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**Code of good agricultural practices (GAP) for onion
production**



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Code of Good Agricultural Practices (GAP) for Onion Production

Foreword

The Philippine National Standard (PNS) Code of Good Agricultural Practices (GAP) for Onion Production was prepared by the Technical Working Group on GAP for Onion Production chaired by the Bureau of Agriculture and Fisheries Product Standards (BAFPS) created per Special Order No. 138 series of 2012 dated January 2012.

In the preparation of this standard the following documents were considered:

- Bureau of Agriculture and Fisheries Product Standards (BAFPS). 2011 Code of Good Agricultural Practices (GAP) for Fruits and Vegetable Farming. PNS/BAFPS 49:2011
- Katipunan ng mga Samahang Magsisibuyas ng Nueva Ecija (KASAMNE). Internal Control System – Operatios Manual
- Deanon J.R., Mabesa R.C., Reveche R.A., Cayabyab B.F. and Padilla C.L. 2003. Techno Guide on Onion Growing. University of the Philippines Los Baños.
- Bulb Onion Production Guide. Accessed from: <http://www.darfu4b.da.gov.ph/onion.html>

Code of Good Agricultural Practices (GAP) for Onion Production

INTRODUCTION

The Code of Good Agricultural Practices (GAP) for Onion Production, hereto referred as GAP Onion, emanated from the National Onion Action Team (NOAT) due to the recurring problems and issues of the industry. The Code will be the basis for subsequent certification of onion farms. This certification scheme will provide assurance on our product's safety which is meant for consumers at the domestic and foreign markets. Although the main aim of the Code of GAP is towards prevention and minimization of risk occurrences from microbial and chemical contaminants, it is also geared towards empowering farmers to adopt practices that will enable them to adhere to stringent technical and legal requirements of our trading partners.

SECTION 1 – OBJECTIVES

The objective of this code is to provide specific guidance to ensure the minimization of microbiological and chemical food safety risks associated with the production of onion intended for consumption. These risk factors occur during production, harvesting, post-harvest handling and distribution. This code also enumerates practices aimed towards protection of workers' health, safety and welfare. This will likewise tackle environmental management.

SECTION 2 – SCOPE, USE AND DEFINITIONS**2.1 Scope**

This code covers specific guidance related to the production, harvesting, postharvest handling and transport of onion intended for direct human consumption.

2.2 Use

This code follows the format of the Code of Good Agricultural Practices (GAP) for Fruits and Vegetable Farming (PNS/BAFPS 49:2011). It provides additional and specific guidelines for onion production and it should be read in conjunction with the said document.

2.3 Definitions

farm

any premise or establishment in which fresh fruits and/or vegetables are grown and harvested and the surroundings under the control of the same management

hazard

a biological, chemical or physical agent in, or condition of, food with the potential to cause an adverse health effect

primary production

those steps involved in the growing and harvesting of fresh fruits and vegetables such as planting, irrigation, application of fertilizers, application of agricultural chemicals, etc.

onion

(*Allium cepa L.*) herbaceous plant with edible bulb cultivated for food

plowing

procedure for the mechanical working of soil; simultaneous turning over, loosening, and intermingling of the soil

harrowing

breaking up and smoothing out the surface of the soil

furrowing

making long, narrow, shallow trenches

SECTION 3 - PRIMARY PRODUCTION OF ONION

3.1 Farm Location

1. In order to minimize further soil degradation, highly degraded areas should be supervised through sustainable land management practices.
2. Other considerations for the conduct of physical risk assessment of the site can include considerations on flooding, potential drainage problems, and erosion. In the case of new site(s) the risk of causing environmental harm within or outside the site should be assessed for the proposed use. A record of all potential hazards identified should be kept. Risk assessment should consider the prior use of the site and potential impact of adjacent sites to the new site(s).
3. If results of the evaluation of the adjoining sites or prior land use lead to the conclusion that potential hazard exist, the sites should be further evaluated through analysis and characterization of the identified risks i.e., contaminants.
4. If the risks from contaminants are found to be at unacceptable levels, the site should not be used for production and primary processing until corrective or control measures are carried out.

5. Whenever remedial action is required to manage the risk, the action taken should be monitored to ensure that contamination of the produce is eliminated or kept within acceptable levels. A record should be kept on the action taken and the results thereof.

3.2 Farm Structure and Maintenance

Production Site and Property Map

1. The production site for onion should not exceed maximum altitude of 1,500 meters above sea level. When planting in sloppy areas, sustainable land management practices should be employed.
2. In order to determine if the site is suitable for onion production and in preparation for fertilization, soil analysis should be performed. In cases where there are possible risks of contamination, the soil must be analyzed for occurrence of pathogenic microorganisms and/or heavy metals. **If heavy metals are detected, it should comply with international standards.** Upon the conduct of relevant analyses, the condition of the soil may be improved to make it favorable for cultivation of onion. Interventions like adjustment of soil pH, decontamination and installation of drainage canal can be carried out.
3. In order to assist the farmer in assessing the possible sources of contamination and /or for monitoring purposes, a property lay-out map within the site should be prepared to indicate the locations of the following, as applicable:
 - crop production area;
 - on field / off-field production area;
 - sources of water used on the farm (well, reservoir, rivers, lakes, farm ponds, etc.)
 - chemical pesticides and fertilizer storage and mixing areas;
 - tools and equipment cleaning and disinfection areas;
 - storage area for tools and equipment;
 - solid waste disposal area;
 - property buildings, structures, road and canal networks;
 - environmentally sensitive and highly degraded areas (e.g. saline/sodic)
4. In case of multiple production areas in a given site, each area should be identified by a name or Code, and must be indicated in the property map. The site identification signage should include the following minimum information: name of the farmer, variety planted, date planted and expected date of harvest. The name or Code should be indicated in all documents and recorded.

Site Management

1. Domestic and farm animals except those that will be used for transport, should be excluded from the production site and packing shed during harvests. Such animals must be on leash or caged to avoid microbial contamination and minimize transfer of soil borne diseases.
2. Irrigation water should be clean in order to avoid being a source of further contamination.

3. Site signage identifying the farm may be displayed for easy recognition.
4. Adequate areas for waste collection of biodegradable and non-biodegradable wastes should be provided. Non-biodegradable waste should be segregated from biodegradable waste materials including those of empty pesticide containers and empty sacks of fertilizers.

Building and Storage Facilities Plan

1. Fertilizers and chemicals must have separate storage areas. Barriers should be provided to keep spillage from spreading on the adjacent surroundings.
2. When constructed, the packing shed should be separated and secured with a fence or barrier, from the production area.
3. Materials used for pest control such as nets, baits and traps should be maintained.
4. Designated resting areas for farmers should be available.
5. Toilet facilities provided for the farm workers, if present within the farm production area, must be properly maintained. These should not be close to water sources or in places where rain can wash out contaminants or cause spills. Water from toilets should be disposed also in a manner that minimizes the risk of health and environmental harm on and off the site. In the absence of such and when the farm is near the house, toilet facilities should be easily accessible.

