Basic GAP for Promoting Indian Agriculture-IndiaGAP

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Moon Light Farming

- Agriculture is as old as human civilization

- “There was a time when farmers planted by the phases of the moon and harvested about a third or less of the yield they get today—if they didn’t lose the crops to weeds, insects, and weather”
What is **sustainable** agriculture?

- All agricultural production systems and practices which are *economically viable, environmentally sound, and socially acceptable* ...

- “... and which contribute to a better quality of life for agricultural producers and their families and the general public.”

**Good agricultural practices (GAP) support sustainable agriculture**
When is Agriculture Sustainable?

• Conserves soil and water resources
• Maintains a diverse ecosystem
• Reduces environmental impacts
• Minimizes pest problems
• Provides worker safety at work
• Produces safe & hygienic produce for consumption
• It is profitable to farmers
Objectives of GAP

- Increasing agricultural productivity & reducing loss
- Lowering production costs (p/unit)
- Increasing food safety and quality by:
  - Eradicating worst practices
  - Supporting long term thinking / strategies
- Optimizing use of natural resources
  - land, water, human capital
- Enhancing information sharing and consensus on “good farming practices”
- Identifying constraints, institutional support needs and interventions to promote GAPs
Adverse effect of current agriculture practices

- Indiscriminate use of chemical fertilizers
- Use of excessive water leading to depletion of water resources
- Irrational use of pesticides leading to high pesticide residues
- Contamination of water bodies and underground water
- Degradation of soil quality particularly micronutrients
Adverse effect of current agriculture practices

- Soil degradation and erosion due to lack of soil conservation measures
- Low productivity and quality
- Loss of up to 35 percent of horticultural produce during harvesting and post harvest operations
- Risk to health and safety of agricultural workers
Good agricultural practices: Basic elements

- Site History & Site Management
- Land and Soil management
- Seed &propagation material management
- Sowing and crop management
- Water &irrigation management
- Fertilizer and nutrient management
- Integrated pest management
- Crop produce management
Site history and site management

- Site history
  - Availability of site records - Flood, famine, rainfall
  - Orderly maintenance and up-to-date records
  - Reference system for each type of farm

- Site management
  - Risk assessment for each site its suitability
  - Management plan to minimise the risk identified
Land & Soil management

- Soil mapping
  - Soil map of the farm - soil profile

- Cultivation
  - Techniques used to improve soil structure to avoid compaction

- Application of modern soil conservation techniques to reduce soil erosion:
  - mulching
  - cross line techniques on slopes
  - sowing grass or green fertilizers,
  - trees and bushes on borders of sites.
Seed & Propagation Material Management

- Quality and health of propagation material
  - Guaranty seed quality (free from injurious pests, diseases, virus etc)
  - Documented purchase of propagation material
  - Verification of purchased propagation material
  - Germination quality of seeds

- Pest and disease resistance varieties
  - Consideration of disease resistance while selecting varieties

- Chemical treatments and dressings
  - Records of treatment
Sowing and crop Management

- Sowing /planting
- Methods and timings of sowing
  - Records of sowing method, rate and date
  - Genetically modified organisms
- Application of cultivation techniques
  - to improve or maintain soil structure
  - Proper crop rotation
  - mix cropping
Fertilizer & Nutrient Management

- Nutrient requirements
  - Establish nutrient requirement
    - Application of fertilizers/manures timed
- Advice on quantity and type of fertilizers
  - Competent and qualified advisors-certificate
- Fertilizer storage
  - Inorganic fertilizer inventory-record of use
  - Store separate from PPP
  - Store in a clean, dry & covered area - reduce contamination
- Organic fertilizer
  - Risk assessment
  - Biofertilizer
  - Human sewage sludge banned
- Inorganic fertilizer
  - Purchased with evidence of nutrient content
  - Evidence of chemical content-heavy metals
Water & Irrigation Management

- Predicting irrigation requirements
  - Systematic method of prediction

- Irrigation methods
  - Water conservation
  - Water management plan
  - Record of water usage

- Quality of irrigation/fertigation water
  - Untreated sewage water banned
  - Annual risk assessment-pollution
  - Water analysis in suitable laboratory
Integrated Pest management

- GAP recommends three basic principles of IPM:
  - Prevention—how pests are prevented from entering the farm,
  - Observation and monitoring—what are observation and monitoring techniques used at the farm and
  - Intervention—how intervention activities performed without having impact of safety and environment.
  - Training or advice

- Objective must be achieved with minimum input.

