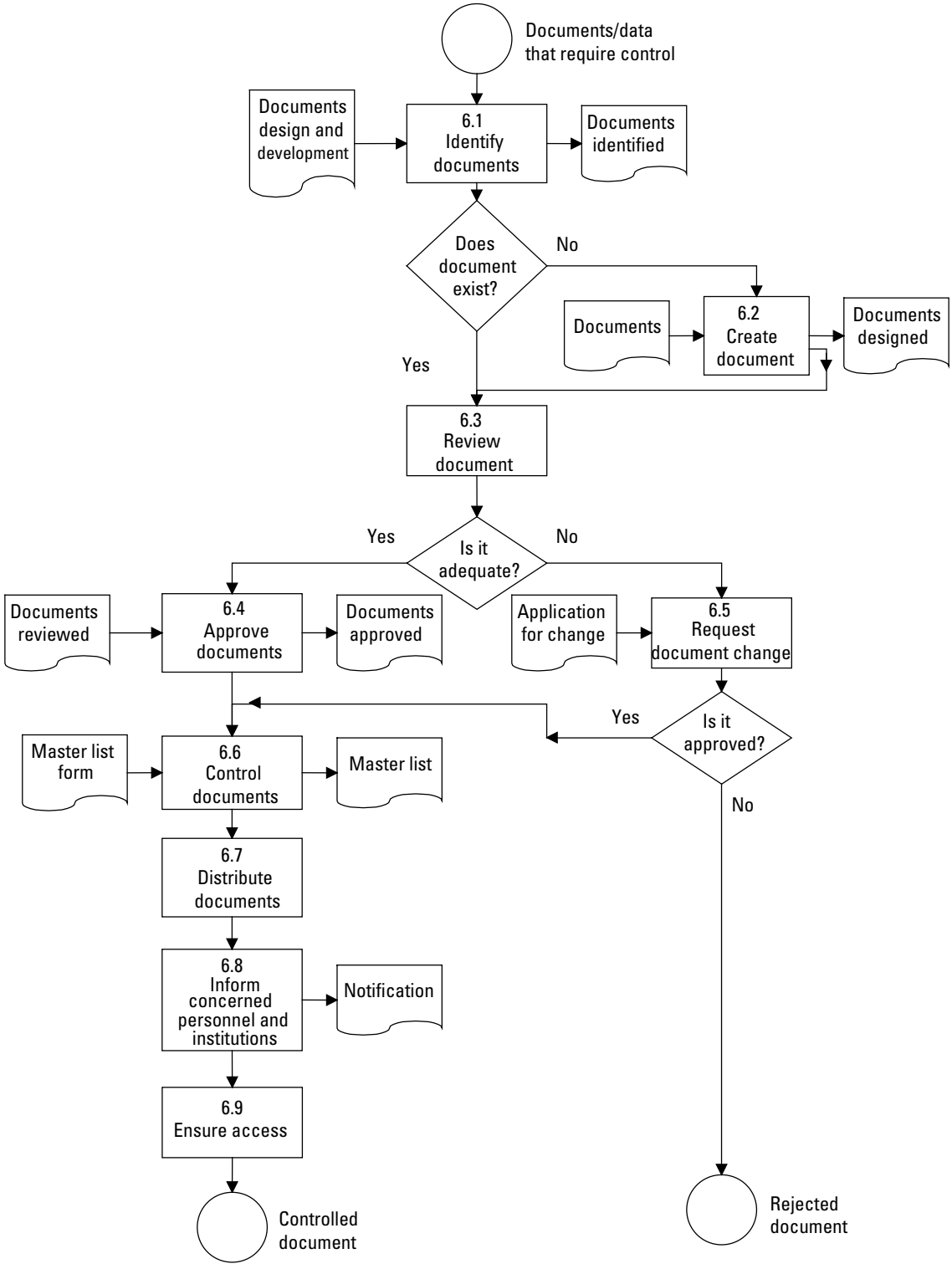
8. FLOWCHART AND ANNEXES

8.1 Flowchart: Document Control Procedure

8.2 DC01 Annexe A: Controlled Documents Master List Template

8.3 DC01 Annexe B: Document Change Application Template

FLOWCHART: DOCUMENT CONTROL PROCEDURE



DC01 ANNEXE A. CONTROLLED DOCUMENTS MASTER LIST TEMPLATE

DOCUMENT	TITLE	NUMBER/CODE	REVISION*	PERSON NAME OR LOCATION	COMMENTS

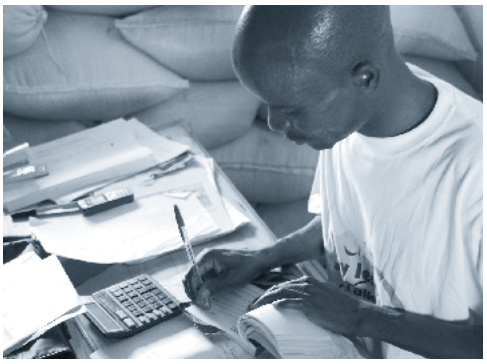
* If the document does not have a revision, use the date as an identifier.

DC01 ANNEXE B. DOCUMENT CHANGE APPLICATION TEMPLATE

Change requested by:	Application date:	
Document title:		
Change requested:		
Reason:		
Recommendation (select one)		
□ Reject (reason)		
□ Accept with changes (explain)		
□ Accept		
If accepted:	Suggested date:	Valid since:
Training required:		
Received by:		Date:
Document control:		
Authorization:		Date:

i) Record Control Procedure

Records are the most critical element of a quality system in an organization. They provide the objective evidence that a procedure is being carried out in a satisfactory manner. Without records, audits cannot be conducted, improvements cannot be achieved and the organization will not have accomplished its quality policy. Quality records need to be maintained, stored in different formats and be available for the General Manager at any time.



1. PURPOSE

1.1 The objective of this procedure is to define the events, actions, interfaces and responsibilities involved in the identification, collection, file, access, storage, maintenance and discharge of records.

2. SCOPE

2.1 From creation of records generated by the seed enterprise quality manual to their control.

3. REFERENCES

3.1 Administrative, operational and support procedures

3.2 Master List of Records

4. DEFINITIONS

4.1 PQM: Production and Quality Manager

4.2 Controlled Record: a record that is required to be kept and maintained under safeguard for future references

4.3 Record: document (electronic or print), product or sample statement, which shall confirm that a procedure (or part of the procedure) has been carried out

5. RESPONSIBILITY AND AUTHORITY

5.1 PQM is responsible for identifying, collecting, filing, storing, discharging and reviewing records.

6. ACTIVITIES

6.1 Identify records

6.1.1 PQM shall identify the records to be controlled, as indicated by the administrative, operational and support procedures of the seed enterprise and shall be included in the Master List of Records (RC01 Annexe A).

6.2 Control records

6.2.1 PQM shall collect, file and keep the records.

6.2.2 PQM shall control the access to the records.

6.3 Dispose of records

6.3.1 PQM shall periodically evaluate the Master List of Records and shall dispose of obsolete and unnecessary records.

6.4 Review records

6.4.1 PQM shall prepare a record review schedule with the purpose of verifying that the records are created and maintained in an adequate manner.

7. RECORDS

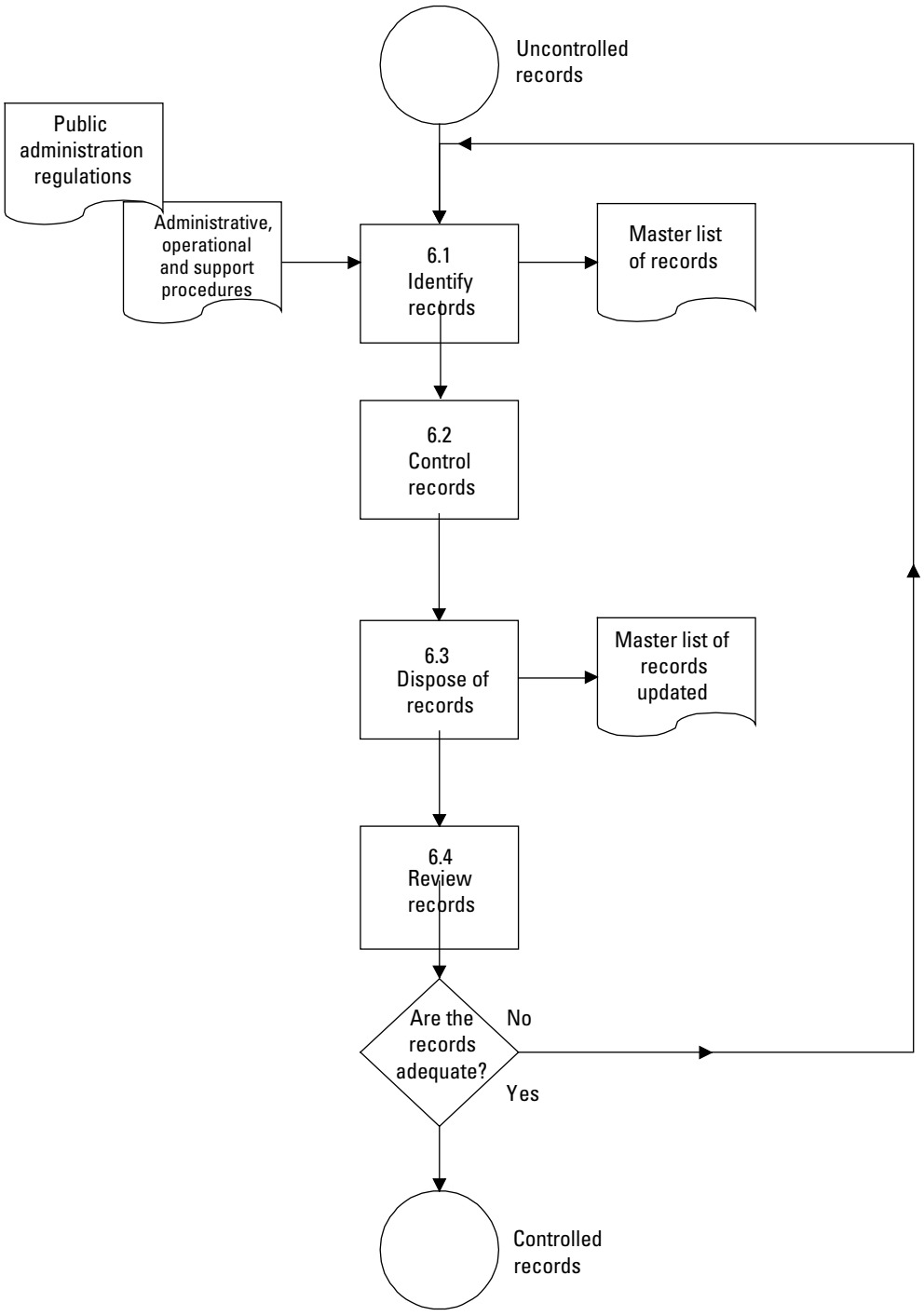
7.1 Master List of Records

8. FLOWCHART AND ANNEXES

8.1 Flowchart: Record Control Procedure

8.2 RC01 Annexe A: Master List of Records Template

FLOWCHART: RECORD CONTROL PROCEDURE



RC01 ANNEXE A. MASTER LIST OF RECORDS TEMPLATE

RECORD TITLE	RECORD NUMBER	DATE OF DISPOSAL	DISPOSAL AUTHORIZED BY	DISPOSAL MADE BY	PERIOD OF RETENTION	METHOD OF DISPOSAL	COMMENTS

SECTION 2. OPERATIONAL PROCEDURES

a) Basic Seed Production Procedure

Basic seed is the starting block for building a high quality commercial seed. Basic seed is multiplied from breeder seed to certified seed, maintaining the genetic purity of the variety. Any deviation from an established procedure will only lead to the multiplication of problems, rather than to the multiplication of quality seed. The quantities of basic seed that are to be produced are also taken into consideration in the procedure by estimating the potential demand for each variety.

1. **PURPOSE**
   - 1.1 This procedure is meant to ensure that adequate basic seed is produced for each variety of each crop marketed by C&H Seeds to meet production demands for five years.
2. **SCOPE**
   - 2.1 From basic seed production planning and field production to harvest and production analysis.
3. **REFERENCES**
   - 3.1 Agro-ecological data
   - 3.2 Market data
   - 3.3 Commercial seed production plans
   - 3.4 Commercial seed sales forecasts
   - 3.5 Basic seed yield data
   - 3.6 Basic seed grower contract
   - 3.7 List of varieties/hybrids
4. **DEFINITIONS**
   - 4.1 GM: General Manager
   - 4.2 PQM: Production and Quality Manager
   - 4.3 FL: Field Leader
   - 4.4 CPL: Conditioning Plant Leader
   - 4.5 MM: Marketing Manager
   - 4.6 Contract Grower: third party grower (typically a farmer, but can be other organization) contracted for production of parent seed by the seed enterprise
   - 4.7 Crop List: list of crops marketed by seed enterprise
   - 4.8 List of Varieties: list of varieties marketed for each crop on the crop list
5. **RESPONSIBILITY AND AUTHORITY**
   - 5.1 GM is responsible for developing the Crop List and the List of Varieties, with the assistance of the MM and the PQM.
   - 5.2 PQM is responsible for approving basic seed production plans.
   - 5.3 PQM is responsible for identifying Contract Growers and signing the contracts.
   - 5.4 PQM is responsible for reviewing and coordinating the field inspection during the different growth stages including the harvesting.
   - 5.5 PQM is responsible for coordinating the harvest.
   - 5.6 PQM is responsible for collecting and maintaining field production data and for preparing field inspection reports.
   - 5.7 PQM is responsible for collecting seed samples used to generate seed analysis report.
   - 5.8 PQM is responsible for generating seed analysis report.
   - 5.9 PQM is responsible for passing or failing each seed lot based on seed analysis report.
   - 5.10 PQM is responsible for maintaining a database of yield data for each variety of each crop.

6. ACTIVITIES

6.1 Select crop

6.1.1 The GM shall determine annually the target crops to be expanded, reduced, or left as is, with the assistance of the MM and the PQM based on market information, agro-ecological data and sales team capabilities.

6.1.2 PQM shall create the Crop List and distribute to the team.

6.2 Select varieties

6.2.1 PQM shall use the Crop List, agro-ecological data and market information to generate a List of Varieties for each crop included on the Crop List, with the assistance of the MM. An Expected Demand Report for each variety shall be prepared for each variety.

6.2.2 List of Varieties is submitted to GM for approval.

6.2.3 The Expected Demand Report shall be generated annually.

6.3 Determine volume

6.3.1 The MM shall use the Crop List, List of Varieties and Expected Demand Report to generate the List of Crops, Varieties, Volume and Area Report (BP01 Annexe A).

6.3.2 The MM, with the assistance of the PQM, shall submit the list of crop varieties and volume to the GM for discussion and approval.

6.3.3 Based on the list of crops, varieties and volume approved, the PQM shall proceed to determine areas, grower availability and resources required.

6.4 Determine area

6.4.1 PQM shall use historical yield data to calculate area required to produce the established volume of each variety, completing the column corresponding to required area of BP01 Annexe A.

6.4.2 PQM shall work with growers to identify areas available each season for basic seed production and prepare a report.

6.4.3 The PQM shall review the area report and determine if adequate resources are available (including adequate seed stock for planting and adequate growing area) for basic seed production.

6.5 Revise volume

6.5.1 If adequate resources are available, the PQM shall prepare the contracts to be signed with the selected growers.

6.5.2 If adequate resources are not available, the PQM shall generate an updated list of crops, varieties, volume and areas required based on available resources, and send the updated list of crops, varieties and volume to the GM for approval.

6.5.3 Upon approval by the GM, the PQM shall initiate production and submit the updated list of crops, varieties and volume to the MM.

6.6 Start production

6.6.1 PQM prepares contracts and secures signatures of the Contract Growers and the GM, completing the Basic Seed Grower Contract Template (BP01 Annexe B).

6.6.2 PQM coordinates growers for planting basic seed production based on the contract agreements signed.

6.6.3 FL shall conduct the field evaluations throughout the growing seasons, recording deviations from variety purity, production timelines and production volumes, following BP01 Annexe C.

6.6.4 FL shall conduct each field inspection following the Field Seed Production Procedure (Part B, Section 2.c), and prepare a report using the format included for the procedure mentioned.

6.6.5 FL shall submit a copy of the field inspection report to PQM.

6.6.6 PQM shall approve or disapprove the fields, based on the inspection report.

6.6.7 If approval is granted, the CPL shall authorize harvesting the field, according to crop specific work instructions.