3.3 Cultural Management

Selection of Quality Planting Material

1. Aside from yield quantity and quality as basic considerations, varieties to be grown should be selected based on market requirements, grower preference and adaptability to the locality. Other considerations may include soil type and nutrient levels, water availability, prevailing temperatures and humidity, insect pest population dynamics, and presence of inocula of major pathogens.
2. For efficient chemical, water and other input utilization, planting materials must be selected based on their nutrient and water use efficiencies, and pests and diseases resistance.
3. Whenever a planting material is produced within the farm or from non-accredited seed/bulb producers (in case of cooperative-based accreditation scheme), chemical(s) used for treatment, dilution of treatment, and purpose of the treatment should be recorded.
4. In cases when seed/bulb material is purchased from reliable seed companies or a Philippine Seed Industry Association (PSIA) member, a record of the source of the seed/bulb materials, the lot number and date of purchase must be maintained.

Land Preparation

1. The site may be prepared through a series of activity involving plowing, harrowing and furrowing.
2. In cases where the area has been previously planted to rice prior to growing onions, the seed bed should be sterilized before transplanting.

3. The use of chemical fumigants and alternatives to sterilize soil or the planting material should be justified and record the chemical(s) applied, application rate and method, and operator's/farmer's name. The farm should not use banned chemical fumigants and other practices not allowed under the Clean Air Act of 1999 (Republic Act 8749) and Presidential Decree (PD) 1144 (Creating the Fertilizer and Pesticide Authority and Abolishing the Fertilizer Industry Authority).
4. The seed bed may be prepared plowing thrice and harrowed after each plowing.
5. If applicable, minimal tillage or zero tillage and mulching may be done.

Drainage and Irrigation System Construction

1. Water sources and their quality (microbial and chemical – pertaining to presence of pesticide residues) should be assessed from time to time. The tests to be conducted should be at a frequency appropriate to the degree of potential risk from the water supply. A copy of certificate of analyses should be kept.
2. Where the risk of chemical and biological contamination is significant from water used for irrigation, an alternative source should be identified or necessary water treatment should be done. A record of treatment method/s used and the monitoring results should be kept.
3. Irrigation of the production area may be done by furrow, flooding, manual watering, sprinkler/shower or drip method to keep the moisture needs at all times.
4. Usually, the field is irrigated three to seven (3 - 7) days prior to transplanting or one to five (1 - 5) days after planting. Subsequent irrigation may be repeated every week or as needed in order to arrest problems during the critical stages, which are the bulb formation and enlargement stages. Further irrigation should be discontinued 15-20 days before maturation.
5. To minimize evaporation, mulching using rice straw may be done. This prevents growth of weeds and serves as source of organic matter.

Transplanting

1. Seedlings may be transplanted 4-6 weeks after sowing. This is done by gently uprooting the seedlings to prevent root damage.
2. Planting distance can range from 5x5centimeter to 20x20 centimeter between plants depending on the onion variety and preferences of the farmers or growers. In order to facilitate transplanting, markers may be used to guide spacing.
3. During planting, care must be taken so as not to damage the basal portion of the plant.

Fertilization

1. To optimize nutrient use and minimize nutrient losses, the farmers may apply organic and/or inorganic fertilizers based on the quantitative information on soil nutrients based on soil analysis or leaf analysis.

2. Fertilizers and soil additives should be judiciously selected to minimize the risk of contamination of produce, particularly with the heavy metals. Only duly registered fertilizers (inorganic and commercial bio/organic) should be used.
3. In cases where the farm produces its own organic fertilizer, the composting areas should be separated from the crop production area and should be at least 50m away from drinking and farm water sources.
4. Undecomposed organic materials must not be applied because the presence of potential contaminants may affect the produce. Treatment of organic fertilizer materials prior to application should be documented. The method, date and duration of the treatment should be recorded.
5. The use of human sewage as source of fertilizer is not allowed.
6. If a product containing organic materials is obtained outside the farm, a certification indicating that the material has been treated should be issued by a BAFPS-licensed supplier.
7. Equipment used for the application of fertilizers and soil additives should be maintained in good working condition and should be checked regularly by a technically competent person. The farm should maintain a documented equipment maintenance program. Equipment that has been used for the on-site production of organic fertilizer should be cleaned after each use and prior to its use for other farm operations to minimize the risk of microbial cross-contamination.
8. For the storage of fertilizer materials:
 - Storage area must be separated from other agro-chemical products to prevent cross contamination;
 - The storage area should be well-ventilated and appropriately covered to protect inorganic fertilizers, such as powder, granules or liquids from sunlight, rain, humidity, and other atmospheric factors;
 - Storage area should be free from waste, does not constitute a breeding place for rodents, and where spillage and leakage is easily cleared away;
 - All inorganic fertilizers should be stored in a prescribed manner to avoid or minimize risk of contamination to water sources. For instance, liquid fertilizers must be bundled and proximity of water courses and flood risks, etc. should be considered; and
 - Fertilizers should not be stored with harvested crop or yield and plant propagation materials.
9. The utilization of inorganic fertilizer should be based on First-In First-Out (FIFO) or First Expiry, First Out (FEFO) practice.
10. Fertilizer application pertaining to frequency and amount should be based on soil analysis. High nitrogen rates tend to shorten shelf life of onion. Fertilization may also depend on the type of soil, topography, location and the environment. Organic-based (fully decomposed; obtained from BAFPS Licensed Supplier in case of commercial organic fertilizer) and/or inorganic fertilizers may be applied as basal fertilizer and then side-dressed at different days after transplanting.
11. Depending on the variety and whenever necessary, foliar fertilizers may be sprayed when there is bulb formation.

3.4 Harvesting

1. Onions should be harvested upon reaching maturity while taking into consideration the characteristics of the variety planted. Usually, onion reaches maturity 70 to 120 days after transplanting. Other maturity indices may include the following:
 - necks are reasonably dry and the tops have fallen over.
 - leaves start to topple down.
 - softening of the neck, color change of the leaves.
2. Harvesters must wash their hands before harvesting or wear hand gloves during harvesting. Good personal hygiene must be practiced to avoid cross-contamination of the produce.
3. After harvesting the bulb, the leaves are trimmed two to three (2-3) cm from the neck since trimming the leaves very close to the neck hastens moisture loss and entry of microorganisms. A longer leaf in turn increases the surface area for moisture loss.
4. Harvesting under the rain should be avoided. Onions that are unfit for human consumption should be segregated during harvesting.
5. In order to minimize damage and avoid contamination of onion with soil, pathogens, fertilizers or other agro-chemicals, the harvested produce should not have direct contact with the ground. Appropriate harvesting crates/containers should be used.
6. Containers used for harvesting should be suitable and clean before use. Liners may be used to protect the produce, particularly when containers have rough surfaces. Unfit harvesting crates/containers should be disposed if it will cause undue damage to the onion or will cause contamination.
7. Containers of harvested onion should be clearly identified with names or codes containing onion variety, date of harvest, lot number, volume and name of farmer. Record of this information should be kept for traceability.