"IPM is a sustainable approach to managing pests by combining biological, cultural, mechanical and chemical tools in a way that minimizes economic, health and environmental risks".
PRE -HARVEST APPLICATION OF PESTICIDES

- Educate growers on the implication of interval of pesticide use on consumers
- Scientific basis for interval between use of pesticides and harvest.
- Producer to demonstrate pre-harvest intervals observed for PPP applied to the crops,
- Maintain PPP application records and crop harvest dates from treated locations.
- Place in the field warning signs, time of application etc. to ensure compliance to registered pre-harvest intervals
Plant protection products Management

- Choice of plant protection products
- Pre-harvest interval
- Application equipment
- Disposal of surplus application mix
- Pesticide residue analysis
- PPP storage and handling
- Disposal of empty containers
- Disposal of obsolete PPP
Crop Produce Management: Packaging

- Final produce packing at point of harvest
  - Harvesting process hygiene procedure
  - Documented inspection process

- Packed produce protected from contamination
- Collection, storage, distribution point - clean hygienic
- Packing material stored to avoid contamination
- Waste of packing material removed
- Temperature, humidity control, if stored in the farm
- Water of potable quality
Crop Produce Management: Produce handling

- **Principles of hygiene**
  - Hygiene risk analysis and risk assessment
  - Documented hygiene procedures implemented

- **Personal hygiene**
  - Workers basic instruction in hygiene
  - Implementation of hygiene instruction
  - Wearing outer garments
  - Smoking, eating, chewing & drinking at designated places
  - Sign display of instructions for workers and visitors

- **Sanitary facilities**
  - Clean toilet and hand washing facilities
  - Sign clearly displayed for hand washing
  - Lockable storage for workers
Crop Produce Management:  
Produce handling  Contd

- Packing and storage areas?
  - Handling & storage area clean & maintained
  - Storage of cleaning & lubricants
  - Cleaning & Lubricants approved
  - All equipment clean and maintained
  - Rejections and waste - stored at designated place
  - Breakage safe lamps used
  - Written glass and hard plastic handling procedure
  - Packing material stored in clean place
  - Restricted animal entry
Crop Produce Management: Produce handling  Contd

- Quality control
  - Documented inspection process
  - Temp. humidity maintained & documented
  - Produce sensitive to light stored away from light
  - Stock rotation managed
  - Verifying measuring & control equipment
Good agricultural practices - Supporting Systems

- Record keeping & internal self assessment
- Workers health, safety and welfare
- Waste and pollution Management
- Environment and conservation
- Traceability
- Customer complaints
Record keeping and internal self assessment

- Availability of records
- Retention period defined
- Minimum internal self assessment or Producer group inspection per year
- Effective corrective action on nonconformities raised during internal self assessment or producer group inspection
Workers health, safety and welfare

- Risk assessment
  - Written risk assessment for safe & healthy working
- Training
  - Adequate safety & health Training & records of training
  - Training in first aid
  - Basic hygiene training
- Hazards and first aid
  - Accident and emergency procedures
  - First aids kits available
- Protective clothing/equipment
- Workers welfare
Waste and pollution Management

- Identification of waste and pollutants
  - Identify all possible waste products
  - Identify sources of pollutants

- Waste and pollution action plan
  - Documented farm waste management plan
  - Farm and premises clear from litter and waste
  - Adequate provision for waste disposal
Environment and conservation