6.6.8 PQM shall collect seed samples from each field and submit for testing at the seed lab (BP01 Annexe D).

6.6.9 PQM shall deliver a copy of the inspection report and the seed analysis report to the Contract Grower.

6.6.10 PQM and team shall determine if production targets are met based on yield reports data for each field.

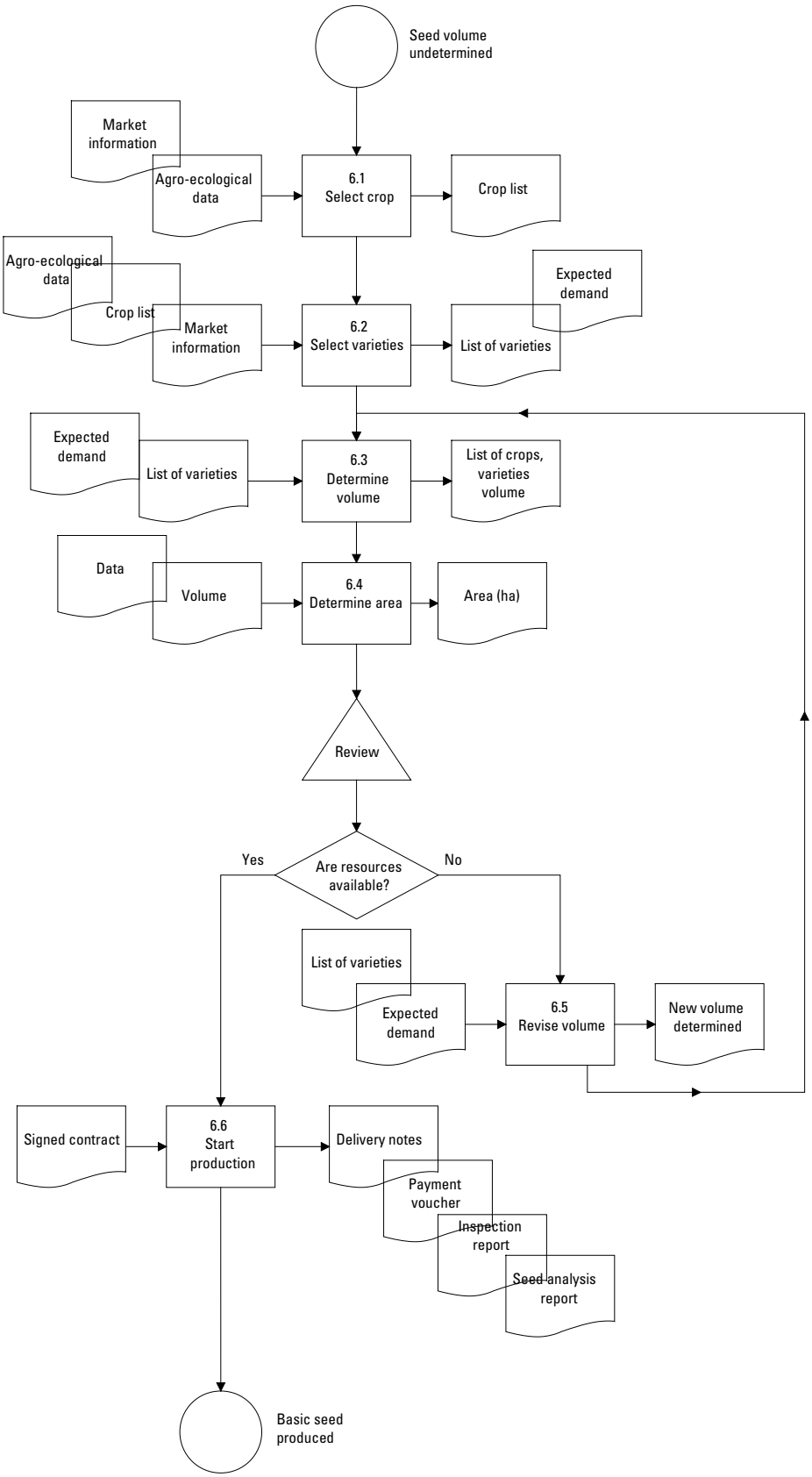
7. RECORDS

7.1 Crop List
7.2 List of Varieties
7.3 Expected Demand Reports
7.4 List of Crops, Varieties, Volume, Area Required and Revisions (if applicable)
7.5 Signed Contract Grower Contracts
7.6 Inspection Reports
7.7 Seed Analysis Reports
7.8 Basic Seed Inventory Database

8. FLOWCHART AND ANNEXES

8.1 Flowchart: Basic Seed Production Procedure
8.2 BP01 Annexe A: List of Crops, Varieties, Volume and Area Report Template
8.3 BP01 Annexe B: Basic Seed Grower Contract Template
8.4 BP01 Annexe C: Field Evaluation Report Template
8.5 BP01 Annexe D: Seed Analysis Report Template

FLOWCHART: BASIC SEED PRODUCTION PROCEDURE



BP01 ANNEXE A. LIST OF CROPS, VARIETIES, VOLUME AND AREA REPORT TEMPLATE

CROP	VARIETY	5 YEAR VARIETY DEMAND FORECAST (TONS/SEED)	BASIC SEED REQUIRED TO PRODUCE 5 YEAR FORECAST (KILOGRAMS/SEED)	AREA REQUIRED TO PRODUCE BASIC SEED (HECTARES)
RICE				
MAIZE				
Discussed with:			Approved by:	
			Date:	

BP01 ANNEXE B. BASIC SEED GROWER CONTRACT TEMPLATE

<CONTRACT GROWER NAME> undertakes to produce high quality basic seed for C&H Seeds.

<CONTRACT GROWER NAME> shall ensure that proper field management practices are followed in time, such as fertilization, tillage, herbicide application and irrigation (if applicable) as outlined below.

For the growing season of <NAME GROWING SEASON> , <CONTRACT GROWER NAME> agrees to plant the following production areas:

LOCATION OF PRODUCTION	CROP	VARIETY	PRODUCTION AREA	YIELD TARGET

C&H Seeds shall supply <CONTRACT GROWER NAME> with the required quantities of basic seed, technical advice, inspection services and harvest services.

<CONTRACT GROWER NAME> shall plant the basic seed at the prescribed population/density and shall immediately return all excess basic seed to the C&H Seeds technician present at planting.

Access to production area: <CONTRACT GROWER NAME> agrees to allow C&H Seeds access to fields listed above during reasonable business hours, and grants C&H Seeds the right to perform necessary activities in the field.

Herbicide use and weeding: The field should be kept weed-free at all times and <CONTRACT GROWER NAME> should use all possible measures, including herbicides to control weeds.

Fertilizer application: <CONTRACT GROWER NAME> agrees to fertilize the crop at rates that allow for yield to meet targets specified above.

Planting pattern: (TO BE SPECIFIED BY C&H Seeds)

Planting population/density: The crop shall be planted at the population/density of _____ to _____ plants per hectare.

Irrigation: If required, <CONTRACT GROWER NAME> shall ensure that the field has access to irrigation throughout the growing season to ensure yield targets are met.

Quality: <CONTRACT GROWER NAME> shall ensure that seed delivered to C&H Seeds meets the seed enterprise's standards for purity and germination.

<CONTRACT GROWER NAME> Signature Date

C&H Seeds Signature Date

BP01 ANNEXE C. FIELD EVALUATION REPORT TEMPLATE

FIELD	CROP	PURITY %	DAYS AHEAD/ BEHIND PRODUCTION TIMELINES	EXPECTED YIELD GAIN/ LOSS +/- (%)	COMMENTS

Field inspection completed by: _____

Date of inspection: _____

Date of submission: _____

BP01 ANNEXE D. SEED ANALYSIS REPORT TEMPLATE

FIELD	CROP	PURITY %	GERMINATION %	STRESS TEST %	SEED-BORNE DISEASES PRESENT

Seed analysis completed by: _____

Date of analysis: _____

Date of submission: _____

b) Basic Seed Acquisition Procedure

In some cases, a small- to medium-sized seed enterprise may rely on third parties to provide the genetics and basic seed necessary for their own certified seed production. This is most effectively handled through a specific contract with the genetics provider, assuring that the quality and quantity required are delivered at the appropriate time and location. This procedure ensures that the acquisition of basic seed is accomplished in a fully organized manner, so as to secure the amount of this seed category at the time required for the following multiplication.

1. PURPOSE

1.1 The purpose of this procedure is to define the proper methodology needed to obtain the necessary basic seed to meet commercial demand for the following year.

2. SCOPE

2.1 From prediction of the amount of basic seed of varieties needed to receipt of basic seed at C&H Seeds.

3. REFERENCES

3.1 Agro-ecological data
3.2 Market data
3.3 Commercial seed production plans
3.4 Commercial seed sales forecasts
3.5 Basic seed yield data
3.6 Basic seed grower contract
3.7 List of varieties/hybrids

4. DEFINITIONS

4.1 GM: General Manager
4.2 PQM: Production and Quality Manager
4.3 FL: Field Leader
4.4 CPL: Conditioning Plant Leader
4.5 MM: Marketing Manager
4.6 Crop List: list of crops marketed by C& H Seeds
4.7 Genetics Provider: third party contracted for production of parent seed by C&H Seeds
4.8 List of Varieties: list of varieties marketed for each crop on the crop list

5. RESPONSIBILITY AND AUTHORITY

5.1 GM is responsible for developing the Crop List and the List of Varieties with the assistance of the MM and the PQM.
5.2 PQM is responsible for approving basic seed production plans.
5.3 PQM is responsible for identifying the genetics provider and signing the contracts.
5.4 PQM is responsible for reviewing and coordinating the field inspection during the different growth stages including the harvesting.
5.5 PQM is responsible for coordinating the harvest.
5.6 PQM is responsible for collecting and maintaining field production data and for preparing field inspection reports.
5.7 PQM is responsible for collecting seed samples used to generate a seed analysis report.
5.8 PQM is responsible for generating the seed analysis report.
5.9 PQM is responsible for passing or failing each seed lot based on seed analysis report.
5.10 PQM is responsible for maintaining a database of yield data for each variety of each crop.

6. ACTIVITIES

6.1 Select crop

6.1.1 The GM shall determine annually the target crops to be expanded, reduced, or left as is, with the assistance of the MM and the PQM based on market information, agro-ecological data and sales team capabilities.

6.1.2 PQM shall create the Crop List and distribute to the team.

6.2 Select varieties

6.2.1 PQM shall use the Crop List, agro-ecological data and market information to generate a List of Varieties for each crop included on the Crop List, with the assistance of the MM. An Expected Demand Report shall be prepared for each variety.

6.2.2 List of Varieties is submitted to GM for approval.

6.2.3 The Expected Demand Report shall be generated annually.

6.3 Determine volume

6.3.1 MM shall use the Crop List, List of Varieties and Expected Demand Report to generate the List of Crops, Varieties, Volume and Area Report (BP01 Annexe A - previous procedure).

6.3.2 MM, with the assistance of the PQM, shall submit the List of Crops, Varieties, Volume and Area Report to the GM for discussion and approval.

6.4 Establish contract

6.4.1 PQM prepares contracts and secures signatures of genetics provider and GM based on the List of Genetics Providers (BA01 Annexe A) and completing the Genetics Provider Contract Template (BA01 Annexe B).

6.5 Evaluate field production

6.5.1 FL shall conduct the field evaluations, as necessary, throughout the growing seasons, recording deviations from variety purity, production timelines and production volumes, as in BA01 Annexe C.

6.5.2 FL shall submit a copy of the Field Evaluation Report to PQM.

6.5.3 PQM shall approve or disapprove the fields based on the Field Evaluation Report and the final seed laboratory test, shown in BA01 Annexe D.

6.6 Acquire seed

6.6.1 If approval is granted, PQM shall authorize the delivery of the basic seed to C&H Seeds, with a copy to FO.

6.6.2 Upon receipt of seed at C&H Seeds, FO will proceed to make final payment within 3 business days.

7. RECORDS

7.1 Crop List

7.2 List of Varieties

7.3 Expected Demand Reports

7.4 List of Crops, Varieties, Volume and Area Required, and Revisions (if applicable)

7.5 Signed Genetics Providers Contracts

7.6 Seed Analysis Reports

7.7 Field Evaluation Reports

7.8 Basic Seed Inventory Database

8. FLOWCHART AND ANNEXES

8.1 Flowchart: Basic Seed Acquisition Procedure

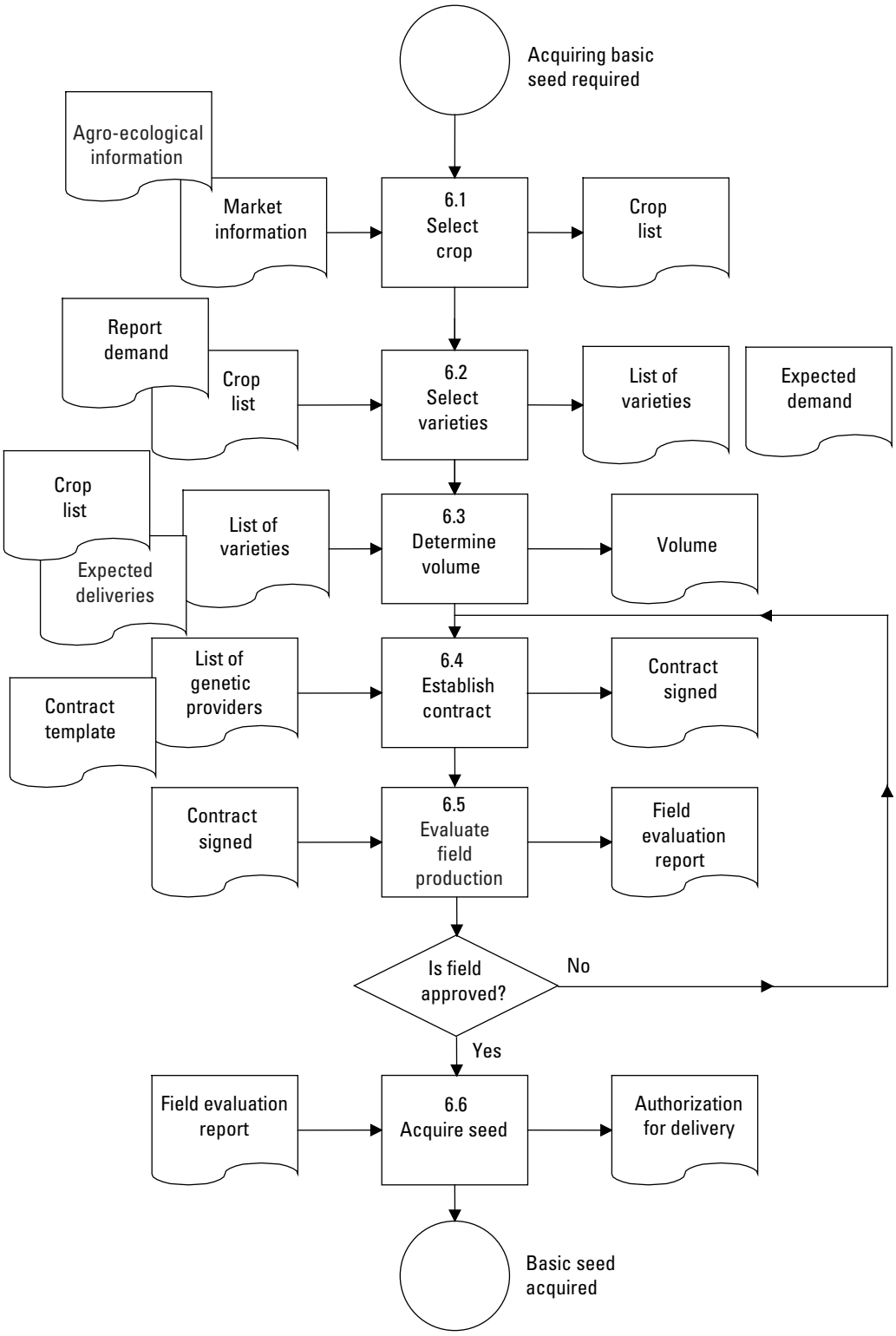
8.2 BA01 Annexe A: List of Genetics Providers Template

8.3 BA01 Annexe B: Genetics Provider Contract Template

8.4 BA01 Annexe C: Field Evaluation Report Template

8.5 BA01 Annexe D: Seed Analysis Report Template

FLOWCHART: BASIC SEED ACQUISITION PROCEDURE



BA01 ANNEXE A. LIST OF GENETICS PROVIDERS TEMPLATE

SUPPLIER NAME	ADDRESS, TERRITORY, CITY, STATE, ZIP CODE	CROP	VARIETY	RECORD/ HISTORY	QUALIFICATIONS

BA01 ANNEXE B. GENETICS PROVIDER CONTRACT TEMPLATE

Contract number:

Date:

This contract is effective as of _____(date) between C&H Seeds [Seed Enterprise] (Buyer), who will acquire basic seed, and (full name) _____ (Supplier), located in (full address) _____, who will provide the seed.

Both parties mutually declare under this contract the following:

1) Description of the seed to be provided by the Supplier:

   Quantity: _____

   Crop variety: _____

   Quality: _____

   Identification tags: _____

   Cost of seed:_____

   Cost of transportation:_____

2) The seed shall be clearly identified and packaged with the following quality standards of

   _____

3) The Supplier shall arrange the transport of the seed to the destination agreed upon with the [Seed Enterprise] (Buyer).

4) Buyer shall pay the Supplier the amount of _____ for the basic seed at the time of receiving the seed.

5) Termination: this contract shall terminate automatically on _____

6) Confidentiality: The parties shall not at any time or any manner, either directly or indirectly divulge, disclose, communicate or use for personal benefit, any information included in this contract.

_____

C&H Seeds [Seed Enterprise] signature Date

_____

Seed Supplier signature Date

BA01 ANNEXE C. FIELD EVALUATION REPORT TEMPLATE

FIELD	CROP	PURITY %	DAYS AHEAD/ BEHIND PRODUCTION TIMELINES	EXPECTED YIELD GAIN/ LOSS +/- (%)	COMMENTS

Field inspection completed by: _____

Date of inspection: _____

Date of submission: _____

BA01 ANNEXE D. SEED ANALYSIS REPORT TEMPLATE

FIELD	CROP	PURITY %	GERMINATION %	STRESS TEST %	SEED-BORNE DISEASES PRESENT

Seed analysis completed by: _____

Date of analysis: _____

Date of submission: _____

c) Field Seed Production Procedure

The genetic quality of the previously acquired basic seed, together with the field production quality, will determine the varietal purity of the certified seed put into the marketplace for the farmers. Therefore, the activities carried out in each field must be the same to ensure similar high qualities, although fields may vary. Actions ranging from ensuring that the correct variety and category of seed is planted, to a harvest free of mixtures and minimum mechanical damage, need to be measurable and repeatable to secure a high-quality field product.

1. PURPOSE

1.1 The purpose of this procedure is to define the sequence of events, interfaces and responsibilities involved in the process of seed production for maize and rice.

2. SCOPE

2.1 From planning maize and rice seed production to harvesting the seed.

3. REFERENCES

3.1 Seed production manual
3.2 Seed certification and C&H Seeds standards and regulations
3.3 Model of seed production contracts with growers

4. DEFINITIONS

4.1 GM: General Manager
4.2 PQM: Production and Quality Manager
4.3 FL: Field Leader
4.4 MM: Marketing Manager
4.5 Contract: legal document that establishes the agreement of production between the Contract Grower and seed enterprise
4.6 Contract Grower: qualified farmer who produces seed under contract for the seed enterprise
4.7 NSA: National Seed Authority

5. RESPONSIBILITY AND AUTHORITY

5.1 GM is responsible for signing the contracts.
5.2 PQM is responsible for planning the seed production, selecting the Contract Growers, reviewing the field reports and coordinating receipt of seed from the field.
5.3 FL is responsible for controlling the actual seed production, preparing field reports and documenting harvested seed.

6. ACTIVITIES

6.1 Plan seed production
- 6.1.1 PQM plans the production twice a year based on the potential market and the storage inventory established by the MM and completing FP01 Annexe A.
- 6.1.2 GM, with assistance of MM and PQM, shall adjust the seed production based on the market and government policies.
- 6.1.3 PQM shall contract with authorized providers, from two growing seasons prior, for parent seed to produce basic seed.
- 6.1.4 PQM shall maintain a stock of the parent and basic seeds.