3.5 Post-Harvest Handling

1. Harvested onion may be sorted and / or packed on-farm or may be transported to a common packinghouse facility. If transported, onions are hauled carefully in an appropriate container to the packinghouse to minimize mechanical damage.
2. Onion to be sorted out should not be placed in direct contact with the soil or the floor of the packinghouse, farm or field to avoid cross-contamination of the produce.
3. Sorters/packers should wash their hands with soap or detergent before handling the produce.
4. Onion may be sorted according to size and quality as guided by the Philippine National Standard (PNS) or preference of the market. Damaged and diseased onion should be discarded to avoid cross-contamination of the whole lot. Moreover, rejects (split/bottleneck) should be discarded.
5. It is recommended to cure harvested onion (shallots) for 10-14 days in sunny, well-ventilated area by aligning the leaves of one onion cover the bulb of

succeeding bulb. Trimming or clipping of leaves may be done after the curing period when the neck has fully dried up and is closed.

3.6 Packaging and Transport

1. Onions, which have been sorted, are packed in mesh bag (red bags) at 27.5kg/bag. For specific packaging requirements of individual countries, the packaging specifications should be mutually agreed upon.
2. Each packaging container must be clearly labeled with the following information: source, variety, weight, class/grade and name of producer.
3. Onions packed in mesh bags after the appropriate tags have been put may be delivered at cold storage facility or hanger. Onions must not be allowed to over-dry before it is delivered to a cold storage facility.
4. Storage facilities for packaging materials must be kept free from rodents, birds, farm animals, physical and chemical contaminants.
5. Bagged onions should be transported separately from goods that are potential sources of chemical contamination and causes of biological and physical hazards. Moreover, mixing of non-compatible produce during transport should be avoided.
6. For long delays before transport, onions should be kept at the optimum temperature conditions.
7. When farm vehicle used for transporting harvested onions are also used for other purposes, it should be cleaned prior to hauling to avoid contamination.
8. Refrigerated transport vehicles should be covered with temperature settings that will minimize quality loss of the onions.

3.7 Cold Storage Facilities

1. Packed onion may be stored in a cold storage facility after post-harvest processing has been done. Prior to piling, delivered onions are randomly sampled (3-5 bags per delivery) and checked for presence of rejects, bottlenecks, split and rotten onion. These essentially determine the shelf life of packed onions in the cold storage facility. After this random checking, the onion shall undergo conditioning process at the anteroom for an hour before its transfer to the cold storage room.
2. Prior to loading also, the facility is pre-cooled to bring down the temperature to zero degrees Celsius (0°C). Each room may be sprayed with fungicide. Record of application should be kept with information including: chemical(s) used, date of application, rate of application and name of applicator.
3. Bagged onions are piled inside the cold storage facility not more than 12 layers high and re-piling is done every 45 days.
4. The temperature is maintained at -0.5°C to +0.5°C and relative humidity of 70-85%. A blower is also installed for every 1,000bag capacity of the cold storage facility.
5. Refrigeration equipment should be in good working condition with the temperature regularly monitored and recorded.

6. Cooling equipment must be cleaned and inspected frequently. Maintenance of equipment and use of appropriate sanitary procedures are critical in ensuring the safety of the produce.
7. Cold storage facilities should be thoroughly cleaned after each operation to exclude decaying plant wastes and foul smell.

SECTION 4 – CROP PROTECTION

4.1 Insect Pest, Diseases and Weed Control

1. In order to control the entry of diseases such as anthracnose, bacterial rot, purple blotch, white rot, pink rot, downy mildew and twister and the population increase of the following insect/arthropods pests like thrips, leafminer, earworm, armyworm, cutworm, semi-looper, and mites, the farmer should regularly conduct monitoring. Visual inspection for the signs/symptoms of insect pest and diseases should be done.
2. The farm should employ proper weed management to maintain sufficient population of natural enemies in refuges or borders. Pre and post-emergence control strategies using herbicides may also be done. It is recommended that weeding activities should start one (1) month after transplanting.
3. In order to prepare the farm from damages, a pest and/or disease management program to address emerging/new insect pest and diseases aside from those enumerated above.

4.2 Integrated Pest Management

1. Integrated Pest Management (IPM) is an effective and environment-friendly approach to pest management to control and minimize pest damages. IPM combines the use of current and comprehensive information on the life cycles of pests; their interaction with the environment and the available pest control methods, e.g. varietal selection biological, cultural, physical, mechanical and chemical controls. Use of chemicals should be on a need basis and only FPA registered pesticide for onions should be used (Annex 1).
2. To decide whether management or control is needed and to correctly determine the best management strategy, insect pests and diseases should be monitored and identified. The field and facilities are checked to identify presence of pests, population density and the damages.

SECTION 5 – PESTICIDE MANAGEMENT

5.1 Choice of Crop Protection Products

1. Crop protection measures should be appropriate for the control of pests and based on the approval of the competent authority.
2. Growers should use agricultural chemicals that are registered for cultivation of onion and procured from licensed suppliers that are duly approved by the FPA

and in the country where the produce is intended to be traded. The use of such agricultural chemicals must be in accordance with the approved label instructions for the intended purpose/s.

3. If the choice of chemical products is made by advisers, proof of their technical competence should be made available such as certificates of trainings, education, experience and accreditation from competent authority.
4. The expiry dates of the chemicals to be procured should be noted. The expiration date is 2 years after the formulation date indicated on the label.
5. The chemicals should be applied at approved dosages to prevent residue levels exceeding the maximum residue limits (MRLs). **Residue levels in the produce should comply with the maximum residue limits for pesticides established by the Codex Alimentarius Commission.**
6. If deemed necessary, the produce shall be subjected to residue analyses to be conducted by an accredited laboratory for safety precautions.

5.2 Application of Crop Protection Products

1. The person responsible for application should be technically competent. He should possess the relevant trainings and experiences. The assistance of government or industry technicians must be requested if in doubt of applying a certain pesticide.
2. The Integrated Pest Management (IPM) principles and techniques should be used whenever possible to minimize the use of pesticides. A rotation strategy for chemical application and other crop protection measures must be employed to avoid the development of pesticide resistance, i.e. use different chemical groupings (e.g. organophosphates, synthetic pyrethroids, carbamates, etc.) of pesticides.
3. Mixing of more than two (2) chemicals should be avoided, unless recommended by FPA, or specified in the product label.
4. Growers/applicators should observe established Pre-harvest Intervals (PHIs) or the period between chemical application and harvest.
5. Appropriate warning signs should be placed on a newly applied or is being applied area with pesticides.
6. Workers should use well-maintained protective clothing/attire during applications. Observe established re-entry periods or the safe period of time to enter the field for monitoring or follow up spraying.
7. Application of pesticides should be managed appropriately to minimize the risk of spray drift to neighboring properties and environmentally sensitive areas. In such cases, areas applied with pesticides should be marked with appropriate warning signs for public safety.

5.3 Safety and Welfare of Authorized Worker/s during Application

1. Authorized farm workers should be trained on the proper handling (e. g. application) of crop protection products.
2. Material Safety Data Sheets (MSDS) or safety instructions from approved labels should be made readily available for reference.

3. First aid facilities (e.g. kits) should be readily available to treat workers of minor cuts and bruises and those that have been accidentally contaminated with chemicals prior to medical attention/treatment in a hospital.
4. First-aid and emergency instructions should be documented and conspicuously displayed in strategic locations.