- Impact of farming on environment & biodiversity
  - Management of wild life & conservation plan
  - Sustainable commercial activity & environmental impact of agricultural activity
  - Baseline audit to understand existing animal and plant diversity
  - Plan to enhance habitats & increase biodiversity

- Unproductive site
  - Conversion of unproductive sites to conservation areas:
    - Low lying wet areas
    - Woodlands
    - Headland strip

- Energy efficiency
  - Monitoring of energy at farms
Traceability & Recal

- Recall procedure to manage withdrawal
- Registered product traceable back to and tractable from registered farm

**Tracking**
Supports Logistic Control

- From farm to fork
- Batch or Lot Identification

**Tracing**
Retraces the journey, events & conditions by reference to relevant data and records

- From fork to farm
- Batch or Lot Recall
Customer Complaints

- Complaint handling procedure
- Complaints adequately recorded, studied and followed
- Complainant informed
REMEMBER …

While FOOD QUALITY is an option …

… FOOD SAFETY is an entitlement.
What is Standardization?

• An activity giving solution to repetitive applications to problems in the sphere of science, technology, economics etc aimed at the achievement of the optimum degree of order in a given context

• The activity consists of the processes of formulating, issuing and implementing standards

• Important benefits of standardization are improvement of the suitability of products, processes & services for their intended purpose, prevention of barriers to trade and facilitation of technological cooperation.
What is a Standard?

A technical specification/ other document available to general public, drawn up with cooperation and consensus or general approval of all interests affected by it. It is based on consolidated result of science, technology and experience and is aimed at promotion of optimum community benefits.
Why Standards?

OECD economists found that differing standards, technical regulations, combined with the cost of testing and compliance certification constitutes between 2 and 10 percent of overall production costs - not an insignificant amount!
Need for standardization

- Global upsurge in the use of GAP has created increased demand of use of scientific agriculture
- The major challenge facing growth and outreach of the traditional agriculture is their quality, safety and sustainability.
- The Food Industry is mainly dependent on the quality of the raw agricultural produce used in the manufacture of the food product.
- In this back ground standardization by QCI/ FASSI to ensure quality and safety of raw material for food products was initiated
Elements of GAP standard

- Site selection and meteorological data
- Soil conditions
- Seeds and propagation material
- Crop management for cultivation
- Harvest and post harvest management
- Identification and traceability
- Personnel and equipment
- Workers health, safety and welfare
- Record keeping and internal self-assessment
  /internal inspection
Method of evaluation

• The standard is structured to provide:
  ➢ Control criteria-requirements
  ➢ Conformance criteria-ensuring conformity,
  ➢ Level of conformance:
    ▪ Critical.
    ▪ Major
    ▪ Minor
  ➢ Structured checklist of evaluation provided
Control criteria

Critical:
• When evidence shows that the grower has not complied with requirements in its documentation and implementation and which raises doubts on the operation and practice of GAP calling for an early correction and corrective actions within the time frame.

Major:
• When evidence suggests major break down in the implementation in certain elements of the criteria calling for the early corrective actions within a time frame

Minor
• When evidence shows an isolated non-compliance to the GAP criteria and has negligible impact on the operation of the system and its results.
Certification options
For
IndiaGAP
Options for certification

Option 1 Individual certification

Individual producer applies for certification and gets certification for his/her produce.

1.1 Multisite without implementation of QMS

Individual producer or one organization owns several production locations or Production Management Units (PMU’s) that do not function as separate legal entities without QMS applies and gets certification

1.2 Multisite with implementation of QMS

Individual producer or one organization owns several production locations or Production Management Units (PMU’s) that do not function as separate legal entities with QMS applies and gets certification
Options for certification

1.3 **Basic Progressive Model**

Individual producer/farmer applies for certification and gets certification under the IndiaGAP basic requirements.

*Note-This is generic GAP progressive model for all farmers and farm produce that are not able to straight away go to more expressive model of GAP given in other options*

**Option 2 Group Certification**

A producer/farmer group applies for group certification and the producer group, as legal entity, gets certification.