6.2 Select fields for planting
- 6.2.1 PQM, with the assistance of FL, shall select the best areas/fields based on the list of Contract Growers with experience.
- 6.2.2 PQM shall prepare the contracts for the Contract Growers, utilizing the Contract Growers Contract Template (FP01 Annexe B). These shall then be signed by the General Manager.

6.3 Register fields

6.3.1 PQM shall register the fields with the government certification agency, utilizing the official forms at the times dictated by the NSA.

6.4 Plant fields

6.4.1 Dates for planting shall be established by FL in coordination with the field personnel and the growers.

6.4.2 FL shall provide the basic seed to growers one week in advance and be present at the time of planting.

6.4.3 The growers shall plant the fields following the agreement in the contract.

6.5 Inspect fields

6.5.1 FL shall conduct at least five (5) field inspections based on the guidelines of C&H Seeds.

6.5.2 After each inspection, FL and field technicians shall prepare a report using the Field Inspection Report Template developed by C&H Seeds (FP01 Annexe C).

6.5.3 The FL, or field technicians, shall provide a copy of the inspection report to the grower and a copy to FL.

6.5.4 The PQM, with the assistance of the FL, shall decide whether to approve or disapprove of the field during the flowering inspection or last inspection, depending on the crop.

6.5.5 If the field is rejected, continue with the discard procedure.

6.5.6 If the field is approved, the PQM shall authorize the harvest, signing the last Field Inspection Report Template (FP01 Annexe C).

6.6 Harvest fields

6.6.1 FL shall verify the cleanliness and calibration of the harvesting machinery.

6.6.2 The harvest shall be carried out based on the production guidelines from C&H Seeds.

7. RECORDS

7.1 Signed Contracts

7.2 Field Selections

7.3 Report of Inspections, Field Approvals/ Rejections

7.4 Discard Report

8. FLOWCHART AND ANNEXES

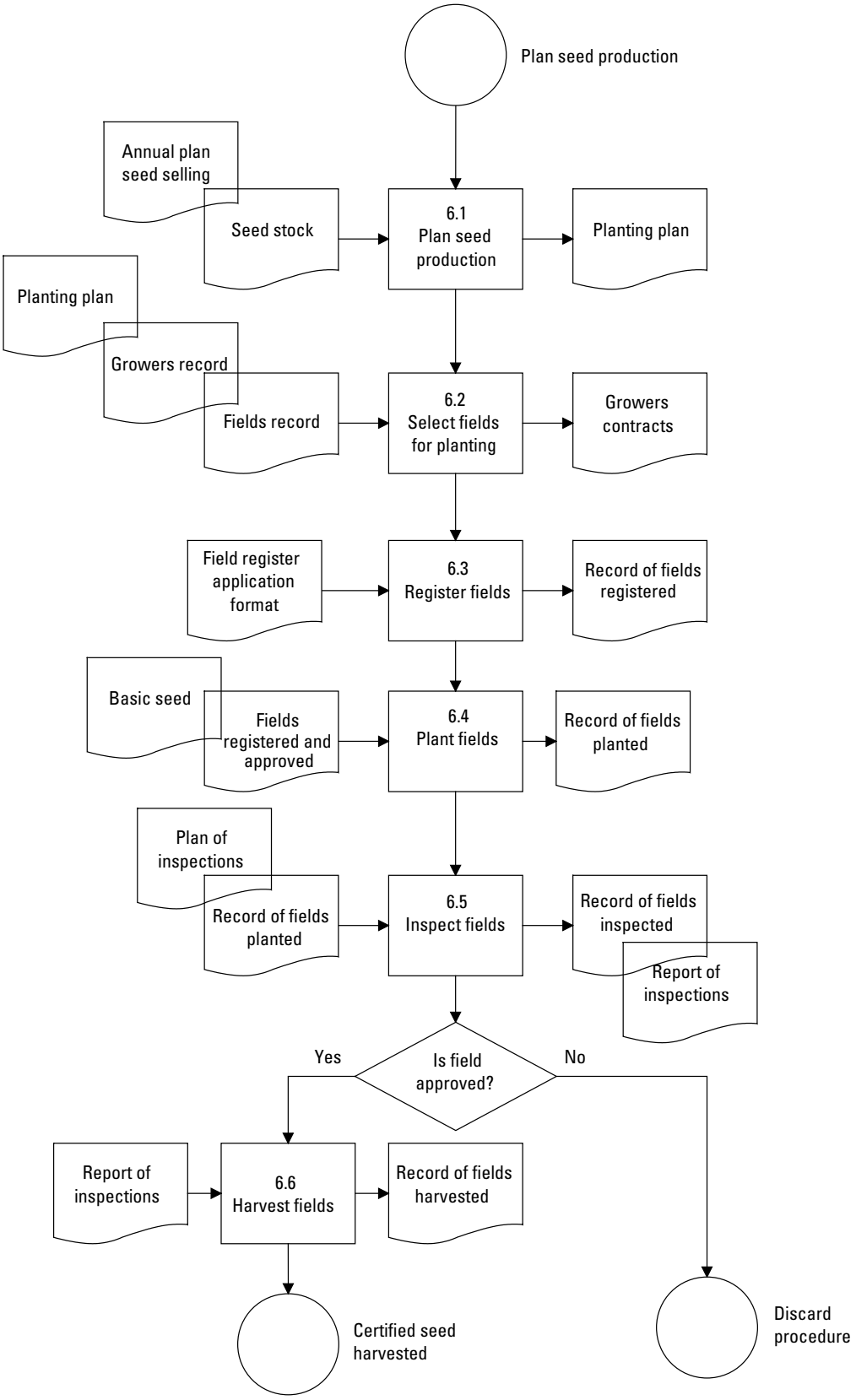
8.1 Flowchart: Field Seed Production Procedure

8.2 FP01 Annexe A: Production Plan Template

8.3 FP01 Annexe B: Contract Growers Contract Template

8.4 FP01 Annexe C: Field Inspection Report Template

FLOWCHART: FIELD SEED PRODUCTION PROCEDURE



FP01 ANNEXE A. PRODUCTION PLAN TEMPLATE

CROP	VARIETY	TONS REQUIRED	AREA REQUIRED	DATE REQUIRED

Discussed with:

Approved by:

Date:

FP01 ANNEXE B. CONTRACT GROWERS CONTRACT TEMPLATE

Name of Contract Grower:	Address:	Crop and variety:
Generation or class:	Total area:	

C&H Seeds undertakes to supply the Contract Grower with the required quantities of parent seed or basic seed; technical advice based on the inspections carried out and the packaging material for the raw seed at harvesting.

The Contract Grower shall plant the seed at the prescribed population and shall return all excess seed within one week after the planting to C&H Seeds. The Contract Grower shall retain all the labels and the packaging material of all the planted basic seed until the produced seed has been delivered to C&H Seeds.

The Contract Grower shall ensure that the land planted with the seed crop has not been planted with another variety of the same crop during the past season so as to minimize the mixture with volunteer plants and ensure that the high purity varietal seed is produced.

The Contract Grower shall ensure that proper cultural practices are followed in time, such as weeding, roguing, proper fertilizer application and irrigation at their own cost:

1. Weeding: The field should be kept weed-free at all times and the Contract Grower should use all possible measures, including herbicides, to control weeds.
2. Roguing: All off-types should be removed from the crop and there should be less than 0.05% off-types at any inspection.
3. Fertilizer application: The Contract Grower, following the advice of the FL, shall fertilize the crop at rates that enable him/her to obtain the maximum yield possible.
4. Planting pattern for maize: The crop shall be planted at a ratio of X female rows to Y male rows on the same day.
5. Planting population for rice: The crop shall be planted at the population of X plants per hectare using Y kg. of basic seed per hectare.
6. Irrigation: The Contract Grower shall ensure that the field is kept at or close to field capacity at all times.

The Contract Grower shall implement and follow all of the instructions given to him/her by the Financial Officer and/or the seed inspector of the National Seed Authority (NSA). If the Contract Grower does not follow the instructions and this leads to the rejection of the crop, C&H Seeds shall be entitled to recover the cost of the basic seed and 10% of the gross value of the grain.

C&H Seeds shall pay the Contract Grower at the rate of $ _____ per ton for the conditioned seed and will return the discards to the Contract Grower.

_____

Contract Grower Name Signature Date

_____

C&H Seeds Signature Date

FP01 ANNEXE C. FIELD INSPECTION REPORT TEMPLATE

Name of grower:	Address:	Field number:
Crop and variety names:	Source of seed:	Total area:
Field location:		
Counts:	Inspection (circle): 1st, 2nd, 3rd, 4th, 5th	
	Varietal mixture	Seed-borne disease
Preceding crop:		
Isolation:		
Number of other plants per Ha.:		
Weeds present:		
Remarks:		
Grower signature		Date
Field Leader/Field Technician signature		Date
Production and Quality Manager on 5th inspection signature		Date

d) Discard Procedure

In most situations, seed will be discarded by the seed enterprise because of seed germination loss during storage, mechanical mixture during drying or conditioning, or seed field rejection. In all cases, it is to the seed enterprise's advantage to assure that discarded seed does not find its way back into the marketplace. This could occur if a field is rejected and the Contract Grower attempts to sell his/her product as seed "under the radar". This same result could also occur if the discard is sold by the seed enterprise to unscrupulous grain millers who may try to sell it as seed rather than mill the discard. In either case, these discards will contribute to a poor "seed" product in the market, giving "true seed" a bad quality stigma and reducing present and future sales. A good discard procedure, utilized by all seed enterprises, will diminish the possibility of discards reaching the farmers, and promote the concept of good quality seed.

1. **PURPOSE**
   - 1.1 The purpose of this procedure is to define the sequence of events, interfaces and responsibilities involved in the process of discarding rejected seed crops.
2. **SCOPE**
   - 2.1 From rejection of the field/seed to final disposal of plant material.
3. **REFERENCES**
   - 3.1 Seed Production Manual
   - 3.2 Seed Certification Standards and Regulations
   - 3.3 Contract Grower contracts
   - 3.4 Inspection Report
4. **DEFINITIONS**
   - 4.1 PQM: Production and Quality Manager
   - 4.2 FL: Field Leader
   - 4.3 CPL: Conditioning Plant Leader
   - 4.4 Contract: legal document that establishes the agreement of production between the Contract Grower and C&H Seeds
   - 4.5 Contract Grower: qualified farmer who produces seed under contract with C&H Seeds
   - 4.6 Discard Seed: any seed that does not meet the quality standards as laid out in the certification scheme or C&H Seeds standards and has been rejected
   - 4.7 NSA: National Seed Authority
5. **RESPONSIBILITY AND AUTHORITY**
   - 5.1 PQM is responsible for writing the rejection report.
   - 5.2 PQM is responsible for signing the rejection report and disposing of the grain.
6. **ACTIVITIES**
   - 6.1 Determine source of the discard
     - 6.1.1 PQM shall use the rejection report to determine the source of the discard, and complete DI01 Annexe A.
     - 6.1.2 If the source of the discard is the field, continue with 6.4.
     - 6.1.3 If the source of seed is from the warehouse, go to 6.2.
   - 6.2 Isolate affected seed lot
     - 6.2.1 CPL shall have the seed lot taken to a designated area in the warehouse. CPL shall mark the lot with a clear label of "seed not for sale or distribution" with red tape around the lot.
       - 6.2.1.1 If the seed has not been treated, go to 6.3.
       - 6.2.1.2 If the seed has been treated, destroy in presence of NSA official and obtain signed record of destruction.

6.3 Contact grain buyer

6.3.1 Write a letter providing information about the grain quantities involved.

6.3.2 Enter into an agreement with the grain buying company, detailing the purchase price and delivery dates with a "not-for-sale as seed" clause, and keep sales receipt records, completing DI01 Annexe B.

6.4 Notify Contract Grower

6.4.1 Inform him or her of the rejection of the field lot according to the inspection and seed analysis reports.

6.4.2 Inform and agree with the Contract Grower on the purchase price.

6.5 Control harvest

6.5.1 PQM and/or the Field Leader shall supervise the harvest process in the field.

6.5.2 The Field Leader shall ensure compliance with all C&H Seeds rules.

6.6 Deliver to grain buyer

6.6.1 PQM shall organize the delivery of the discarded seed lot to the purchaser based on the documented agreement (DI01 Annexe B) and obtain sales receipt.

7. RECORDS

7.1 Rejection Report

7.2 Field Discard Record

7.3 Seed Lot Discard Document

7.4 Sale Agreement Document

7.5 Sale Receipt

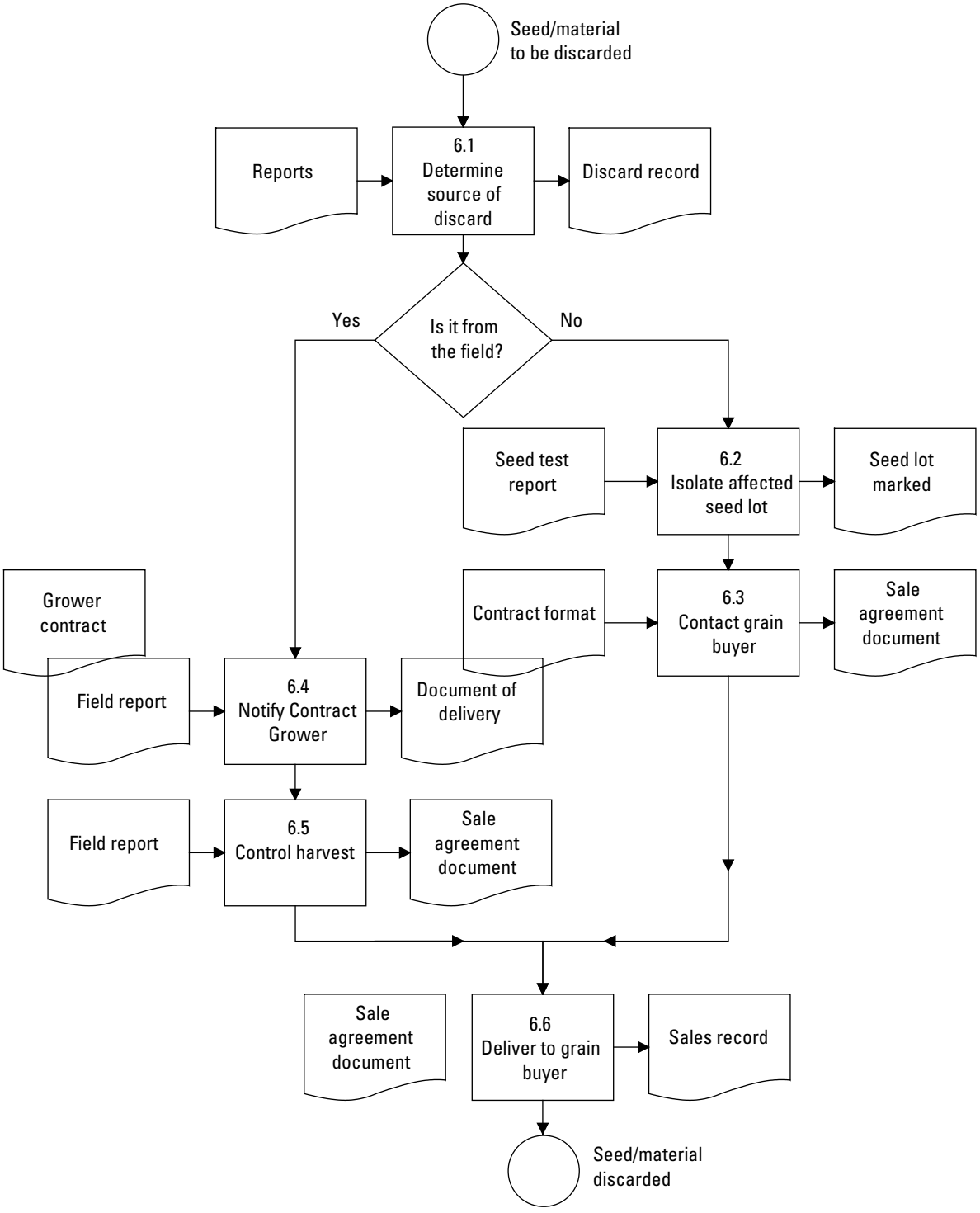
8. FLOWCHART AND ANNEXES

8.1 Flowchart: Discard Procedure

8.2 DI01 Annexe A: Discard Record Template

8.3 DI01 Annexe B: Document For Grain Delivery To Purchaser Template

FLOWCHART: DISCARD PROCEDURE



DI01 ANNEXE A. DISCARD RECORD TEMPLATE

Discard record number:	Date:
Contract Grower name:	
Address:	
Location of field:	
Field number:	
Crop:	
Variety:	
Class of seed:	
Stage of the crop:	
Reasons for discard:	
Signatures	
C&H Seeds: Signature Date	Contract Grower: Signature Date

DI01 ANNEXE B. DOCUMENT FOR GRAIN DELIVERY TO PURCHASER TEMPLATE

Record number:
Contract Grower name:
Receipt number:

To:
From:

THE FOLLOWING SEED LOTS ARE BEING DELIVERED AS GRAIN TO:

_____

FIELD NUMBER	CROP	QUANTITY (KG)	NUMBER OF CONTAINERS	REMARKS

e) Seed Conditioning and Labeling Procedure

Seed conditioning, also known in some countries as "seed processing", is the post-harvest process of:

i. Drying the seed down to safe moisture content levels for storage
ii. Removing foreign, undesirable materials to raise the physical purity and improve the appearance of the seed
iii. Eliminating non-germinating seeds to improve the physiological quality of the seed lot
iv. Removing seeds of a different variety to attain the highest genetic quality possible
v. Treating seed with chemical products to protect the seed from field insects and diseases
vi. Labeling the seed containers with accurate information including the variety name, category, weight or number of seeds, quality information and name of the seed enterprise
vii. Storing the seed lot in a condition and location that protects the seed from losing any of its quality parameters

A small- to medium-sized enterprise may or may not have seed conditioning equipment. A seed enterprise that has conditioning equipment and facilities should use the procedure below to ensure that all post-harvest activities are always carried out with the same methodology and record-keeping. If the enterprise does not have their own conditioning and storage equipment, the enterprise should be allowed to operate through service agreements with a seed conditioner. In this case, the procedure will need to be modified to reflect this variation and establish the necessary controls.

Seed treatment has been included in this quality manual as a "work instruction" and is outlined in the following subsection (Part B, Section 2. f).

A work instruction is an integral part of a procedure in process management. The following example shows how a work instruction is constructed and integrated into a procedure.