5.4 Storage of Crop Protection Products

1. The crop protection product storage facility should comply with all the appropriate national or local regulations. It must have non-absorbent shelves such as metal or rigid plastic material to minimize the problem of contamination due to spillage.
2. Chemicals should be stored in a well-lighted, sound and secure structure, with access limited to the authorized personnel only. The structure should be located and constructed to minimize the risk of contaminating produce and should be equipped with emergency facilities in the event of a chemical spill, fire and other natural or man-made calamities.
3. Crop protection products should be stored in the original container with legible labels.
4. Proper segregation in the storage of crop protection products (e.g. liquids should not be stored together with dry formulations) should be observed.
5. In order to avoid expired chemicals, a record or inventory of stored chemicals should be kept with the following details: chemical name, date and quantity obtained, expiry date and date when completely used or disposed of. The stock inventory that will indicate the contents of the stored containers should be done before every cropping season.

5.5 Maintenance and Storage of Equipment

1. Equipment used for chemical application should be maintained in good working condition. A technically competent person before each use should check such equipment.
2. Agricultural chemical sprayers should be calibrated as necessary, to maintain the precision of the application rate. Records of maintenance and calibration activities should be kept.
3. Mixing containers, sprayers and other equipments and tools used for chemical applications should be thoroughly washed after use, especially when used with different agricultural chemicals on different crops, i. e. to avoid contamination of the produce or damaging the crop. Washings should be contained in a specific area or in a designated container for proper disposal.
4. Protective attires should be separately washed from other clothings and stored properly for future use.

5.6 Disposal of Crop Protection Products and Other Contaminated Wastes

1. Empty chemical containers should not be re-used and should be safely secured until these are disposed. Empty containers should never be used for food and drink-related purposes. The empty containers should be returned back to the suppliers / distributors for proper disposal.

2. Crop protection product containers should be rinsed three (3) times prior to disposal and should be disposed according to label directions.
3. Expired or banned chemicals should never be used for crop protection purposes. Obsolete chemicals are disposed of through official collection systems or in designated legal off-site areas.
4. Container washings should be disposed appropriately to avoid contamination of the produce and minimize the risk of environmental harm within and outside the site.
5. All pesticide-contaminated wastes shall be disposed in a designated sanitary landfill, if available.
6. Fuels, oils and other unusable non-agri-chemicals should be disposed properly to avoid the risk of contaminating the produce.

SECTION 6 – FARM MANAGEMENT

6.1 Personal Hygiene

1. Workers should have appropriate knowledge or must be trained in personal hygiene practices.
2. Farm workers should comply with farm hygiene regulations such as observance of personal cleanliness and appropriate clothing (i.e. hand washing, wearing of jewelry and fingernail length and cleaning, etc) and personal behavior (i.e. no smoking, spitting, eating, chewing, etc).
3. Written instructions on personal hygiene practices should be provided to workers or displayed on prominent locations.
4. Fixed or mobile toilets and hand washing facilities should be available and accessible (i.e. within at least 500 m) to the workers and should be properly maintained in good hygienic condition. These should be located in an appropriate area.

6.2 Farm Sanitation

1. Measures should be taken in order to ensure that the cultivation area is free from possible sources of contamination (e.g. litters, etc.)
2. Packing, handling and storage areas that can be sources of contamination should be identified. Cleaning and sanitation procedures should be prepared and followed.
3. Sanitation procedures conducted during the harvesting operations should follow those provisions in the relevant section(s).

6.3 Equipment, Containers and Materials

1. Containers used for harvesting, handling and packing produce must never be used for hauling or storing agricultural chemicals, lubricants, oil, cleaning chemicals, plant or other debris, and tools, etc.
2. Equipments, reusable harvesting containers and harvesting tools that come in contact with fruits or vegetables should be made of non-toxic materials, easily cleaned and disinfected. These implements and the farm vehicle should be

regularly maintained to avoid contamination. A cleaning and disinfection schedule on a regular basis should be followed and recorded.

3. Specific hygienic and maintenance requirements may be identified for each piece of equipment that is used and the type of fruit or vegetable associated with it.
4. Equipment, containers and materials should be stored in a separate area away from chemicals, fertilizers and soil additives storage areas. Measures should be taken to minimize contamination from pests.
5. Containers for waste, by-products and inedible or dangerous substances should be specifically identifiable, suitably constructed and, where appropriate, made of impervious material. Where applicable, such containers should be lockable to prevent malicious or accidental contamination of fresh fruits and vegetables or agricultural inputs. Such containers should be segregated and identified so that they will not be used as harvesting containers.

6.4 Buildings and Structures

1. If available, building and structures used for production, packing, handling and storage of produce should be designed and constructed according to building standards and maintained to minimize the risk of contaminating the produce. Lights bulbs should be shatter proof in areas where produce, packing containers and materials are exposed. In the event of bulb shattering, exposed produce is rejected while equipment, packing containers and materials are cleaned.
2. In cases where equipment tools, grease, oil, fuel and farm machinery are kept in the same building where produce are handled, packed and stored, these should be kept in a separate room to prevent cross-contamination and should not be operated.

6.5 Animals, Pest and Disease Control

1. Domestic and farm animals must be restricted from the production site and from areas where produce are harvested, packed and temporarily held.
2. Measures should be taken to prevent the introduction of pests and diseases within the cultivation, handling, packing and storage areas.
3. Baits and traps used for pest control should be positioned and maintained in strategic areas to minimize the risk of contaminating the produce, packing containers and other handling materials. The location of baits and traps should be included in the building lay out map.

6.6 Record Keeping

1. A record of fertilizers and soil additives obtained should be kept with the following specifics: source, product name, and date and quantity obtained.
2. The application of fertilizers and soil additives should be recorded, detailing the following: date, name of the product or material used treatment location, application rate, application method, and operator name.
3. Records of procurement, inventory and utilization of inorganic fertilizers should be maintained and updated regularly. These should include: source, product name, date and quantity, expiration date (for liquid fertilizers) and the nutrient composition of the materials.

4. A record of procured chemicals should be kept, with the following details: chemical name, supplier of the chemical, date of purchase, expiry dates, and quantity procured.
5. After application, the following should be recorded: name of applicator, name of product/s used, application rate, total volume of spray used per area sprayed, frequency of application, method of application, date of application and PHI.
6. The records must always be accessible during inspection of the farm.
7. Records of production, processing and distribution should be maintained for two (2) years to facilitate a food borne illness investigation and recall, if any.
8. Whenever applicable, growers and/or packers should always update all relevant information on agricultural activities such as the site of production, suppliers' information on agricultural inputs, lot numbers of agricultural inputs, irrigation practices, use of agricultural chemicals, water quality data, pest control and cleaning schedules for indoor establishments, premises, facilities, equipment and containers.
9. A record should also be kept on the following specifics: date of supply, quantity of produce and destination for each consignment of produce.
10. Whenever applicable, growers and packers should have programs to ensure effective lot identification. These programs should be able to trace the sites and agricultural inputs involved in primary production and the origin of incoming material at the packing establishment in case of suspected contamination.
11. Packed containers must be clearly labeled with an identification to enable traceability of the produce to the farm or site where the produce is grown.

6.7 Review of Practices

1. All practices are reviewed at least once each year to ensure that they are done correctly and actions are taken to correct any deficiencies identified or if changes occur to environmental regulations.
2. A record is kept to show that all practices have been reviewed and any corrective actions taken are documented.
3. Actions are taken to resolve complaints related to environmental management, and a record is kept of the complaint and actions taken.

SECTION 7 – WORKER'S HEALTH, SAFETY AND WELFARE

1. Working conditions are suitable for workers and protective clothing is supplied where conditions are hazardous to workers.
2. All farm vehicles, equipment and tools, including electrical and mechanical devices, are adequately guarded and maintained and inspected on a regular basis for potential hazards to users.
3. Safe manual handling practices are followed to minimize the risk of injury from lifting heavy objects and excessive twisting and reaching movements.
4. Where provided by an employer, living quarters are suitable for human habitation and contain basic services and facilities.

5. The minimum working age shall comply with the country regulations which is more than 15 years of age.
6. New workers are informed about the risks associated with health and safety when starting at the worksite.
7. Workers have appropriate knowledge or are trained to a level appropriate to their area of responsibility in the following areas:
 - Operating vehicles, equipment and tools;
 - Accident and emergency procedures;
 - Safe use of chemicals; and
 - Personal hygiene

Annex 1

List of Agricultural Pesticides Registered for Onion

As of 31 December 2011

LIVE INGREDIENT	PRODUCT NAME	CONC.	*TYPE	USE/S	TOX CAT.
ABAMECTIN	ABAMEC 1.8 EC	18 g/L	EC	I	2
(thrips, leafhopper)	AGRIGUARD 1.8 EC	18 g/L	EC	I	2
	AGRI-MEK 1.8 EC	18 g/L	EC	I	2
	RADI-MEKTIN 1.8 EC	18 g/L	EC	I	2
	ROMEKTIN 1.8 EC	18 g/L	EC	I	2
AZOXYSTROBIN	AMISTAR 25 SC	250 g/L	SC	F	4
(basal/bulb rot)					
CAPTAN	CAPTAN 50 WP	500 g/kg	WP	F	4
(downy mildew, purple blotch and leaf blight)					
CARTAP	AEGIS CARTAP 50 SP	500 g/kg	SP	I	3
HYDROCHLORIDE	AGROTAP 50 SP	500 g/kg	SP	I	3
(thrips, cutworm)	ALTAP 50 SP	500 g/kg	SP	I	3
	ARTAP 50 SP	500 g/kg	SP	I	3
	BARRAGE 50 SP	500 g/kg	SP	I	3
	BLIZZARD 50 SP	500 g/kg	SP	I	3
	BOLTRIN 50 SP	500 g/kg	SP	I	3
	BUENAS 50 SP	500 g/kg	SP	I	3
	CARDINAL 50 SP	500 g/kg	SP	I	3
	CARE- TOP 50 SP	500 g/kg	SP	I	3

LIVE INGREDIENT	PRODUCT NAME	CONC.	*TYPE	USE/S	TOX CAT.
	CARTAP ES	500 g/kg	SP	I	3
	CARTAP GOLD 50 SP	500 g/kg	SP	I	3
	CORE 50 SP	500 g/kg	SP	I	3
	DIAMOND 50 SP	500 g/kg	SP	I	3
	EJA CARTAP 50 SP	500 g/kg	SP	I	3
	EXTREME 50 SP	500 g/kg	SP	I	3
	FLAME 50 SP	500 g/kg	SP	I	3
	GEMTRAK 50 SP	500 g/kg	SP	I	3
INDUKEM CARTAP 50 SP		500 g/kg	SP	I	3
	INGRAM 50 SP	500 g/kg	SP	I	3
	KATAPAT 50 SP	500 g/kg	SP	I	3
	MEGATAP 50 SP	500 g/kg	SP	I	3
	NUTAP 50 SP	500 g/kg	SP	I	3
	OCC CARTAP 50 SP	500 g/kg	SP	I	3
	OCEAN COOL 50 SP	500 g/kg	SP	I	3
	OVER-ALL 50 SP	500 g/kg	SP	I	3
	PADAN 4G	40 g/kg	G	I	4
	PADAN 50 SP	500 g/kg	SP	I	3
	PADIM 50 SP	500 g/kg	SP	I	3
	PATRAK 50 SP	500 g/kg	SP	I	3
	PHILTAP 50 SP	500 g/kg	SP	I	3

LIVE INGREDIENT	PRODUCT NAME	CONC.	*TYPE	USE/S	TOX CAT.
	PROPONE 50 SP	500 g/kg	SP	I	3
	RAMPAGE 50 SP	500 g/kg	SP	I	3
	ROYAL CARTAP	500 g/kg	SP	I	3
	SPARROW 50 SP	500 g/kg	SP	I	3
	SPUR 50 SP	500 g/kg	SP	I	3
	STELLAR 50 SP	500 g/kg	SP	I	3
SUPER CARTAP 50 SP		500 g/kg	SP	I	3
	TAP OUT 50 SP	500 g/kg	SP	I	3
	TEPOK 50 SP	500 g/kg	SP	I	3
	TEXICON 50 SP	500 g/kg	SP	I	3
	THUNDER 50 SP	500 g/kg	SP	I	3
	TRAC 50 SP	500 g/kg	SP	I	3
	TRIBAND	500 g/kg	SP	I	3
	TSUNAMI 50 SP	500 g/kg	SP	I	3
	VEGETOX 50 SP	500 g/kg	SP	I	3
	VERSUS 50 SP	500 g/kg	SP	I	3
	VOLTZ 50 SP	500 g/kg	SP	I	3
	WOKTAP 50 SP	500 g/kg	SP	I	3
CHLOROTHALONIL	ALTERNIL 720 SC	720 g/L	SC	F	4
(puple blotch, bulb rot,	AVATAR 720 SC	720 g/L	SC	F	4
neck rot)	BALEAR 500 SC	500 g/kg	SC	F	4
	BANKO 75 WP	750 g/L	WP	F	4

LIVE INGREDIENT	PRODUCT NAME	CONC.	*TYPE	USE/S	TOX CAT.
	BARON 720 SC	720 g/L	SC	F	4
	BOSSING 720 SC	720 g/L	SC	F	4
	CHANIL 720 SC	720 g/L	SC	F	4
	CHLORONIL 75 WP	750 g/L	WP	F	4
	CHLOTHANIL 720 SC	720 g/L	SC	F	4
	CIVIL 75 WP	750 g/kg	WP	F	4
DACONIL 2787 75 WP		750 g/kg	WP	F	4
	DACONIL 720 SC	720 g/L	SC	F	4
	DACONIL SC 500	500 g/L	SC	F	4
	DEACON 720 SC	720 g/L	SC	F	4
	DEACON 75 WP	750 g/kg	WP	F	4
	FREE 75 WP	750 g/kg	WP	F	4
	GARDENIL 500 SC	500 g/L	SC	F	4
	GLIDER 720 SC	720 g/L	SC	F	4
	GREENIL 500 SC	500 g/L	SC	F	4
	HQ TURBONIL 75 WP	750 g/kg	WP	F	4
	KONTRA 75 WP	750 g/kg	WP	F	4
	LEADONIL 500 SC	500 g/L	SC	F	4
	ODEON 720 SC	720 g/L	SC	F	4
	ORANIL 500 SC	500 g/L	SC	F	4
	ORANIL 720 SC	720 g/L	SC	F	4
	PILARACH 500 SC	500 g/L	SC	F	4
	PILARICH 720 SC	720 g/L	SC	F	4
	RIGHT TRAC 720 SC	720 g/L	SC	F	4
	ROVER	500 g/L	SC	F	4
	SHIELD 72 SC	720 g/L	SC	F	4
	SIGNATVRE 500 SC	500 g/L	SC	F	4
	SIMBA 720 SC	720 g/L	SC	F	4
	SYNTAX 720 SC	720 g/L	SC	F	4
	TELGAR 500 SC	500 g/L	SC	F	4
	TRANSONIL 500 SC	500 g/L	SC	F	4