1. PURPOSE

1.1 The objective of this procedure is to define the sequence of events, interfaces and responsibilities involved in the process of seed conditioning, and includes labeling if C&H Seeds is accredited.

2. SCOPE

2.1 From the harvest of the seed crop to conditioned seed.

3. REFERENCES

3.1 C&H Seeds production standards
3.2 Seed Certification Standards and Regulations

4. DEFINITIONS

4.1 PQM: Production and Quality Manager
4.2 CPL: Conditioning Plant Leader
4.3 Contract Grower: qualified farmer who produces seed under contract with C&H Seeds
4.4 NSA: National Seed Authority

5. RESPONSIBILITY AND AUTHORITY

5.1 CPL is responsible for receiving all seed lots at the conditioning plant facility.
5.2 CPL is responsible for receiving seed and conditioned seed samples, and for sending these samples to the quality assurance laboratory.
5.3 CPL is responsible for all phases of seed drying, cleaning, treating, packaging, labeling and storing.

6. ACTIVITIES

6.1 Receive seed

6.1.1 CPL shall receive the harvested seed from Contract Growers and record all information detailed in the Seed Receipt at Conditioning Plant Template (SC01 Annexe A).

6.1.2 The seed received shall be weighed and the moisture content determined and recorded.

6.1.3 CPL shall issue a receipt with the weight and moisture content to the Contract Grower (SC01 Annexe A).

6.2 Take sample

6.2.1 As the seed is received into the conditioning plant, CPL shall take a representative sample from the seed lot and send to the laboratory with a completed Sampling Card (SC01 Annexe B).

6.3 Test quality of pre-conditioned seed lot

6.3.1 The PQM shall conduct the seed testing following International Seed Testing Association (ISTA) rules and C&H Seeds standards.

6.3.2 The PQM shall issue a quality report of the seed received, completing SC01 Annexe C.

6.3.3 If the results of the quality test are out of standards established by C&H Seeds, continue with the seed discard procedure.

6.3.4 If the results are within the standards established by C&H Seeds, the seed is accepted and continue with 6.4.

6.4 Condition seed lot

6.4.1 CPL shall determine the seed lot to be conditioned by following a conditioning schedule.

6.4.2 CPL with staff of conditioning plant shall start with the pre-cleaning and drying of the seed to remove contaminants and reduce moisture content to C&H Seeds standards.

6.4.3 CPL with staff shall record all drying operations, recording initial and final moisture contents (SC01 Annexe D).

6.4.4 CPL with staff shall continue with the cleaning, treatment, bagging and labeling of the seed lot, recording the information in SC01 Annexe D.

6.5 Test quality of cleaned seed

6.5.1 CPL shall take a sample of cleaned seed and send to the lab for testing.

6.5.2 PQM shall conduct a test to verify quality of the seed lot and compliance with C&H standards.

6.5.2.1 If the quality of seed is within standards, continue with 6.6.

6.5.2.2 If the quality of seed is not within standards, but may be re-conditioned, continue with 6.4.

6.5.2.3 If the quality of seed is within standards, and cannot be re-conditioned, continue with the discard procedure.

6.6 Treat seed

6.6.1 CPL with staff of conditioning plant shall treat the seed and record type and amount of treatment utilized, recording the information in SC01 Annexe D.

6.6.2 The treatment shall be accomplished following the C&H Seeds standards using the chemicals and dosages established.

6.7 Apply for labels

6.7.1 PQM shall apply to NSA for the labels, based on the seed testing and field inspection reports (SC01 Annexe E, page 104).

6.7.2 If the company is accredited, NSA shall send the approval of the seed lot and the certificate.

6.8 Weigh, pack and label

6.8.1 After conditioning and treatment are completed, CPL and staff shall package seed into containers of specific net weight.

6.8.2 CPL and staff shall pack and sew the bags at the time the seed is placed in the bags.

6.8.3 PQM shall issue the labels based on the approval by NSA, which must be sewn on each bag by the CPL with staff to maintain the identity of the seed.

6.9 Store seed

6.9.1 CPL with staff shall stack the bags in the designated area of the storage facility and identify the seed lot with two signs on the seed lot with its corresponding information.

6.9.2 CPL with staff shall stack the bags in the storage facility in such a way as to prevent the bags from directly touching the floor and with sufficient space between seed lots and walls to allow sampling.

6.9.3 CPL will update the seed lot storage location board and record completing SC01 Annexe F, page 105.

7. RECORDS

7.1 Sampling Reports

7.2 Seed Testing Reports

7.3 Record of Conditioning

8. FLOWCHART AND ANNEXES

8.1 Flowchart: Seed Conditioning and Labeling Procedure

8.2 SC01 Annexe A: Seed Receipt at Conditioning Plant Template

8.3 SC01 Annexe B: Sampling Card Template

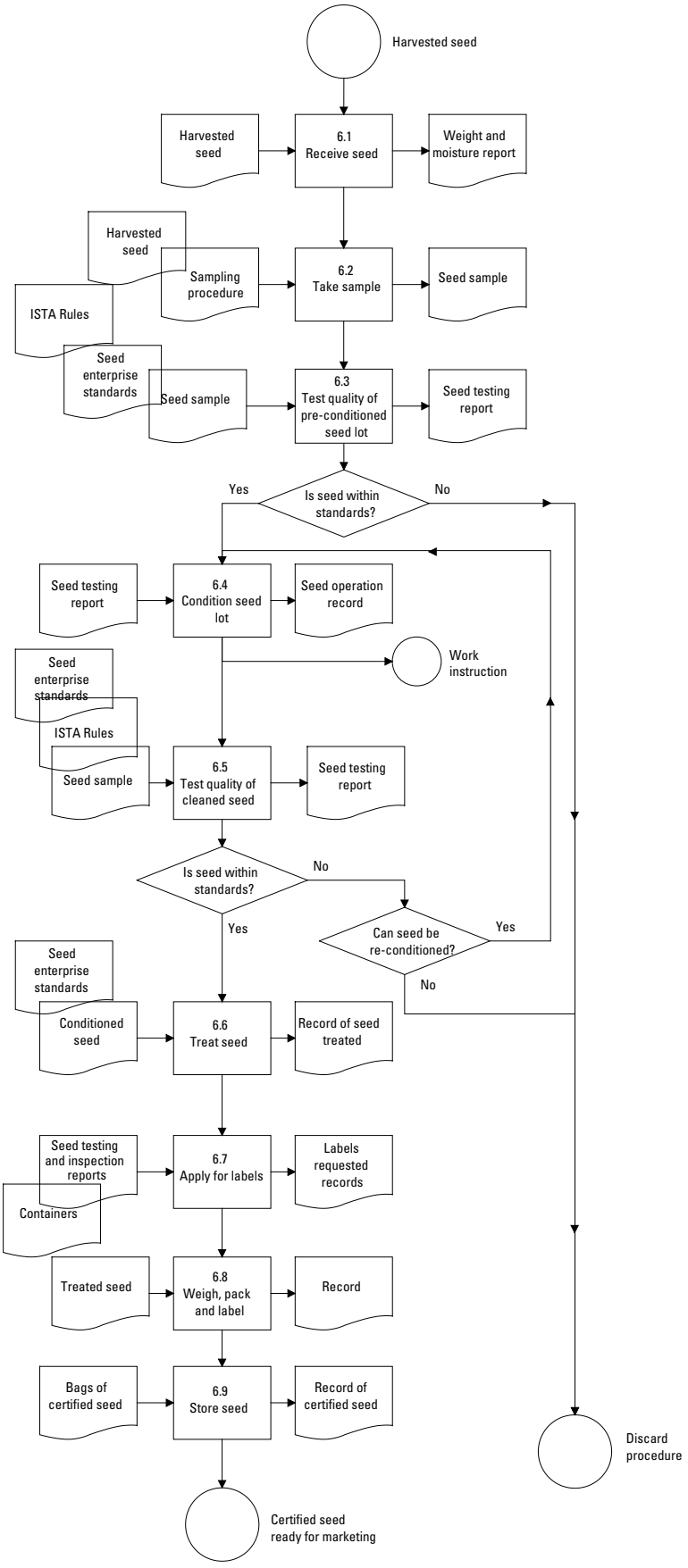
8.4 SC01 Annexe C: Seed Laboratory Testing Report Template

8.5 SC01 Annexe D: Seed Conditioning Operation Template

8.6 SC01 Annexe E: Certification Label Request Template (See page 104.)

8.7 SC01 Annexe F: Certified Seed Storage Record Template (See page 105.)

FLOWCHART: SEED CONDITIONING AND LABELING PROCEDURE



SC01 ANNEXE A. SEED RECEIPT AT CONDITIONING PLANT TEMPLATE

Receipt number: _____

Contract Grower information
Name:
Address:

Field location:
Production in hectares:
Crop:
Variety:
Class of seed:
Planting date:

Harvest date:
Weight:
Moisture content:

Notes:

Conditioning Plant Leader: _____

Signature Date

SC01 ANNEXE B. SAMPLING CARD TEMPLATE

Crop species:
Variety:
Field number:
Seed lot number assigned:
Contract Grower:
Class: □ Pre-basic □ Basic □ Certified (1st generation) □ Certified (2nd generation)
Seed lot total weight at reception (Kg): Seed lot total weight after conditioning (Kg): Number of bags in seed lot: Weight per bag (Kg): Number of certified seed tags requested: Seed lot storage location:

Sampler: _____
Signature Date

Conditioning Plant Leader: _____
Signature Date

SC01 ANNEXE C. SEED LABORATORY TESTING REPORT TEMPLATE

Crop:	
Variety name:	
Lot number:	
Sample number:	
Tests requested:	
Contract Grower:	
Date sample received: Signature:	Date tests concluded: Signature:
Test results Purity: Germination: Moisture: Stress: Seed health:	
Remarks:	

Production and Quality Manager: _____

Signature Date

SC01 ANNEXE D. SEED CONDITIONING OPERATION TEMPLATE

Crop:
Variety:
Field number:
Lot number:
Contract Grower:
Initial weight (kg):
Final weight (kg):
Final number of bags:
Pre-cleaning discards (kg):
Drying notes:
Moisture content reduced from _____% to____%
Cleaning discards (kg):
Treatment material name and amount:
Labeling number of tags from tag number_____to tag number_____:
Storage location number:
Additional remarks:

Conditioning Plant Leader:_____
Signature Date

Production and Quality Manager: _____
Signature Date

f) Seed Treatment Work Instruction

When a single task is performed by a single person, it is called a "work instruction". A work instruction has exactly the same elements as a procedure, except that the first element of the work instruction is called a "Title" instead of a "Purpose". In most small- to medium-sized seed enterprises, one can expect that seed treatment will be performed by the Conditioning Plant Leader under the close supervision of the Production and Quality Manager. This characteristic fulfills the requirements of a work instruction of one task, one person.

Also, in small- to medium-sized seed enterprises in developing countries, the conventional wisdom is that seed should be treated as purchase orders are received. This way, seed that may go on as unsold after the planting season still may be sold as grain, if carryover is not an option.

1. **TITLE**
   - 1.1 The purpose of this work instruction is to define the actions, interfaces and responsibilities involved in seed treatment at C&H Seeds.
2. **SCOPE**
   - 2.1 From the receipt of seed requiring treatment to treated seed ready for bagging and labeling.
3. **REFERENCES**
   - 3.1 National environment and health standards
   - 3.2 Product usage instructions and compatibility recommendations
   - 3.3 Seed treatment equipment operation manual
   - 3.4 Calibration of Critical Equipment Procedure
4. **DEFINITIONS**
   - 4.1 PQM: Production and Quality Manager
   - 4.2 CPL: Conditioning Plant Leader
5. **RESPONSIBILITY AND AUTHORITY**
   - 5.1 PQM is responsible for the supervision of all seed treatment operations and ensuring that the appropriate seed treatment products are utilized, calibration carried out and that all seed lots are treated in the same way.
   - 5.2 CPL is responsible for cleaning the treatment equipment and completing the Clean Inspection Report. CPL is also responsible for calibrating the treatment equipment, and completing and signing the Calibration Report with the PQM.
6. **ACTIVITIES**
   - 6.1 Clean equipment
     - 6.1.1 CPL cleans the treatment equipment ensuring that cleaning solutions do not react with treatment residue according to the chemical incompatibility chart.
     - 6.1.2 PQM inspects machine cleanliness and signs the Equipment Cleanliness Report (WI01 Annexe A).
   - 6.2 Calibrate equipment
     - 6.2.1 PQM conducts the calibration for the treatment equipment in accordance with the equipment and product doses specifications.
     - 6.2.2 CPL completes the Calibration Report and signs with PQM (WI01 Annexe B).

6.3 Mix chemicals

6.3.1 PQM determines treatment quantity required to treat the seed batch or lot, reviews the product specifications for the treatments, mixes the required chemicals, if more than one, and adds the water requirements.

6.3.2 CPL records data in the Chemical Use Report and signs with PQM (WI01 Annexe C).

6.4 Treat seed

6.4.1 CPL performs the seed treatment during his/her work shift ensuring that treatment is proceeding correctly and shutting down if there are any issues interfering with the seed treatment.

6.4.2 PQM must be present during all operations of the seed treatment to handle issues that may arise.

6.4.3 During and upon completion of the seed treatment, CPL checks that the treatment is within standards and PQM verifies and generates the Treatment Inspection Report (WI01 Annexe D).

7. RECORDS

7.1 Record of Machine Cleaning

7.2 Record of Machine Calibration

7.3 Record of Chemicals Used

7.4 Record of Treatment Completion and Treated Seed Quantity

8. FLOWCHART AND ANNEXES

8.1 Flowchart: Seed Treatment Work Instruction

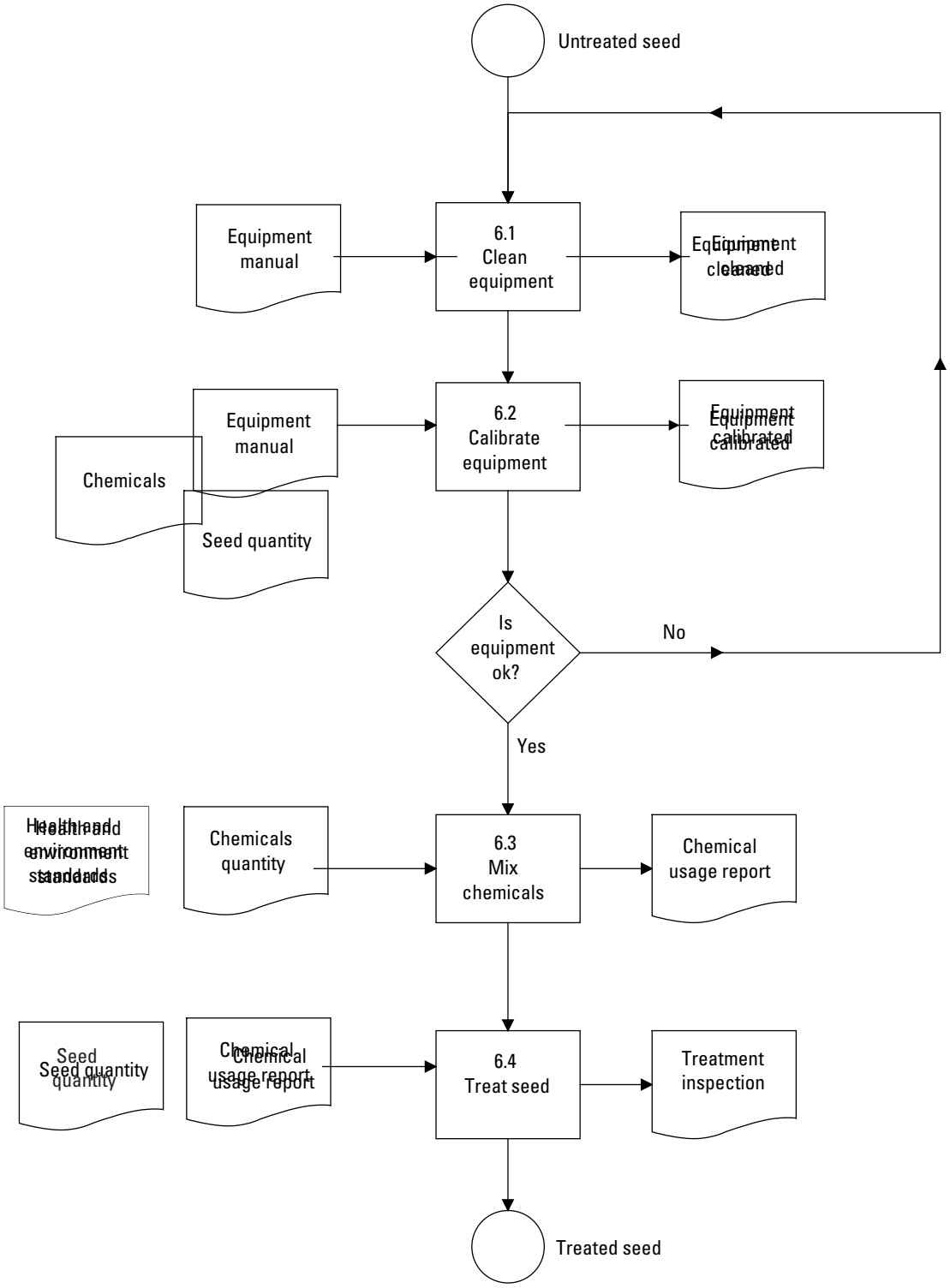
8.2 WI01 Annexe A: Equipment Cleanliness Report Template

8.3 WI01 Annexe B: Calibration Report Template

8.4 WI01 Annexe C: Chemical Use Report Template

8.5 WI01 Annexe D: Treatment Inspection Report Template

FLOWCHART: SEED TREATMENT WORK INSTRUCTION



WI01 ANNEXE A. EQUIPMENT CLEANLINESS REPORT TEMPLATE

Conditioning Plant Leader:		Date:
Equipment name:	Model and serial number:	Location:
Previous chemical applied:		
Did you check the product tank, the chemical mixing tanks and the application mixer?		
Did you check the chemical incompatibility chart?		
Comments:		

Production and Quality Manager: _____

Signature Date

WI01 ANNEXE B. CALIBRATION REPORT TEMPLATE

Type of equipment:
Identification number:
Tolerance (if applicable):
Conditions:
Frequency of calibration:
Calibration method:
Remarks:

	Date	Time	Condition	Adjustment	Initial
1					
2					
3					
4					
5					
6					
7					
8					

WI01 ANNEXE C. CHEMICAL USE REPORT TEMPLATE

Production and Quality Manager name:	Signature:	Date:
Conditioning Plant Leader name:	Signature:	Date:
Crop seed:	Variety name:	Seed lot number:
Treatment used:		
Chemical(s) used:	Amount used:	Amount remaining:
Treatment dosage:	Active ingredients:	Colorants:
Comments:		

WI01 ANNEXE D. TREATMENT INSPECTION REPORT TEMPLATE

Production and Quality Manager name:	Signature:	Date:
Conditioning Plant Leader name:	Signature:	Date:
Weight seed treated:	Lot number:	
Inspection completed? Y N (If not, explain in comments)	Inspector comments:	

SC01 ANNEXE E. CERTIFICATION LABEL REQUEST TEMPLATE

To: (Name of authority issuing the certificate) From: C&H Seeds	
Lot number:	
Crop:	
Variety or hybrid:	
Variety name or code number:	
Statement of re-labeling, if required:	
Number of containers and declared weight of lot:	
The seed lot bearing this reference number has been produced in accordance with the Seed Certification and Quality Assurance System and is approved/provisionally approved as:	
– Pre-Basic seed (Label color: Violet band on white)	
– Basic seed (Label color: White)	
– Certified seed, 1st generation (Label color: Blue)	
– Certified seed, ... generation (Label color: Red)	
Signature:	Place and date:

Production and Quality Manager: _____

Signature Date

SC01 ANNEXE F. CERTIFIED SEED STORAGE RECORD TEMPLATE

Crop_____

VARIETY	CATEGORY	LOT NUMBER	STORAGE LOCATION	TOTAL QTY (KG)	GROWER'S NAME	DATE CONDITIONED	QUALITY LEVEL (VIGOR)	REMARKS

g) Seed Market Determination Procedure

The seed market determination procedure is the most important activity of a seed enterprise, independent of the organization's size. The estimation of the seed demand can make or break the organization, depending on the quality of the marketing information gathered. This procedure attempts to outline the activities that should be carried out for seed market determination and the type of information that the organization needs to make an informed decision. Also, this procedure should be classified as Confidential Business Information (CBI).