LIVE INGREDIENT	PRODUCT NAME	CONC.	*TYPE	USE/S	TOX CAT.
	TRANSONIL 720 SC	720 g/L	SC	F	4
	TRUNIL 75 WP	750 g/kg	WP	F	4
	VALIANT 75 WP	750 g/kg	WP	F	4
	VENGEANCE 500 SC	500 g/L	SC	F	4
	VENGEANCE 720 SC	720 g/L	SC	F	4
	VENGEANCE 75 WP	750 g/kg	WP	F	4
	VIVO 500 SC	500 g/L	SC	F	4
	VIVO 720 SC	720 g/L	SC	F	4
	YODA 500 SC	500 g/L	SC	F	4
CHLORPYRIFOS + BPMC	ALAKDAN 300	210+10 5 g/L	EC	I	2
(thrips, cutworm)	ARVUZ 31.5 EC	210+10 5 g/L	EC	I	2
	BLUDAN PLUS 31.5 EC	210+10 5 g/L	EC	I	2
	BREAKER	210+10 5 g/L	EC	I	2
	BRODAN 31.5 EC	210+10 5 g/L	EC	I	2
	BUGDOWN 31.5 EC	210+10 5 g/L	EC	I	2
	CAGE 31.5 EC	210+10 5 g/L	EC	I	2
	C-WINNER 31.5 EC	210+10 5 g/L	EC	I	2
	CYCARB 31.5 EC	210+10 5 g/L	EC	I	2
	DUAL ACTION EC	210+10 5 g/L	EC	I	2
	GAROTE EC	210+10 5 g/L	EC	I	2
	KUDOS 31.5 EC	210+10 5 g/L	EC	I	2
	PERFEK 31.5 EC	210+10 5 g/L	EC	I	2
	RADIANT 31.5 EC	210+10	EC	I	2

LIVE INGREDIENT	PRODUCT NAME	CONC.	*TYPE	USE/S	TOX CAT.
		5 g/L			
	SUPREMO EC	210+10 5 g/L	EC	I	2
	TIRADOR 31.5 EC	210+10 5 g/L	EC	I	2
	TOXIDAN 31.5 EC	210+10 5 g/L	EC	I	2
	VORDAN 31.5 EC	210+10 5 g/L	EC	I	2
	WARRIOR 31.5	210+10 5 g/L	EC	I	2
COPPER/CUPRIC					
HYDROXIDE	CHAMP DP	576 g/kg	DP	F	3
(purple blotch and	CHAMPION WP	770 g/kg	WP	F	3
downy mildew)	FUNGURAN-OH	770 g/kg	WP	F	3
	HIDROCOB 77 WP	770 g/kg	WP	F	3
	HYDROXIDE SUPER 77 WP	770 g/kg	WP	F	3
	K-101 WETTABLE POWDER	770 g/kg	WP	F	3
	K-300 DRY PRILL	576 g/kg	DF	F	3
	KOCIDE DF 2000	538 g/kg	DF	F	3
	KOP-HYDROXIDE 770 WP	770 g/kg	WP	F	3
COPPER OXIDE	NORDOX 50 WP	575 g/kg	WP	F	3
(purple blotch)					
CYPERMETHRIN	ADER 5 EC	50 g/L	EC	I	4
(thrips, cutworm)	AMDA	50 g/L	EC	I	4
	ARMETHRIN 5 EC	50 g/L	EC	I	4
	ARRIVO 5 EC	50 g/L	EC	I	4
	ARROW 5 EC	50 g/L	EC	I	4
	ATTACK 5R	50 g/L	EC	I	4
	AZUDRIN 5 EC	50 g/L	EC	I	4

LIVE INGREDIENT	PRODUCT NAME	CONC.	*TYPE	USE/S	TOX CAT.
	BAGSIK 5 EC	50 g/L	EC	I	4
	BAGWIS 5 EC	50 g/L	EC	I	4
	BIG SHOT 5 EC	50 g/L	EC	I	4
	BIGATHRIN 5 EC	50 g/L	EC	I	4
	BIOMEGSTAR	50 g/L	EC	I	4
	BLAZE 5 EC	50 g/L	EC	I	4
	BOXER 5 EC	50 g/L	EC	I	4
	BRUTAL 5 EC	50 g/L	EC	I	4
	BUGBUSTER 5 EC	50 g/L	EC	I	4
	BULL'S EYE INSECTICIDE	50 g/L	EC	I	4
	BULLET 5 EC	50 g/L	EC	I	4
	BUSHWHACH	50 g/L	EC	I	4
	CAPETAN	50 g/L	EC	I	4
	CAPTURE 5 EC	50 g/L	EC	I	4
	CAT CYPERMETHRIN	50 g/L	EC	I	4
	CIPO 5 EC	50 g/L	EC	I	4
	COMBAT 5 EC	50 g/L	EC	I	4
	CONQUEROR 5 EC	50 g/L	EC	I	4
	CYBEST 5 EC	50 g/L	EC	I	4
	CYCLONE 5 EC	50 g/L	EC	I	4
	CYMBUSH 5 EC	50 g/L	EC	I	4
	CYPERON 5 EC	50 g/L	EC	I	4
	CYPEX 50 EC	50 g/L	EC	I	4
	DESTROY 5 EC	50 g/L	EC	I	4
	EJA CYPERMETHRIN	50 g/L	EC	I	4
	ELITE CYPER 5 EC	50 g/L	EC	I	4
	FALCON 5 EC	50 g/L	EC	I	4
	FLASH 5 EC	50 g/L	EC	I	4
	GLOBAL 5 EC	50 g/L	EC	I	4
	GRANADA 5 EC	50 g/L	EC	I	4
	GREENGUARD 5 EC	50 g/L	EC	I	4
	GUARDIAN 5 EC	50 g/L	EC	I	4
KAISAKA CYPERMETHRIN 5 EC		50 g/L	EC	I	4