1. PURPOSE

1.1 The purpose of this procedure is to define the sequence of events, interfaces and responsibilities involved in the process of seed market determination.

2. SCOPE

2.1 From undetermined amounts of seed required for the following planting seasons to the seed market determination.

3. REFERENCES

3.1 Seed Enterprise Production Standards
3.2 Seed Certification Standards and Regulations
3.3 Seed Enterprise Market Strategy
3.4 Certified and Basic Seed Stock Reports

4. DEFINITIONS

4.1 PQM: Production and Quality Manager
4.2 MM: Marketing Manager
4.3 PSL: Promotion and Sales Leader
4.4 Basic Seed: new crop seed
4.5 Carryover: the quantity of seed supply on hand at the beginning of a marketing year, not including any quantity that was produced for the seed enterprise during the current calendar year
4.6 CBI: Confidential Business Information
4.7 Contract Grower: qualified farmer who produces seed under a contract for seed enterprise
4.8 Seed Volume: quantity of seed

5. RESPONSIBILITY AND AUTHORITY

5.1 PQM shall be responsible for providing grower information, suitability, grower relations and grower selection to the volume planning process.
5.2 MM shall be responsible for determining quality of existing seed and identifying potential new varieties.
5.3 PQM shall be responsible for planning the seed production, reviewing the field reports and coordinating seed reception from the field.
5.4 MM shall be responsible for ensuring that the volume planning process requirements are met and determining and securing supplies needed for commercial sale.
5.5 MM shall load inputs into the supply planning information management system, adjusting risk management targets and reviewing and updating the volume plan per the supply and demand information timeline calendar.

6. ACTIVITIES

6.1 Collect market information
  6.1.1 MM, with assistance of the PSL, shall obtain historical seed statistics of the last five years.
  6.1.2 MM, with assistance of PSL, will obtain competitor information through C&H Seeds distribution network.
  6.1.3 MM, with assistance of PSL, will obtain farmer information through field days, fairs and surveys.
  6.1.4 MM shall prepare and load all information into the database and analyze.

6.2 Ascertain carryover stock

6.2.1 PQM shall determine usable units of basic seed from C&H Seeds and the basic seed suppliers, if needed.

6.2.2 PQM shall construct and supply the basic seed report to the PQM and GM.

6.2.3 PQM shall verify all usable carryover reserves, one month after the last planting season, in carryover stock of certified seed.

6.2.4 PQM and PSL shall establish usable carryover supply by analyzing the stock report of carryover certified seed that passes carryover quality testing from distributors who will not be returning carryover seed.

6.3 Determine market penetration

6.3.1 The market determination meeting shall be convened by the GM, and take place two planting seasons prior to certified seed sales for the anticipated planting season.

6.3.2 MM and PQM shall complete Part 1 of the Maize Seed Market Determination Plan Template (MD01 Annexe A) and Part 1 of the Rice Seed Market Determination Plan Template (MD01 Annexe B) in preparation for the meeting.

6.3.3 During the meeting, the GM, with the assistance of MM and PQM, shall determine the expansion or reduction of C&H Seeds' market penetration.

6.4 Determine area availability

6.4.1 MM shall work with PQM to determine number of hectares needed for basic and certified seed production.

6.4.2 PQM shall create a chart of growers that shows hectare quantities for each grower as well as area suitability (MD01 Annexe C).

6.5 Identify constraints

6.5.1 PQM shall determine all potential production capacity issues.

6.5.2 PQM shall determine all seed conditioning capacity issues.

6.5.3 PQM shall determine all seed storage issues.

6.5.4 MM shall determine all logistical needs and organize support to optimize seed distribution.

6.6 Review market penetration

6.6.1 PQM, MM and PSL shall meet to review the market determination plan (MD01 Annexe A and MD01 Annexe B), based on issues raised.

6.6.2 PSL and MM shall establish the new revised market demand estimates for C&H Seeds.

6.6.3 GM, with the assistance of the PQM and MM, shall complete Part 2 of MD01 Annexes A and B, and review estimates with financial and macro seed quantity targets, including a risk management percentage to be planted.

6.6.4 GM shall mark the market determination plan as Confidential Business Information (CBI) for use by GM, PQM and MM only.

7. RECORDS

7.1 Records of Market Share Analysis

7.2 Records of Available Seed Stock

7.3 Records of Contract Grower Information

7.4 Records of Product Quality and Historical Performance

8. FLOWCHART AND ANNEXES

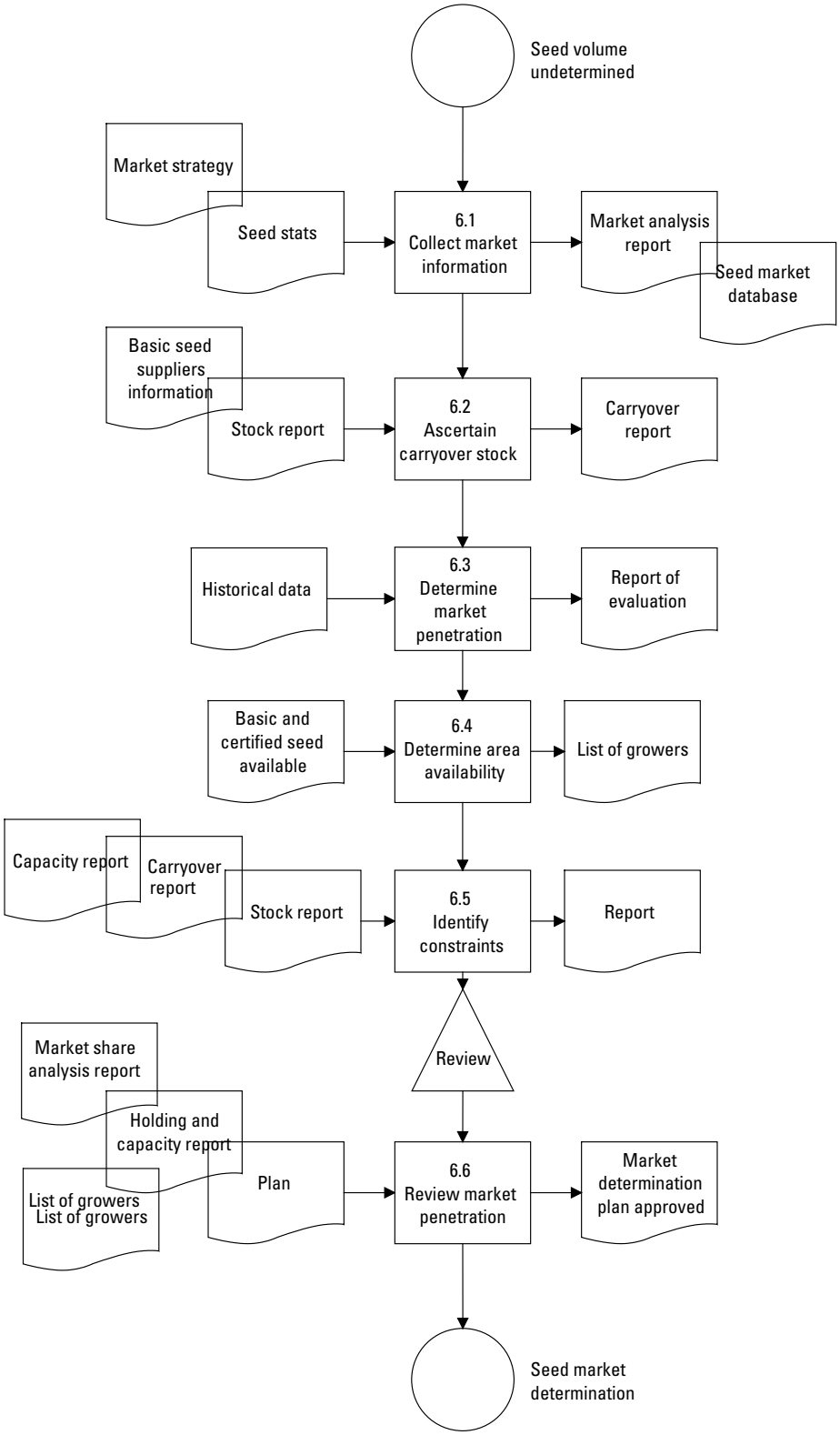
8.1 Flowchart: Seed Market Determination Procedure

8.2 MD01 Annexe A: Maize Seed Market Determination Plan Template

8.3 MD01 Annexe B: Rice Seed Market Determination Plan Template

8.4 MD01 Annexe C: Potential Growers and Capabilities Template

FLOWCHART: SEED MARKET DETERMINATION PROCEDURE



MD01 ANNEXE A. MAIZE SEED MARKET DETERMINATION PLAN TEMPLATE

Management present:			Date:		
C&H seed availability:					
Maize parent seed					
Code name	Lot number	Germination (%)	Amount (kg)	Total amount (kg)	
Certified seed					
Variety name	Lot number	Germination (%)	Amount (kg)	Total amount (kg)	
Historical data by marketing area (past five years)					
Maize certified seed use (ton):					
Variety 1 use (ton):		C&H Seeds market %:		C&H Seeds amount (ton):	
Variety 2 use (ton):		C&H Seeds market %:		C&H Seeds amount (ton):	
Variety 3 use (ton):		C&H Seeds market %:		C&H Seeds amount (ton):	
Competition information (by seed enterprise)					
New varieties Yes____ No____ Market volume increase Yes ____ No____ %____ Market area increase Yes ____ No _____ % ____ Pricing decrease Yes ____ No____ % ____ Pricing increase Yes ____ No____ % ____					

Contract Grower information
PRODUCT FOCUSED
Current varieties offered: (Ranked priority)
Variety characteristics desired: (Ranked priority)

(continued on page 110)

MD01 ANNEXE A. MAIZE SEED MARKET DETERMINATION PLAN TEMPLATE (CONTINUED)

Contract Grower information
SERVICE FOCUSED
Services offered: (Ranked priority)
Services desired: (Ranked priority)
Increase C&H Seeds market penetration: Yes___ No____ Variety_____ Amount (ton)_____ Variety_____ Amount (ton)_____
Production issues:
Conditioning issues:
Storage issues:
Logistics and distribution issues:
Revise market penetration: Yes___ No____ Variety_____ Amount (ton)_____ Variety_____ Amount (ton)_____

Approved by General Manager:_____

Signature Date

MD01 ANNEXE B. RICE SEED MARKET DETERMINATION PLAN TEMPLATE

Management present:			Date:		
C&H Seed availability:					
Basic seed					
Variety name	Lot number	Germination (%)	Amount (kg)	Total amount (kg)	
Certified seed					
Variety name	Lot number	Germination (%)	Amount (kg)	Total amount (kg)	
Historical data by marketing area (past five years)					
Rice certified seed use (ton):					
Variety 1 use (ton):		C&H Seeds market %:		C&H Seeds amount (ton):	
Variety 2 use (ton):		C&H Seeds market %:		C&H Seeds amount (ton):	
Variety 3 use (ton):		C&H Seeds market %:		C&H Seeds amount (ton):	
Competition information (by seed enterprise)					
New varieties Yes____ No____ Market volume increase Yes ____ No____ %____ Market area increase Yes ____ No _____ % ____ Pricing decrease Yes ____ No____ % ____ Pricing increase Yes ____ No____ % ____					

Contract Grower information
PRODUCT FOCUSED
Current varieties offered: (Ranked priority)
Variety characteristics desired: (Ranked priority)

(continued on page 112)

MD01 ANNEXE B. RICE SEED MARKET DETERMINATION PLAN TEMPLATE (CONTINUED)

Contract Grower information
SERVICE FOCUSED
Services offered: (Ranked priority)
Services desired: (Ranked priority)
Increase C&H Seeds market penetration: Yes___ No____ Variety_____ Amount (ton)_____ Variety_____ Amount (ton)_____
Production issues:
Conditioning issues:
Storage issues:
Logistics and distribution issues:
Revise market penetration: Yes___ No____ Variety_____ Amount (ton)_____ Variety_____ Amount (ton)_____

Approved by General Manager:_____

Signature Date

MD01 ANNEXE C. POTENTIAL GROWERS AND CAPABILITIES TEMPLATE

GROWER	HECTARES	PREVIOUS EXPERIENCE	SPECIAL CONSIDERATIONS AND/OR CAPABILITIES

h) Seed Storage Procedure

Seed storage may occur at different stages during the post-harvest period, including storage of unconditioned seed, storage of conditioned but untreated seed, warehouse storage of treated seed and storage at the Agro-dealer level. During these periods, record-keeping of amounts, location and status is of critical importance to the seed enterprise. Also at all stages, seed needs to be carefully monitored for physiological quality decreases and storage insect presence. This procedure describes the logistics as well as some technical actions to serve as a guideline during seed storage.

1. PURPOSE

1.1 This procedure defines the sequence of events, interfaces and responsibilities involved in the process of seed storage for all maize and rice certified seed.

2. SCOPE

2.1 From conditioned seed to seed stored and ready for market.

3. REFERENCES

3.1 Seed Production Manual
3.2 Quality Manual
3.3 Seed Certification Standards and Regulations
3.4 Company specifications for storage
3.5 Warehouse specifications for storage
3.6 Fumigation procedure
3.7 International Seed Testing Association (ISTA) Seed Testing Rules

4. DEFINITIONS

4.1 GM: General Manager
4.2 PQM: Production and Quality Manager
4.3 CPL: Conditioning Plant Leader
4.4 PSM: Promotion and Sales Manager
4.5 Final Shipping Location: the warehouse location where seed shall transfer possession between C&H Seeds and distributor.

5. RESPONSIBILITY AND AUTHORITY

5.1 PQM is responsible for all operations at seed production facility from production planning to shipment to distributor.
5.2 PQM is responsible for conducting seed testing and communicating results to MM.
5.3 CPL is responsible for receiving, conditioning, storing and shipping seed.

6. ACTIVITIES

6.1 Determine storage seed quality and class
- 6.1.1 Use the seed testing report from Seed Conditioning and Labeling Procedure (SC01 Annexe C: Seed Laboratory Testing Report Template) to determine seed quality.
- 6.1.2 Seed shall only be stored when the Seed Storage Quality Report indicates that C&H Seeds' quality standards have been met. If seed does not meet standards and cannot be upgraded to C&H Seeds' standards, go to Discard Procedure (Part B, Section 2.d).
- 6.1.3 PQM, with assistance from CPL, shall determine where to store seed according to C&H Seeds' specifications for storage.

6.2 Determine storage and method
- 6.2.1 CPL shall determine the proper physical location for storage using warehouse specifications.
  - 6.2.1.1 If the final shipping location is the conditioning location, proceed with step 6.2.2.
  - 6.2.1.2 If the final shipping location is not the conditioning location, PQM shall refer to the Seed Distribution Procedure (Part B, Section 2.k) for movement to final shipping location.

6.2.2 PSM shall ensure that guidelines for safe seed storage are followed:

6.2.2.1 Seed shall not be in direct contact with storage floor.

6.2.2.2 Seed lots shall have sufficient separation to allow sampling.

6.2.2.3 Humidity shall be kept at 70 percent or near that level to prevent increase of seed moisture content.

6.2.2.4 Seed storage facilities shall be kept free of insects, rodents, birds and any other pests that may reduce the quality of the seed and seed bags.

6.2.3 When storage location is determined and prior to moving seed to location, PQM shall update storage records in C&H Seeds' database. Include the following: variety name, lot number, seed quality and location.

6.3 Store seed

6.3.1 CPL shall obtain storage records detailing the location and method of storage for a specified conditioned seed lot (ST01 Annexe A).

6.3.2 CPL, with assistance of the storage facility staff, shall move the seed to the predetermined location as per 6.2.3, above.

6.3.3 The CPL shall update the storage seed lot location board with the date, location and seed lot number.

6.4 Fumigate seed

6.4.1 If fumigation is deemed necessary, the PQM shall determine the type of fumigation.

6.4.1.1 Fumigation may be required in any storage unit where proper aeration, as determined by the PQM, is unavailable.

6.4.1.2 Fumigation may be required in any storage unit where the seed moisture is greater than 14 percent.

6.4.1.3 Fumigation may be required monthly in C&H Seeds' storage facilities located in tropical areas.

6.4.2 The PSM shall reference C&H Seeds' standards to assess the proper fumigation type and according to the fumigation work instructions.

6.4.3 Fumigation records shall be updated with the date, location and application of the fumigation.

6.5 Monitor seed quality

6.5.1 All seed lots of C&H Seeds shall be monitored for quality according to ISTA rules and C&H Seeds' standards. If the seed is conditioned seed but not ready to market, go to 6.5.2. If the seed is a finished good, go to 6.5.3.

6.5.2 Seed that has been conditioned but is not ready to market shall be monitored. A representative sample shall be taken every 3 months and the following tests shall be performed and recorded in the Seed Storage Quality Report (ST01 Annexe B):

- Moisture percent
- Germination percent
- Vigor percent

6.5.3 Finished goods seed (conditioned, treated and/or packaged) shall be monitored. A representative sample shall be taken while packaging, once every three months until planting season, and once every six months for carryover seed. The following tests shall be performed and recorded in the Seed Storage Quality Report (ST01 Annexe B):

- Moisture percent
- Germination percent
- Vigor percent (only for carryover seed)

7. RECORDS

7.1 Seed Inventory

7.2 Fumigation Report

7.3 Seed Storage Report

7.4 Seed Storage Quality Report

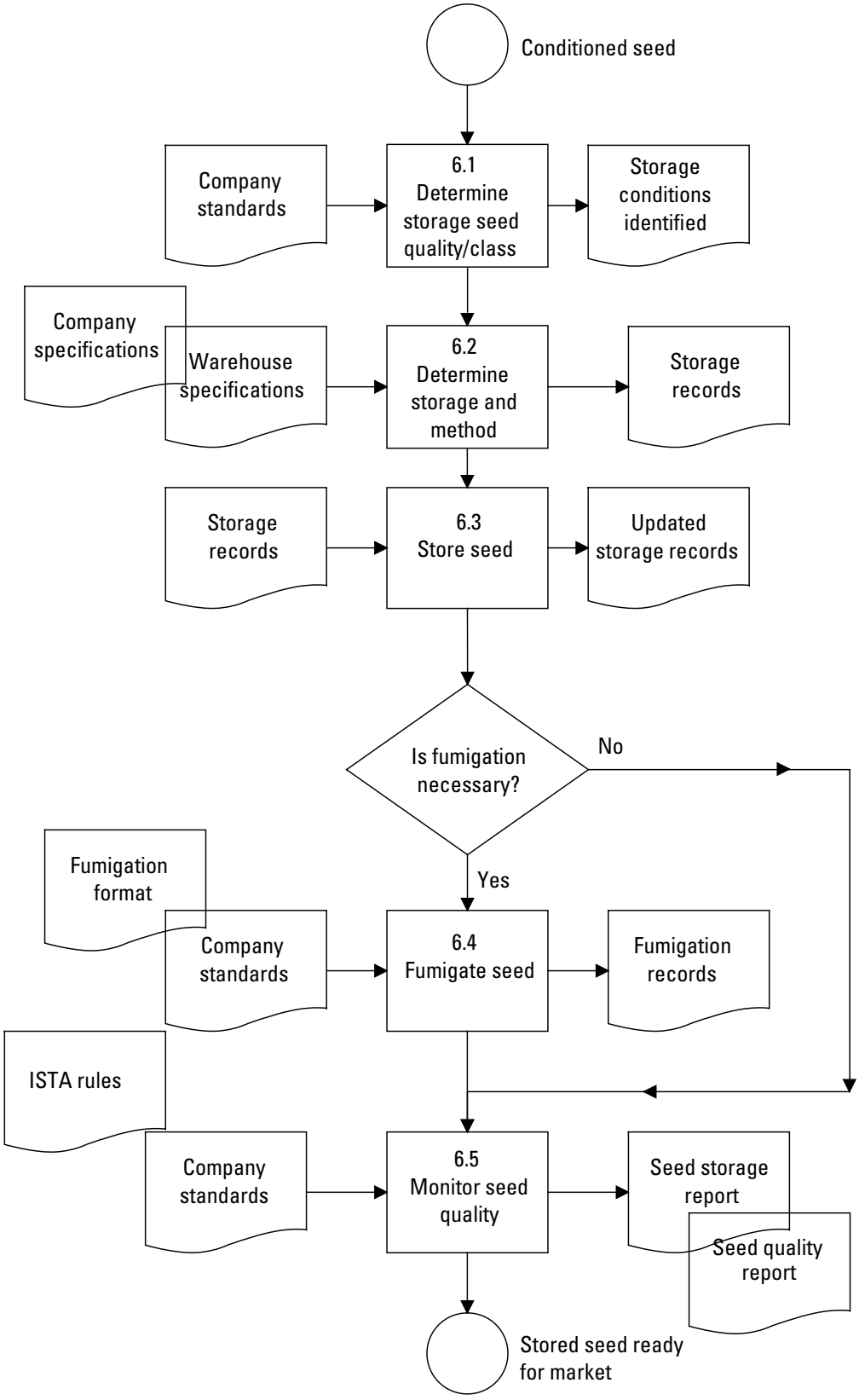
8. FLOWCHART AND ANNEXES

8.1 Flowchart: Seed Storage Procedure

8.2 ST01 Annexe A: Seed Storage Report Template

8.3 ST01 Annexe B: Seed Storage Quality Report Template

FLOWCHART: SEED STORAGE PROCEDURE



ST01 ANNEXE A. SEED STORAGE REPORT TEMPLATE

Seed lot number:	Address:	Field number:
Crop and variety:	Source of seed:	Total quantity (kg/bag):
Storage location:		
Storage method:		
Date of entry:		
Fumigation 1 date:		
Fumigation product:		
Fumigation 2 date:		
Fumigation product:		
Fumigation 3 date:		
Fumigation product:		
Moisture content:		
Germination:		
Vigor (if required):		
Remarks:		
Conditioning Plant Leader	Signature	Date
Production and Quality Manager	Signature	Date

ST01 ANNEXE B. SEED STORAGE QUALITY REPORT TEMPLATE

Crop:	
Sample number:	
Lot number:	
Variety:	
Contract Grower information:	
Date sample received: Signature:	Date tests concluded: Signature:
TEST RESULTS Germination: Moisture: Vigor:	
Remarks:	
Production and Quality Manager: Signature:	 Date:

i) Price Determination Procedure

In determining price, it is essential that ALL costs be captured, including pre- and post-harvest production costs, marketing, promotion and sales costs, administrative costs and financial costs. Because of the different modalities that various seed enterprises operate under, this procedure does not attempt to outline all of the many costs involved, but rather centers on the methodology that should be followed every time to determine the costs of producing one variety. In this way, the seed enterprise can add the administrative costs, and there are clear records for future pricing determinations and corrections as needed. This procedure also should be classified as Confidential Business Information (CBI).

1. PURPOSE

1.1 The purpose of this procedure is to define the sequence of events, interfaces and responsibilities involved in determining the price of hybrid maize seed.

2. SCOPE

2.1 From determination of maize seed production costs to setting of maize seed prices.

3. REFERENCES

3.1 Seed Production Manual
3.2 Seed Conditioning Manual
3.3 Pricing Policy
3.4 Grower Contracts
3.5 Commodity Prices

4. DEFINITIONS

4.1 GM: General Manager
4.2 FO: Financial Officer
4.3 PQM: Production and Quality Manager
4.4 MM: Marketing Manager
4.5 Contract Grower: qualified farmer who produces seed under contract for the seed enterprise

5. RESPONSIBILITY AND AUTHORITY

5.1 The GM is responsible for approving the final selling price.
5.2 The FO is responsible for gathering all administrative costs.
5.3 The PQM is responsible for collecting all field and post-harvest costs.
5.4 The MM is responsible for gathering relevant competitor and market data, reviewing field reports and generating the product cost analysis report, indicative price analysis report and selling price list by volume/location.

6. ACTIVITIES

6.1 Assess cost of production
- 6.1.1 The MM, with the assistance of the PQM, reviews all the direct costs of production.
- 6.1.2 The MM, with the assistance of the PQM, reviews grower pricing.
- 6.1.3 The MM, with the assistance of the PQM, gathers common seed treatment costs.
- 6.1.4 The MM, with the assistance of the PQM, requests quotes for packaging.
- 6.1.5 The MM works with the PQM to account for all production, conditioning, storage, marketing and distribution costs related for each hybrid.
- 6.1.6 The MM shall generate the Product Cost Analysis Report (PD01 Annexe A).

6.2 Determine selling price

6.2.1 The MM shall research external market factors that affect both C&H Seeds financials and competitor pricing.

6.2.2 The MM shall create a Price Analysis Report (PD01 Annexe C) based on the financial needs of C&H Seeds.

6.2.3 The GM and MM shall review the data collected, and the GM shall either reject or accept the price analysis report.

6.2.4 If rejected, go to 6.1.

6.2.5 If accepted, go to 6.3.

6.3 Set price

6.3.1 Based on a final review of the C&H Seeds price policy and price analysis report, the price is determined by the GM.

6.3.2 The MM generates the price list by volume/location (PD01 Annexe B), which is signed by the GM.

7. RECORDS

7.1 Product Cost Analysis Report

7.2 Price Analysis Report

7.3 Selling Price List by Volume/Location

8. FLOWCHART AND ANNEXES

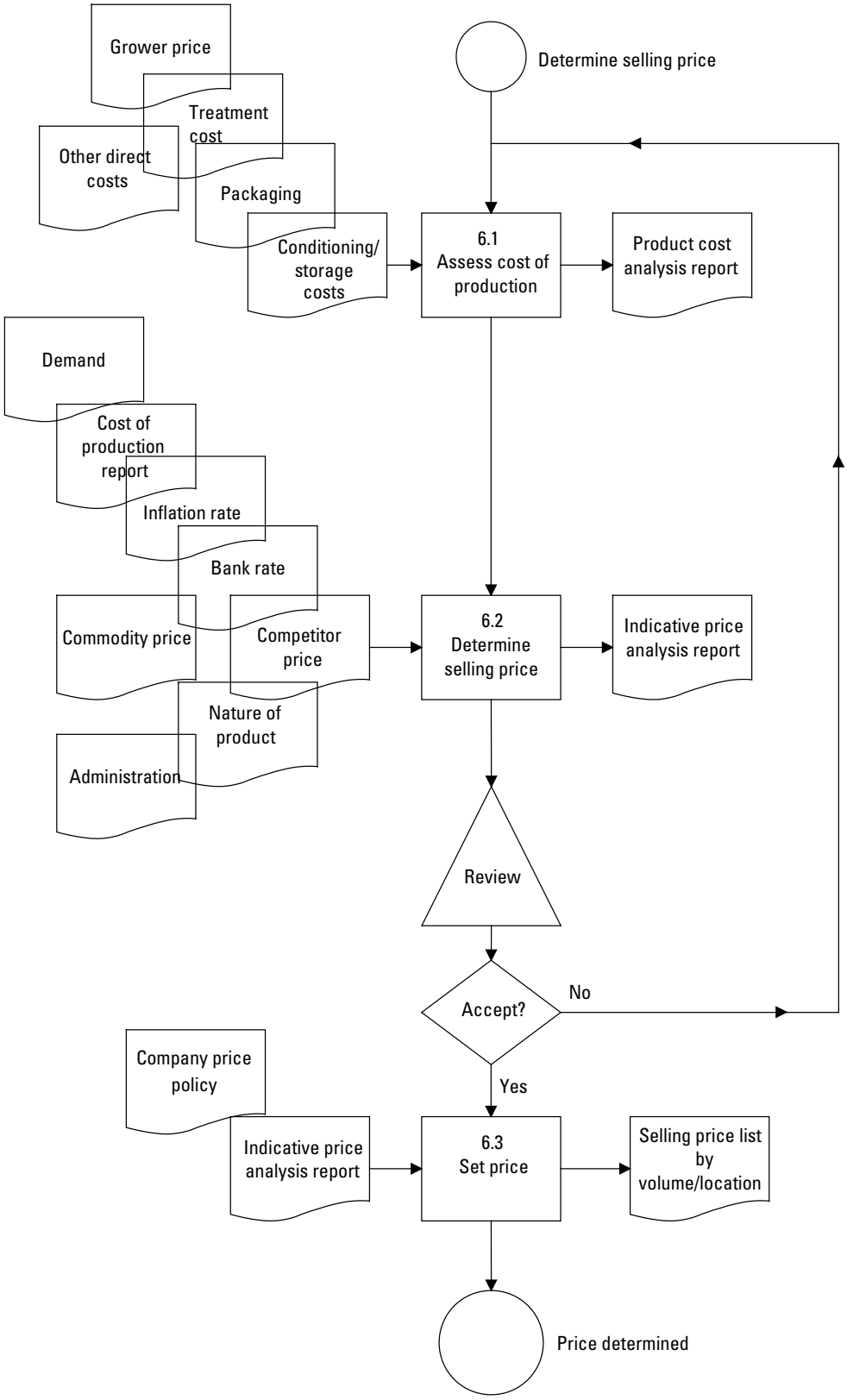
8.1 Flowchart: Price Determination Procedure

8.2 PD01 Annexe A: Product Cost Analysis Report Template

8.3 PD01 Annexe B: Selling Price List by Volume/Location Template

8.4 PD01 Annexe C: Price Analysis Report Template

FLOWCHART: PRICE DETERMINATION PROCEDURE



PD01 ANNEXE A. PRODUCT COST ANALYSIS REPORT TEMPLATE

Prepared by:	Date:
Crop:	
Variety or hybrid:	
Parents (if applicable):	
Grower premium:	
Bag:	
Conditioning:	
Treatment:	
Labels:	
Basic seed:	
Bag pallet:	
Royalties:	
Re-bagging:	
Seed transport:	
Sales:	
Advertising:	
Certification/Inspection:	
Cleanout:	
Interest:	
Other direct costs:	
Total product cost:	

PD01 ANNEXE B. SELLING PRICE LIST BY VOLUME/LOCATION TEMPLATE

Form number: Date:	Version number:	
Crop:	Variety:	
Base price/ton:	Weight:	Sales zone:
	Weight discount (1):	Price increment by location (2):

1) Weight discounts

AGRO-DEALER DISCOUNT		
From	To	%
1	10	1%
11	20	2%
21	30	3%
31	40	4%
41	50	5%
51	60	6%
61	70	7%
71	80	8%
81	90	9%

2) Price increment by location*

ZONE	INCREMENT
1	0%
2 and 3	0.5%
4	1.2%
5	2.0%
6	2.6%

* Location increments to be determined by considering distance and accessibility of roads.

PD01 ANNEXE C. PRICE ANALYSIS REPORT TEMPLATE

TOTAL PRODUCT COST (from PD01 Annexe A):	$
OTHER COSTS:	
– Carryover costs (interest, storage, re-conditioning)	$
– Management overhead (salaries, rent, training)	$
– Financial overhead (interest on investment and capital)	$
TOTAL COSTS: (Total Product Cost + Other Costs)	$
Total Income: Base Price/ton x Number of tons (from PD01 Annexe B)	$
Gross Profit:	$
Taxes:	$
NET PROFIT: (Gross Profit minus Taxes)	$

j) Seed Sales Procedure

The seed sales procedure is a close companion of the market determination procedure. The sales procedure goes into more detail regarding the demonstration field days of new and existing varieties as the primary source of farmer preference information. The procedure also gives an option for handling seed sales in a consistent and organized manner.

1. PURPOSE

1.1 This procedure defines the sequence of events, interfaces and responsibilities involved in the process of selling seeds and the distribution of the ordered seed.

2. SCOPE

2.1 From the analysis of the needed product to the update of the client´s profile with his/her last transaction.

3. REFERENCES

3.1 Seed Price List
3.2 Field Demo Report
3.3 Customer File/Profile

4. DEFINITIONS

4.1 PQM: Production and Quality Manager
4.2 CPL: Conditioning Plant Leader
4.3 MM: Marketing Manager
4.4 PSL: Promotion and Sales Leader
4.5 Agro-dealer: the person or store that sells agricultural inputs such as seeds, fertilizers and chemicals

5. RESPONSIBILITY AND AUTHORITY

5.1 The MM is responsible for the preparation of the list of market needs and reviewing quotes.
5.2 The PSL is responsible for conducting field demos and preparing quotes.
5.3 The Agro-dealer is responsible for receiving/soliciting the order.

6. ACTIVITIES

6.1 Study market
- 6.1.1 MM shall analyze the competitors and the products that are offered in the market following the market determination procedure.
- 6.1.2 MM, with the assistance of the PSL, shall determine which varieties shall be required according to the farmers´ needs.

6.2 Seed promotion
- 6.2.1 Two planting seasons prior to seed sales, the PSL shall present the proposed varieties in field demos, and complete the Farmer Field Demo Evaluation Template (SA01 Annexe A) with the presence of C&H Seeds' Agro-dealers.
- 6.2.2 PSL shall prepare a summary of the farmer field evaluations and present to MM.
- 6.2.3 MM shall determine which promotional tools should be used for advertising each variety by marketing area.
- 6.2.4 PSL shall make personal contact with potential Agro-dealers to show the benefits of the varieties.

6.3 Issue quote
- 6.3.1 MM shall release the price list with the varieties.
- 6.3.2 The Agro-dealer shall receive/solicit the order through a quote.
- 6.3.3 PSL shall record the order and quote to Agro-dealer.

6.3.4 If the order is confirmed, continue with 6.5.

6.3.5 If the order is not confirmed, MM shall follow-up with Agro-dealer to determine reason, record information, and if able to be resolved, go to 6.4.

6.4 Review quote

6.4.1 MM shall analyze and review the original quote.

6.4.1.1 If quote can be modified, go to 6.3.

6.4.1.2 If quote cannot be modified, inform Agro-dealer and close the original quote offer.

6.5 Confirm availability

6.5.1 The MM shall contact the PQM who shall confirm the availability of the ordered seed.

6.5.2 The MM, upon verification of the availability, shall block off the amount quoted to the Agro-dealer with a written hold request (SA01 Annexe B) to the PQM and CPL and copy to PSL.