LIVE INGREDIENT	PRODUCT NAME	CONC.	*TYPE	USE/S	TOX CAT.
	KILLER 5 EC	50 g/L	EC	I	4
	KING 5 EC	50 g/L	EC	I	4
	KINGSTAR 5 EC	50 g/L	EC	I	4
	KNOCK OUT 5 EC	50 g/L	EC	I	4
	KORBUSH 5 EC	50 g/L	EC	I	4
	LABAN 5 EC	50 g/L	EC	I	4
	LAKAS 5 EC	50 g/L	EC	I	4
	LUCKY 5 EC	50 g/L	EC	I	4
	MAGNUM 5 EC	50 g/L	EC	I	4
	MISSILE	50 g/L	EC	I	4
	MISTAH 5 EC	50 g/L	EC	I	4
	MODEL 5 EC	50 g/L	EC	I	4
	PALMETRIN 5 EC	50 g/L	EC	I	4
	PANTHER 5 EC	50 g/L	EC	I	4
	PUNIS X 5.5 EC	50 g/L	EC	I	4
	ROCKET 5 EC	50 g/L	EC	I	4
	SHARPHIL 5 EC	50 g/L	EC	I	4
	SHERPA 5 EC	50 g/L	EC	I	4
	SMASH 5 EC	50 g/L	EC	I	4
	SUPER M 5 EC	50 g/L	EC	I	4
	SUPERSMAK 50 EC	50 g/L	EC	I	4
	SUPRA 5 EC	50 g/L	EC	I	4
	TIPID 5 EC	50 g/L	EC	I	4
	TIRADOR 5 EC	50 g/L	EC	I	4
	TRIGGER 5 EC	50 g/L	EC	I	4
	ULTIMATUM 5 EC	50 g/L	EC	I	4
	VASTHRIN	50 g/L	EC	I	4
	VIRA 5 EC	50 g/L	EC	I	4
	WEAPON 5 EC	50 g/L	EC	I	4
	WIPER 5 EC	50 g/L	EC	I	4
	X- PRESS METHRIN 5 EC	50 g/L	EC	I	4
	XYNERGY MAX	50 g/L	EC	I	4
	ZERON 5 EC	50 g/L	EC	I	4
	ZOOM 5 EC	50 g/L	EC	I	4
CYROMAZINE (leaf miner)	TRIGARD 75 WP	75 g/kg	WP	I	4

LIVE INGREDIENT	PRODUCT NAME	CONC.	*TYPE	USE/S	TOX CAT.
DIFENOCONAZOLE	DIFENTHRUM 25 EC	250 g/L	EC	F	4
	ESCUDO 250 EC	250 g/L	EC	F	4
	MONTANA 250 EC	250 g/L	EC	F	4
	SCORE 250 EC	250 g/L	EC	F	4
	SHARPHIL CONAZOLE	250 g/L	-	F	4
	SIGATROL 25 EC	250 g/L	EC	F	4
FIPRONIL	ASCEND 50 SC	50 g/L	SC	I	3
(cutworm)	BOOM 50 SC	50 g/L	SC	I	3
	FIPOGREEN 50 CC	50 g/L	SC	I	3
FLUAZIFOP-P-BUTYL	ONECIDE 15 EC	150 g/L	EC	H	4
(grasses)					
FLUAZINAM	FROWNCIDE 50 SC	500 g/L	SC	F	4
(purple blotch, botrytis)					
HALOXYFOP-R-METHYL ESTER					
(annual & perennial grasses)					
	GALLANT SUPER	108 g/L	EC	H	2
IMINOCTADINETRIS	BELLKUTE 40 WP	400 g/kg	WP	F	4
ALBESILATE					
(purple blotch)					
LAMBDA CYHALOTHRI N	5 STAR GENERAL	25 g/L	EC	I	2
(thrips, cutworm)	ACHIEVE 2.5 EC	25 g/L	EC	I	2
	ALERT 2.5 EC	25 g/L	EC	I	2
	APOLO 2.5 EC	25 g/L	EC	I	2
	ARNIS 2.5 EC	25 g/L	EC	I	2
	AUTOKILL 2.5 EC	25 g/L	EC	I	2
	BANKER 2.5 EC	25 g/L	EC	I	2
	BIDA 2.5 EC	25 g/L	EC	I	2
	BUGSEEK	25 g/L	EC	I	2
	CHAKU 2.5 EC	25 g/L	EC	I	2
	CLICK 2.5 EC	25 g/L	EC	I	2
	CYHATEX 2.5 EC	25 g/L	EC	I	2

LIVE INGREDIENT	PRODUCT NAME	CONC.	*TYPE	USE/S	TOX CAT.
	D- DESTROYER 2.5 EC	25 g/L	EC	I	2
	DELIVER 2.5 EC	25 g/L	EC	I	2
	DYNAMO 2.5 EC	25 g/L	EC	I	2
	EXCALIBUR 2.5 EC	25 g/L	EC	I	2
	GOLDCROP 2.5 EC	25 g/L	EC	I	2
	ICTC LAMBDA 2.5 EC	25 g/L	EC	I	2
	INDUKEM LAMBDA	25 g/L	EC	I	2
	INFERNO	25 g/L	EC	I	2
	INFERNO 2.5 EC	25 g/L	EC	I	2
	KRISS 2.5 EC	25 g/L	EC	I	2
	LAGASH 2.5 EC	25 g/L	EC	I	2
	LEGION 2.5 EC	25 g/L	EC	I	2
MY FARM LAMBDA-CYHALOTHRIN 2.5 EC		25 g/L	EC	I	2
	MYSTICA 2.5 EC	25 g/L	EC	I	2
	ONE CLICK 2.5 EC	25 g/L	EC	I	2
	SUMO 2.5 EC	25 g/L	EC	I	2
	SUPER LAMBDA 2.5 EC	25 g/L	EC	I	2
	TORCH 2.5 EC	25 g/L	EC	I	2
	TYRANT 2.5 EC	25 g/L	EC	I	2
MBDACYHALOTHRIN	ZULPAC LAMBDA 2.5 EC	25 g/L	EC	I	2
NURON (annual weeds)	AFALON 50 WP	500 g/kg	WP	H	4
MALATHION (cutworm)	ACCESS MALATHION 57 EC	570 g/L	EC	I	4
AGCHEM MALATHION 57 EC		570 g/L	EC	I	4
	AGWAY MALATHION 57 EC	570 g/L	EC	I	4
	ALJAJ MALATHION 57 EC	570 g/L	EC	I	4

LIVE INGREDIENT	PRODUCT NAME	CONC.	*TYPE	USE/S	TOX CAT.
	ALJAY MALATHION 57 EC	570 g/L	EC	I	4
BIOSTADT MALATHION 57 EC		570 g/L	EC	I	4
	CAT MALATHION 57 EC	570 g/L	EC	I	4
CYBERTH MALATHION 57 EC		570 g/L	EC	I	4
	DCDM MALATHION 57 EC	570 g/L	EC	I	4
	EJA MALATHION 57 EC	570 g/L	EC	I	4
FARMERS MALATHION 57 EC		570 g/L	EC	I	4
HEXTAR MALATHION 57 EC		570 g/L	EC	I	4
	ICTC MALATHION	570 g/L	EC	I	4
IVANSMITHS MALATHION 57 EC		570 g/L	EC	I	4
LEADCORP MALATHION 57 EC		570 g/L	EC	I	4
MONARCH MALATHION		570 g/L	EC	I	4
	OCC MALATHION 57 EC	570 g/L	EC	I	4
PLANTCARE MALATHION 57 EC		570 g/L	EC	I	4
PLANTERS MALATHION 57 EC		570 g/L	EC	I	4
VANN HAWK MALATHION 57 EC		570 g/L	EC	I	4
	ZAPUL	570 g/L	EC	I	4