6.6 Update Agro-dealer quote

6.6.1 Agro-dealer shall be updated by the PSL with confirmed quote and packaging order record (SA01 Annexe C).

7. RECORDS

7.1 List of Market Needs

7.2 Field Demo Report

7.3 Updated Quote Record

7.4 Packaging Order Record

7.5 Storage Store Record

7.6 Agro-dealer Record Update

8. FLOWCHART AND ANNEXES

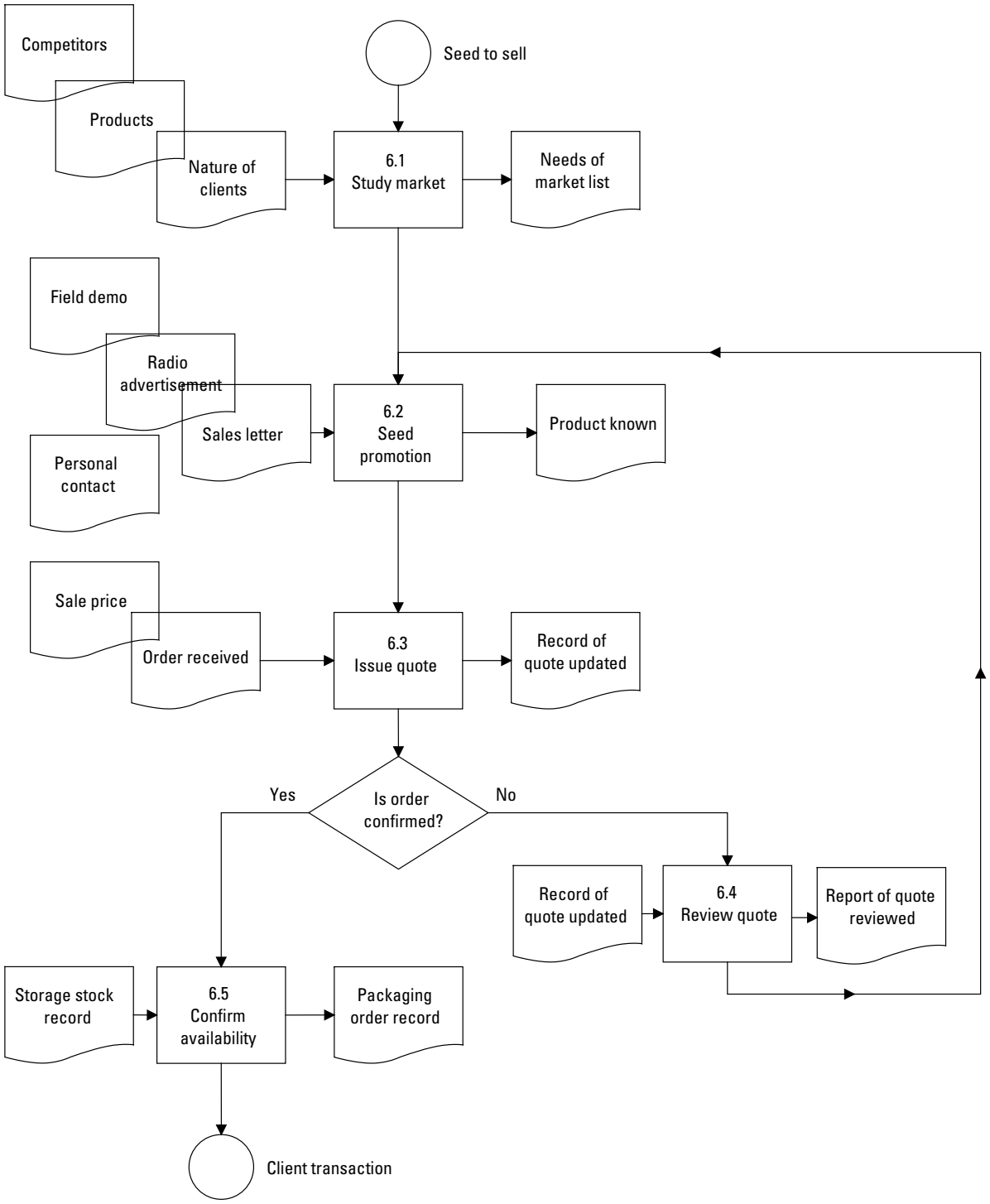
8.1 Flowchart: Seed Sales Procedure

8.2 SA01 Annexe A: Farmer Field Demo Evaluation Template

8.3 SA01 Annexe B: Seed Hold Request Template

8.4 SA01 Annexe C: Quote and Packaging Order Template

FLOWCHART: SEED SALES PROCEDURE



SA01 ANNEXE A. FARMER FIELD DEMO EVALUATION TEMPLATE

Name:	Demo date:
Demo location:	Marketing area:
Varieties presented:	
Check variety/varieties:	
Contract Grower evaluation	
Field appearance:	
Crop appearance:	
Plant appearance:	
Grain appearance:	
Yield:	
Contract Grower preference ranking	
1.	Reason:
2.	Reason:
3.	Reason:
4.	Reason:

SA01 ANNEXE B. SEED HOLD REQUEST TEMPLATE

Place and date: _____

Hold order number :_____

From: Market Manager _____

To: Production and Quality Manager _____

Copy to: Promotion and Sales Leader _____

CROP VARIETY	LOT NUMBER	LABEL NUMBERS	NUMBER OF BAGS	UNIT WEIGHT	TOTAL WEIGHT	CLIENT NAME AND NUMBER

Other remarks:

_____

_____

_____

_____

_____

Marketing Manager Signature Date

SA01 ANNEXE C. QUOTE AND PACKAGING ORDER TEMPLATE

C&H Seeds
Name
Address

To:

Thank you for your inquiry dated: _____

We are pleased to provide the following quote:

CROP VARIETY	QUANTITY	DESCRIPTION	UNIT PRICE	DELIVERY DATE

We will be happy to provide any further information you may need.

Marketing Manager Signature Date

k) Seed Distribution Procedure

The seed distribution procedure is an important activity. It ensures that all seed ordered by the Agro-dealers reaches them with the crops/varieties ordered, at the location specified, in the time frame requested, and in the amounts quoted by the seed enterprise. Any errors in the delivery of any of the aforementioned parameters will most likely result in a costly mistake. Careful planning and a well-grounded procedure will save time and resources, and will contribute to the good reputation of the enterprise.

1. PURPOSE

1.1 This procedure defines the sequence of events, interfaces and responsibilities involved in the process of seed distribution.

2. SCOPE

2.1 From the confirmation of stock to dispatching the seed to the client.

3. REFERENCES

3.1 Seed Price List
3.2 Storage Store Record and Quality
3.3 Customer File/Profile
3.4 List of Clients
3.5 List of Transportation Suppliers

4. DEFINITIONS

4.1 PQM: Production and Quality Manager
4.2 CPL: Conditioning Plant Leader
4.3 MM: Marketing Manager
4.4 PSL: Promotion and Sales Leader

5. RESPONSIBILITY AND AUTHORITY

5.1 MM is responsible for the overall supervision of the entire distribution chain.
5.2 PSL is responsible for the day-to-day operations related to the distribution.
5.3 PQM is responsible for providing the storage stock data to the MM and PSL.

6. ACTIVITIES

6.1 Confirm stocks
- 6.1.1 The CPL shall evaluate the storage stock by crop, variety and quality, and prepare a Stock Report (DS01 Annexe A).
- 6.1.2 The PQM shall reconfirm the stock and present the report to the MM and PSL.

6.2 Identify client location
- 6.2.1 The PSL shall identify the clients and prepare a list with their locations.
- 6.2.2 The PSL shall evaluate the distances among different locations and the roads required to organize the distribution.
- 6.2.3 The PSL shall prepare a list of all clients with a breakdown by client/variety/quantity/town/state.
- 6.2.4 The PSL shall report the list of clients and locations to MM.

6.3 Select transport, method, type

6.3.1 Based on the list of clients, locations and quantity of seed, the PSL shall select and contract the size of transport by groups of locations.

6.3.2 PSL shall prepare a Dispatch Note (DS01 Annexe B) to deliver the order to each location.

6.4 Load transport

6.4.1 PSL shall order the loading of the transport selected for the specified clients/locations.

6.4.2 PSL shall issue a Dispatch Note (DS01 Annexe B) to be signed by the MM.

6.4.3 MM shall approve the Dispatch Note.

6.5 Dispatch truck

6.5.1 With the Dispatch Note signed by the MM, the PSL shall organize the dispatch of the transportation selected, which have been loaded with the seeds.

6.5.2 When the transport (truck) is ready to pass the gate, the PSL, the gate officer and the driver shall sign the Gate Pass (DS01 Annexe C).

7. RECORDS

7.1 Transportation Record

7.2 Stock Report Record

7.3 Customer File/Profile

7.4 Dispatch Note Record

8. FLOWCHART AND ANNEXES

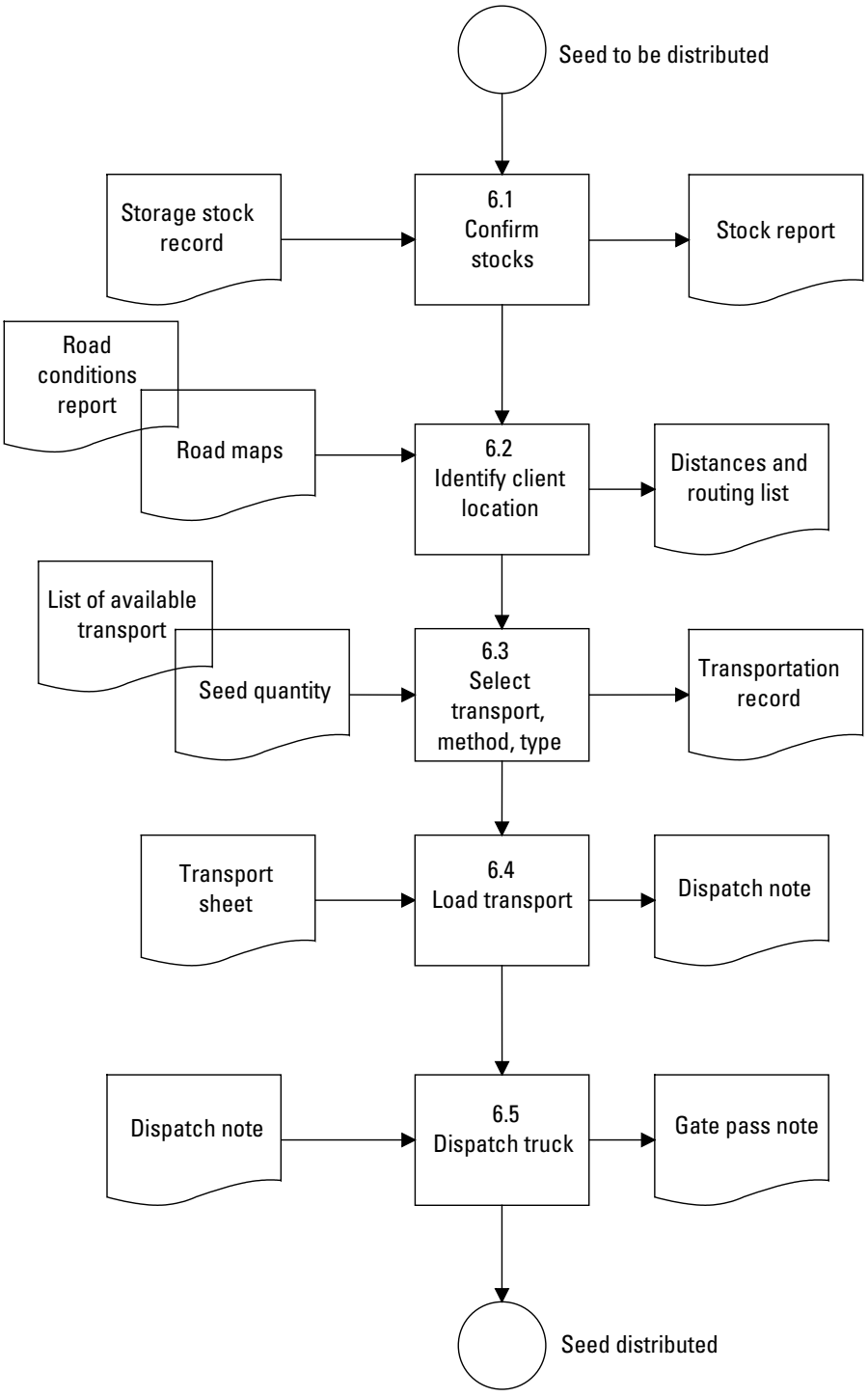
8.1 Flowchart: Seed Distribution Procedure

8.2 DS01 Annexe A: Stock Report Template

8.3 DS01 Annexe B: Dispatch Note Template

8.4 DS01 Annexe C: Gate Pass Template

FLOWCHART: SEED DISTRIBUTION PROCEDURE



DS01 ANNEXE A. STOCK REPORT TEMPLATE

Crop:

VARIETY	CLASS	YEAR OF PRODUCTION	CONTRACT GROWER	LOT NUMBER	QUANTITY	QUALITY PURITY/ GERMINATION	NUMBER OF LABELS	REMARKS

DS01 ANNEXE B. DISPATCH NOTE TEMPLATE

CLIENT	ORDER NUMBER	DISPATCH NOTE NUMBER	LOCATION	VARIETY	SIZE BAGS	NUMBER OF BAGS	TOTAL KG.	LABEL NUMBERS

Dispatcher (Promotion and Sales Leader):_____

Signature Date

Approval by Marketing Manager: _____

Signature Date

Transporting driver:_____

Signature Date

DS01 ANNEXE C. GATE PASS TEMPLATE

Transport company:	
Driver name:	Driver license number:
Vehicle make and model	License plate number:
Dispatch note number:	
Destination/s	
1.	
2.	
3.	
Total bags:	

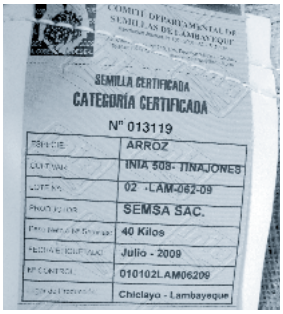
Promotion and Sales Leader:_____
Signature Date

Driver:_____
Signature Date

Gate officer:_____
Signature Date

I) Seed Import Procedure

In most instances, a small- to medium-sized seed enterprise will not be concerned with importing certified seed from a neighboring country. However, in the event that it could occur, e.g., inability to meet market demand as a result of weather emergencies, a seed import procedure may be important to include in the seed enterprise quality manual. The procedure below covers the critical activities and documentation that are normally required in many countries.



1. PURPOSE

1.1 This procedure defines the sequence of events, interfaces and responsibilities involved in the process of approving seed for import.

2. SCOPE

2.1 From the requirement to import seed to final goods in the storage warehouse.

3. REFERENCES

3.1 C&H Seeds Production Standards

3.2 Seed Import/Export Procedures Manual for Government Agencies

4. DEFINITIONS

4.1 GM: General Manager

4.2 FO: Financial Officer

4.3 PQM: Production and Quality Manager

4.4 MM: Marketing Manager

4.5 Consignments: a quantity of seeds being moved from one country to another

4.6 NPPO: National Plant Protection Organization

4.7 PC: Phytosanitary Certificate issued by the NPPO of the country where the seed was produced or grown

4.8 POE: Point of Entry, such as an airport, seaport or land border officially designated for importation of consignments

5. RESPONSIBILITY AND AUTHORITY

5.1 MM is responsible for approving the need for seed import based on the sales plan.

5.2 MM is responsible for developing the sales plan.

5.3 FO is responsible for negotiating freight and shipping insurance and all purchases related to procurement.

5.4 MM is responsible for following up procedures on the delivery of the seed from its sources to the final receipt of goods by the warehouses.

6. ACTIVITIES

6.1 Determine quantities and varieties

6.1.1 The MM shall develop a sales plan showing the quantities and varieties to sell, following the marketing determination procedure.

6.1.2 The MM shall check the inventory and identify the amounts to be imported.

6.2 Obtain import permit

6.2.1 The MM shall generate a seed order for the quantities and varieties to import.

6.2.2 The MM shall obtain a seed import permit from the NPPO (IM01 Annexe A).

6.3 Receive goods

6.3.1 The MM shall obtain a phytosanitary certificate from the NPPO of the exporting country.

6.3.2 The MM shall obtain the seed quality certificate from the exporting organization.

6.3.3 The MM shall advise the NPPO and the NSA on the arrival date of the seed import.

6.3.4 The FO shall gather all documentation required, including the customs documents for import, phytosanitary certificate, seed import permit and seed quality certificate and present at POE on date of arrival to take delivery of the seed.

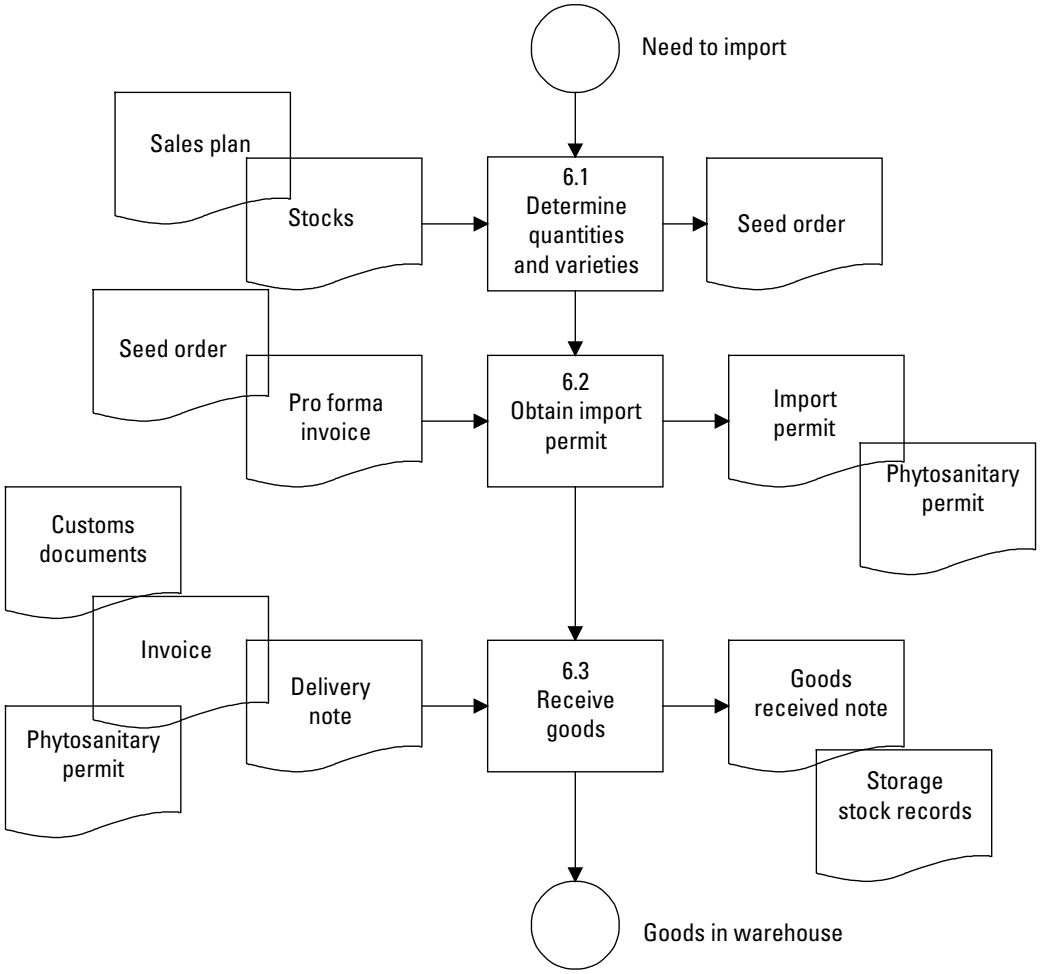
7. RECORDS

7.1 Record of Sales plan
7.2 Record of Inventory
7.3 Record of Seed Order
7.4 Record of Import Permit
7.5 List of Phytosanitary Requirements
7.6 Record of Invoice
7.7 Record of Delivery Note

8. FLOWCHART AND ANNEXES

8.1 Flowchart: Seed Import Procedure
8.2 IM01 Annexe A: Seed Import Application Template

FLOWCHART: SEED IMPORT PROCEDURE



IM01 ANNEXE A. SEED IMPORT APPLICATION TEMPLATE

FOR OFFICIAL USE

Place and date:	Application number:

APPLICANT INFORMATION

Name of importer:	Address and Tel/Fax: Email:
Name of exporter:	Address and Tel/Fax: Email:

DESCRIPTION OF CONSIGNMENT

COMMON NAME	BOTANICAL NAME	VARIETY/ HYBRID	TYPE OF MATERIAL	QUANTITY (KG)	DESCRIPTION

Country of origin:	Country and place of production:	Purpose of import:
Point of exit:	Point of entry:	Transport mode:
Additional info:		

Name of applicant: _____ Date: _____

Signature of applicant: _____

m) Seed Export Procedure

As with the seed import procedure, in most cases a small- to medium-sized seed enterprise will not be concerned with seed exports. In the few cases when it may occur, the procedure below gives a methodology that can be followed, together with the documentation required by most countries. However, given that there are variations among and between countries, it is recommended that each export be researched judiciously to avoid encountering later requirements.

1. PURPOSE

1.1 This procedure defines the sequence of events, interfaces and responsibilities involved in the process of approving seed for export.

2. SCOPE

2.1 From the inquiry for seed export to seed being approved for export.

3. REFERENCES

3.1 Seed Enterprise Production Standards
3.2 Seed Import/Export Procedures Manual for Government Agencies
3.3 National Phytosanitary Regulations
3.4 International Standards for Phytosanitary Measures
3.5 Export Certificates System
3.6 International Seed Testing Association (ISTA) rules and seed health methods

4. DEFINITIONS

4.1 GM: General Manager
4.2 FO: Financial Officer
4.3 PQM: Production and Quality Manager
4.4 MM: Marketing Manager
4.5 Country of Origin: country where seeds were grown
4.6 NPPO: National Plant Protection Organization
4.7 PC: Phytosanitary Certificate, issued by the NPPO of the country where the seed was produced or grown
4.8 Seed: seeds intended for planting and not for consumption

5. RESPONSIBILITY AND AUTHORITY

5.1 The MM is responsible for negotiating the terms of contract of the export.
5.2 The GM is responsible for the evaluation of the seed export contract and approving the export.
5.3 The PQM is responsible for planning the field inspections in accordance with the requirements of the importing country.
5.4 The PQM is responsible for the Phytosanitary Certificate.
5.5 The FO is responsible for following up on all procedures until the goods are delivered to the importing country Point of Entry (border – airport, seaport, land border).

6. ACTIVITIES

6.1 Prepare sales contract
  6.1.1 The GM shall issue a price list for seed to be exported.
  6.1.2 The MM shall receive the orders for seed to be exported.
  6.1.3 The MM shall negotiate and issue a sales contract.
  6.1.4 The MM shall issue an export order upon sale confirmation.
  6.1.5 The GM shall sign off on the export order.

6.2 Obtain phytosanitary certificate

6.2.1 The PQM shall apply for and obtain the Phytosanitary Certificate as accorded by the IPPC (EX01 Annexe B) and issued by the country's NPPO.

6.3 Obtain export permit

6.3.1 The MM shall complete the Seed Export Application Template (EX01 Annexe A).

6.3.2 The MM shall submit and follow up on the issuing of the export permit.

6.4 Obtain customs clearance

6.4.1 The FO shall follow up on government procedures to obtain customs export clearance.

6.5 Dispatch seeds

6.5.1 The FO, with the assistance of the MM, shall follow up on all formalities of the final dispatch of goods until delivery to the importing country and receipt of the delivery note.

7. RECORDS

7.1 Record of Import Permit

7.2 Record of Phytosanitary Certificate

7.3 Record of Export Permit

7.5 Record of Commercial Invoice

7.6 Record of Customs Documents

7.7 Record of Delivery Note

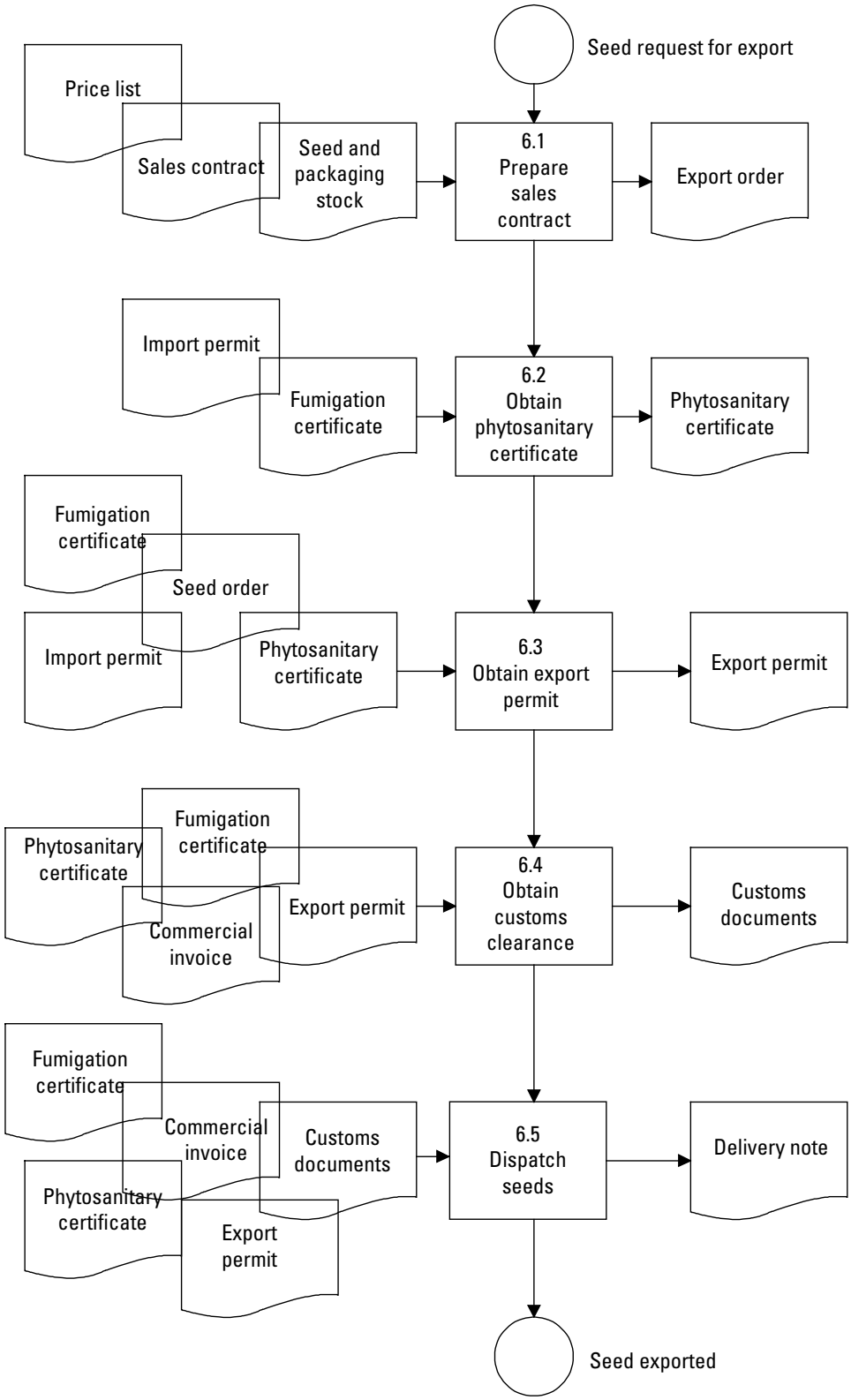
8. FLOWCHART AND ANNEXES

8.1 Flowchart: Seed Export Procedure

8.2 EX01 Annexe A: Seed Export Application Template

8.3 EX01 Annexe B: Phytosanitary Certificate Template

FLOWCHART: SEED EXPORT PROCEDURE



EX01 ANNEXE A. SEED EXPORT APPLICATION TEMPLATE

FOR OFFICIAL USE

SEED EXPORT APPLICATION NUMBER:

Exporter name/address:	Country of destination: Date of export: Conveyance: Point of exit:
Plant species: Variety/Hybrid:	Importer name/address: Seed import permit number: Date of issue: Date of expiration:
Place of production: Field location:	Quantity/Weight: Packages:
Importing country requirements: Additional declaration:	
Seed certification requirements:	

Exporter signature: _____ Date: _____

EX01 ANNEXE B. PHYTOSANITARY CERTIFICATE TEMPLATE

Government of _____

Ministry of Agriculture

NUMBER _____

PLANT PROTECTION ORGANIZATION of _____

TO: PLANT PROTECTION ORGANIZATION(S) of _____

I. DESCRIPTION OF CONSIGNMENT _____

Name and address of exporter: _____
Declared name and address of consignee: _____
Number and description of packages: _____
Distinguishing marks: _____
Place of origin: _____
Declared means of conveyance: _____
Declared point of entry: _____
Name of produce and quantity declared: _____
Botanical name of plants: _____

This is to certify that the plants, plant products or other regulated articles described herein have been inspected and/or tested according to appropriate official procedures and are considered to be free from quarantine pests specified by the importing contracting party and to conform with the current phytosanitary requirements of the importing contracting party, including those for regulated non-quarantine pests.

II. ADDITIONAL DECLARATION _____

III. DESINFESTATION AND/OR DESINFESTATION TREATMENT

Date: _____ Treatment: _____ Chemical (active ingredient): _____
Duration and temperature: _____
Concentration: _____
Additional information: _____
Place of issue: _____

_____
(Stamp of organization) Name of authorized officer:

Date: _____ Signature: _____

n) Calibration of Critical Equipment Procedure

The procedure for calibrating critical equipment is a mandatory requirement in a quality manual. Equipment that may directly affect the final product of the seed enterprise must be periodically calibrated, following the recommendations of the manufacturer. Some examples of critical equipment and calibrations are seed to chemical treatment ratios in seed treaters, thermometers and hygrometers in seed storage areas, thermostats in air heaters used for seed drying, moisture meters and laboratory precision balances.

1. **PURPOSE**
   - 1.1 This procedure defines the sequence of events, actions, interfaces and responsibilities involved in the process of identification, calibration and maintenance of measuring and monitoring critical equipment.
2. **SCOPE**
   - 2.1 From the critical equipment without maintenance to equipment calibrated and maintained.
3. **REFERENCES**
   - 3.1 Equipment calibration standards
   - 3.2 Equipment manuals
4. **DEFINITIONS**
   - 4.1 PQM: Production and Quality manager
   - 4.2 CPL: Conditioning Plant Leader
   - 4.3 Critical Equipment: equipment that is critical for product realization (conditioning, testing)
5. **RESPONSIBILITY AND AUTHORITY**
   - 5.1 PQM is responsible for verifying the conformance of measuring and monitoring equipment.
   - 5.2 CPL is responsible for calibration of equipment.
   - 5.3 CPL is responsible for keeping and maintaining calibration records of critical equipment in the logbook.
6. **ACTIVITIES**
   - 6.1 Identify equipment
     - 6.1.1 PQM shall maintain a list of all equipment with location, item name, manufacturer, model number, serial number, calibration, frequency, calibration standard and tolerance if applicable.
     - 6.1.2 PQM shall identify and document all critical equipment.
     - 6.1.3 PQM ensures that the list of critical equipment is verified and updated at least annually.
     - 6.1.4 PQM shall identify and record each critical equipment item using a serial number, number/code and or model number and register in the logbook (CA01 Annexe A).
   - 6.2 Calibrate equipment
     - 6.2.1 CPL shall calibrate equipment in accordance with written instructions and tolerances.
     - 6.2.2 CPL completes all records of calibrated equipment, including frequency, conditions, tolerances, method and current status (CA01 Annexe B).
     - 6.2.3 Calibrated equipment is labeled with a sticker indicating the status and a calibration record.
     - 6.2.4 When equipment requires calibration from outside the seed enterprise, a certificate of proof of calibration is kept in the file.
   - 6.3 Maintain and store equipment
     - 6.3.1 All critical equipment shall be maintained, stored and handled in a manner to preserve their accuracy and protect them from damage and deterioration.

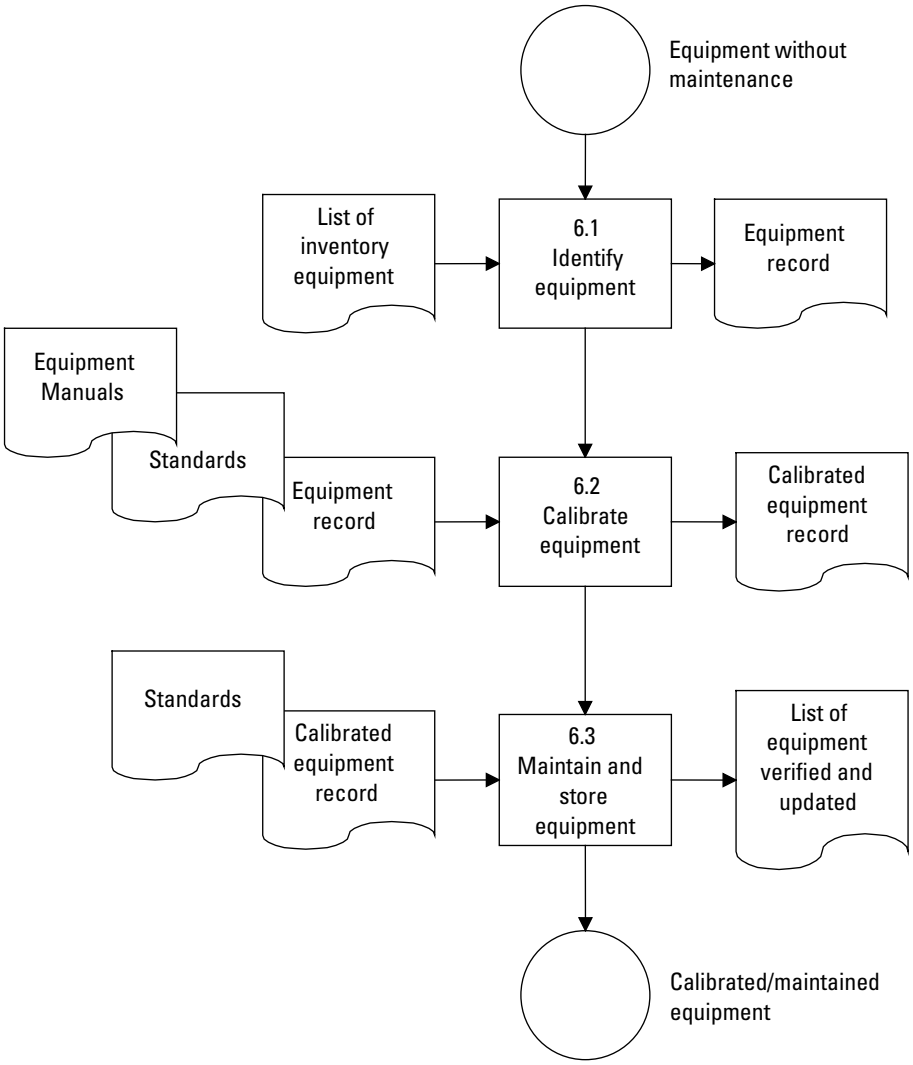
7. RECORDS

7.1 Record of Calibrated Equipment
7.2 List of Inventory Critical Equipment

8. FLOWCHART AND ANNEXES

8.1 Flowchart: Calibration of Critical Equipment Procedure
8.2 CA01 Annexe A: List of Critical Equipment Template
8.3 CA01 Annexe B: Calibration Record Template

FLOWCHART: CALIBRATION OF CRITICAL EQUIPMENT PROCEDURE



CA01 ANNEXE A. LIST OF CRITICAL EQUIPMENT TEMPLATE

EQUIPMENT NAME	ID NUMBER	LOCATION	CALIBRATION REQUIRED	TOLERANCE	COMMENTS

CA01 ANNEXE B. CALIBRATION RECORD TEMPLATE

Type of equipment:
Identification number:
Tolerance (if applicable):
Conditions:
Frequency of calibration:
Method:
Remarks:

	DATE	TIME	CONDITION	ADJUSTMENT	INITIAL
1					
2					
3					
4					
5					
6					
7					
8					

REFERENCES:

Chopra, K.R. and Reusche, G.A. 1993. *Seed Enterprise Development and Management.* FAO Regional Office for Asia and the Pacific.

Cortes, J. 2000. *Process Management Manual for Government Accreditation of Seed Companies.* Seed Science Center, Iowa State University, Ames, IA.

[ISTA] International Seed Testing Association. 2014. Rules Version 2014.

[ISO] International Standard Organization 9000, 2001. *Quality Management*.

[ISPM] International Standard for Phytosanitary Measures, 07-Phytosanitary Certification System 2012-07-17 FAO.

[ISPM] International Standard for Phytosanitary Measures, 07-Phytosanitary Certificates 2014-09-03 FAO.

[ICIA] Iowa Crop Improvement Association. 2008. Iowa Seed Certification Scheme.

[OECD] Organization for Economic Cooperation and Development. 2014. Seed Schemes: Rules and Regulations 2014 Edition.

NOTES:

For more information about the Seed Science Center at Iowa State University, visit www.seeds.iastate.edu, or write seedsci@iastate.edu

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IOWA STATE UNIVERSITY
Extension and Outreach

Issued in furtherance of Cooperative Extension work, Acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture. Cathann A. Kress, director, Cooperative Extension Service, Iowa State University of Science and Technology, Ames, Iowa.