LIVE INGREDIENT	PRODUCT NAME	CONC.	*TYPE	USE/S	TOX CAT.
	MALATHION 57 EC				
MANCOZEB	AEGIS MANCOZEB 80 WP	800 g/kg	WP	F	4
(purple blotch, downy mildew & botrytis leaf spot)	AGCHEM MANCOZEB 80 WP	800 g/kg	WP	F	4
	AGRICOTE MZ 80 WP	800 g/kg	WP	F	4
AGRO TECHNO MANCOZEB 80 WP		800 g/kg	WP	F	4
	ALCOZEB 80 WP	800 g/kg	WP	F	4
	ALJAY MANCOZEB 80 WP	800 g/kg	WP	F	4
	ARIES MANCOZEB	800 g/kg	WP	F	4
	ARMAZEB 80 WP	800 g/kg	WP	F	4
	ATTAIN M-80	800 g/kg	WP	F	4
	BIOZEB 80 WP	800 g/kg	WP	F	4
	CANOPY 80 WP	800 g/kg	WP	F	4
	CAT MANCOZEB 80 WP	800 g/kg	WP	F	4
	CURAZEB 80 WP	800 g/kg	WP	F	4
	D-10 80 WP	800 g/kg	WP	F	4
	DAYTEN MANCOZEB	800 g/kg	WP	F	4
DITHANE M-45 NEOTEC WP		800 g/kg	WP	F	4
	DITHANE RAINSHIELD	750 g/kg	DF	F	4
	EMZEB 75 WDG	750 g/kg	WDG	F	4
	EMZEB 80 WDG	800 g/kg	WP	F	4

LIVE INGREDIENT	PRODUCT NAME	CONC.	*TYPE	USE/S	TOX CAT.
EVER MANCOZEB 75 DF		800 g/kg	DF	F	4
	EVER MANCOZEB 80 WP	800 g/kg	WP	F	4
	FILZEB 80 WP	800 g/kg	WP	F	4
	FULLCLEAN 80 WP	800 g/kg	WP	F	4
	FUNGUFREE	800 g/kg	WP	F	4
	FUNGUFREE 80 WP	800 g/kg	WP	F	4
	GANAZEB 80 WP	800 g/kg	WP	F	4
	GRANMAN 75 DF	750 g/kg	DF	F	4
	GREENBLAST 80 WP	800 g/kg	WP	F	4
	ICTC MANCOZEB	800 g/kg	WP	F	4
	IVAZEB 80 WP	800 g/kg	WP	F	4
KEMISTAR MANCOZEB 80 WP		800 g/kg	WP	F	4
	LAXON 80 WP	800 g/kg	WP	F	4
	LENIN MANCOZEB 80 WP	800 g/kg	WP	F	4
	MANA 80 WP	800 g/kg	WP	F	4
	MANAGER 80 WP	800 g/kg	WP	F	4
	MANCOTEX 80 WP	800 g/kg	WP	F	4
	MANCOZEB 80 WP	800 g/kg	WP	F	4
	MANZATE 200	800 g/kg	WP	F	4
	MANZATE 200 FUNGICIDE	800 g/kg	WP	F	4

LIVE INGREDIENT	PRODUCT NAME	CONC.	*TYPE	USE/S	TOX CAT.
	MANZATE DF	750 g/kg	DF	F	4
	MANZATE OPTIMA 42 SC	420 g/L	SC	F	4
	MARTHSEB 80 WP	800 g/kg	WP	F	4
	MARZEB 80 WP	800 g/kg	WP	F	4
	MICRON 80 WP	800 g/kg	WP	F	4
	MNK MANCOZEB 42 SC	420 g/kg	SC	F	4
	NAKAZEB 80 WP	800 g/kg	WP	F	4
	PACAZEB 80 WP	800 g/kg	WP	F	4
	PARAFUNGUS 80 WP	800 g/kg	WP	F	4
	PILARZEB 75 WDG	750 g/kg	WDG	F	4
RADISSON MANCOZEB 600 AS		600 g/kg	WP	F	4
RADISSON MANCOZEB 80 WP		800 g/kg	WP	F	4
	RAINFAST 80 WP	800 g/kg	WP	F	4
	REDEEM 600 OS	600 g/L	OS	F	4
	REDEEM 750 WDG	750 g/kg	WDG	F	4
	REDEEM 80 WP	800 g/kg	WP	F	4
	ROBIN 80 WP	800 g/kg	WP	F	4
	SAVIOR 80 WP	800 g/kg	WP	F	4
	SHOGUN 800	800 g/kg	WP	F	4
	TRANZEB 80 WP	800 g/kg	WP	F	4
	TRIZEB 80 WP	800	WP	F	4

LIVE INGREDIENT	PRODUCT NAME	CONC.	*TYPE	USE/S	TOX CAT.
		g/kg			
	TROOP 80 WP	800 g/kg	WP	F	4
	VANCOZEB 420 SL	420 g/kg	SL	F	4
	VANCOZEB 80 WP	800 g/kg	WP	F	4
	VANZEB 75% WDG	750 g/kg	WDG	F	4
	VANZEB 80 WP	800 g/kg	WP	F	4
	VONDOZEB 75 WG	750 g/kg	WG	F	4
	VONDOZEB L	455 g/L	F	F	4
	VONDOZEB PLUS	800 g/kg	WP	F	4
	WONDER 80 WP	800 g/kg	WP	F	4
	ZEBRA BLUE 80 WP	800 g/kg	WP	F	4
OXYFLUORFEN	GOAL 24 EC	240 g/L	EC	H	4
(broadleaves, sedges, grasses)	OXYBULB 24 EC	240 g/L	EC	H	4
PENDIMETHALIN	HERBADOX 33 E	330 g/L	EC	H	4
(grasses, broadleaf, weeds)	PREKILL 330	330 g/L	EC	H	4
PHENTHOATE	PENDANT 50 EC	500 g/L	EC	I	2
(thrips)	PENNANT 50 EC	500 g/L	EC	I	2
	PHENOM	500 g/L	EC	I	2
	SALVO 50 EC	500 g/L	EC	I	2
PROPAQUIZAFOP	AGIL 100 EC	100 g/L	EC	H	4
(grasses)					
PROPINEB	ANTRACOL 70 WP	700 g/kg	WP	F	4
(downy mildew, anthracnose & purple blotch)	PROTOCOL WP 70	700 g/kg	WP	F	4
SETHOXYDIM	NABU-S	111 g/L	EC	H	4

LIVE INGREDIENT	PRODUCT NAME	CONC.	*TYPE	USE/S	TOX CAT.
(grass weeds)					
SPINOSAD	SUCCESS NATURALYTE 25 SC	25 g/L	SC	I	4
(thrips, cutworm)					

*Type of Formulation: EC = emulsifiable concentrate, SC = suspension concentrate,
WP = wettable powder, SP = soluble powder, DP = dispersible powder

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