

# **QUALITY CONTROL IN FEED MANUFACTURING / CURRENT GMP AND PROPER STORAGE FOR QUALITY**

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**AND**

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- 1. Feed production in Malaysia**
- 2. Quality Control in feed manufacturing**
- 3. Current GMP**
- 4. Proper Storage for Quality**



# CURRENT POSITION

## Feed Production

**Continued reliance on imported raw material for feed production and has increased substantially. Development of feed base alternatives including maize is still at experimental stage.**



**Feed manufacturing is the process of combining feed ingredients to form a mixture designed to provide a variety of nutrients in a practical form.**

- a) To improve flock uniformity**
- b) Improve birds condition**
- c) Stimulate the immune system**





**nutritional quality of feed ingredient is defined by its comparative ability to supply specific nutrients to the target animal – free of physical and chemical contaminants.**

## **Depends On :-**

- a) Content of Nutrients**
- b) Availability of Nutrients**
- c) Batch variation**
- d) Management of ingredient variation**
- e) Genetics / harvesting / processing / storage / transportation / conditions / adulterations.**

# MAIN BENEFITS FROM QUALITY CONTROL

1. Improved Profits
  2. Increase Market Share
  3. Cost savings in production
  4. Cost savings in Customer Service Department
  5. Fewer Complaints
  6. Lower compensation payments
  7. Customer satisfaction
  8. Enhanced quality image
  9. More disciplined management
  10. Good company morale
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# FEED MANAGEMENT

1. Increase nutrient density of feed – to compensate the reduced feed intake.
2. Feed Ca separately to improve shell quality and egg production
3. Feed low protein diets as increase in protein levels results in increase in heat production
4. Provide feed during cooler parts of the day
5. Increase dietary fat – if economical
6. Increase available phosphorous content
7. Supplement antifungal compound
8. Supply synthetic amino acids – when protein is lowered
9. Vit C at 44 mg/kg of diet or add Sodi-bi-carb-0.03% to improve shell quality
10. Pelleted feeds – beneficial – increases the M.E. content and increases feed intake

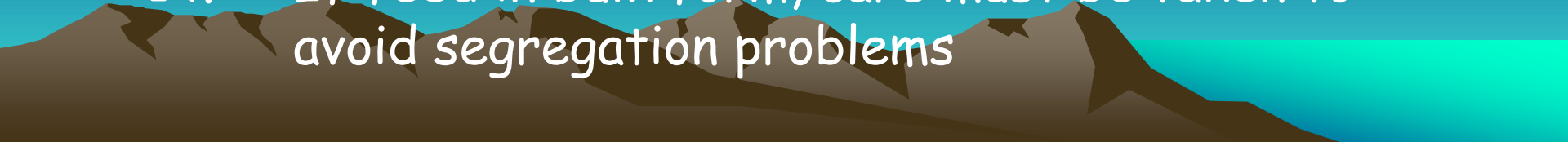
# FEED

Feed must satisfy :-

1. Be palatable
2. Must have good FCR in Broilers
3. Good egg production in layers
4. Good egg production / hatchability / fertility in Breeders
5. Balanced with CP / AA / Energy / Vitamins / Minerals needed at all stages of growth
6. Free from Toxins (Aflatoxin / Anti Nutritional factors)



## Feed (cont'd)

7. Free from harmful bacteria
  8. Free from bad odour / rancidity
  9. Particle size should be suited to birds age group
  10. Feed should be able to store for long - preservation
  11. Anticoccidial drugs of right dosage - Broilers / Pullets
  12. Should not be too mashy or dusty
  13. Less variation in quality
  14. If feed in bulk form, care must be taken to avoid segregation problems
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# FEED INGREDIENTS AND THEIR ANALYSIS

Ingredients	Protein	Moisture	Fat	Fibre	Calcium	Phos.	Sodium	Afla - toxin	Urease Activity	Bacteria	Micro - scopic	Frequency
Maize	✓	✓						✓				W
Cereal Grain	✓	✓										E
Soyabean Meal	✓	✓		✓					✓			E
Corn gluten Meal	✓											E
Fish Meal	✓				✓	✓	✓			✓	✓	E
Meat and Bone Meal	✓	✓			✓	✓	✓			✓	✓	E
Cotton Seed Meal	✓											E
Sunflower Seed	✓			✓								E
Flour Meal Products	✓	✓	✓	✓								E

W → Weekly

E → Every Load

# ELEMENT IN THE MANAGEMENT OF QUALITY ASSURANCE

1. QUALITY POLICY
2. SPECIFICATION SYSTEM
3. SETTING STANDARDS
4. ACCEPT / REJECT DECISIONS
5. SYSTEM IMPROVEMENT
6. ADMINISTRATION / MOTIVATION

# EVALUATION OF FEED QUALITY

1. Variations in incoming feed ingredients
2. Variations in feed mixing efficiency
3. Variations in efficiency of delivery of mixed feed   ⇒  Mixing point   ⇒  Animals
4. Variations in analytical procedures

# Processing & Production Quality

- a. Size of grains
- b. Size of pellets
- c. Colour of pellets
- d. Smell of feed
- e. Mixing of ingredients
- f. Bagging – stiching – weight
- g. Cards – specifications
- h. Special instructions
- i. Any contaminations – insects - weevils

# QUALITY CONTROL PROCEDURES

## 1. Visual Inspection – On Arrival For :-

- a) Wetness
- b) Odour
- c) Moldiness
- d) Infestation  
- with Insects / Rodents / Excreta
- f) Signs of hot spots

## 2. Sampling :-

at different intervals when discharge

## 3. Physical analysis:-

Damages, Moisture, Size, shape

## 4. Intrinsic Quality :-

Crude Protein, Fat, Ash, Fiber

## 5. Confirmation of Quality

# FEEDSTUFFS QUALITY

Three Criteria involved :-

1. Physical Quality	Size, shape, Damage, Density, Moisture
2. Sanitary Quality	Foreign Material, Dust, Insects, Rodent excreta, Fungal infection
3. Intrinsic Quality	Non Visible attributes such as Protein, Oil, Ash, Fiber etc

# QUALITY CONTROL

## A. Raw Materials

### External :-

1. Signs of wetness / moldy / caking insect infection / smell / colour.
2. Sampling – Microscopical – adulteration
3. Check for Crude Protein / Fat / Ash / Toxins etc.
4. Reject / Accept



## B. Finished Feed

1. Sampling every batch of production
2. Check for granulation / mixing properties / pellet size / colour / smell / etc.
3. Proximate analysis for :-

*Protein*

*Moisture*

*Fibre*

*Fat*

*Ash*

*Ca*

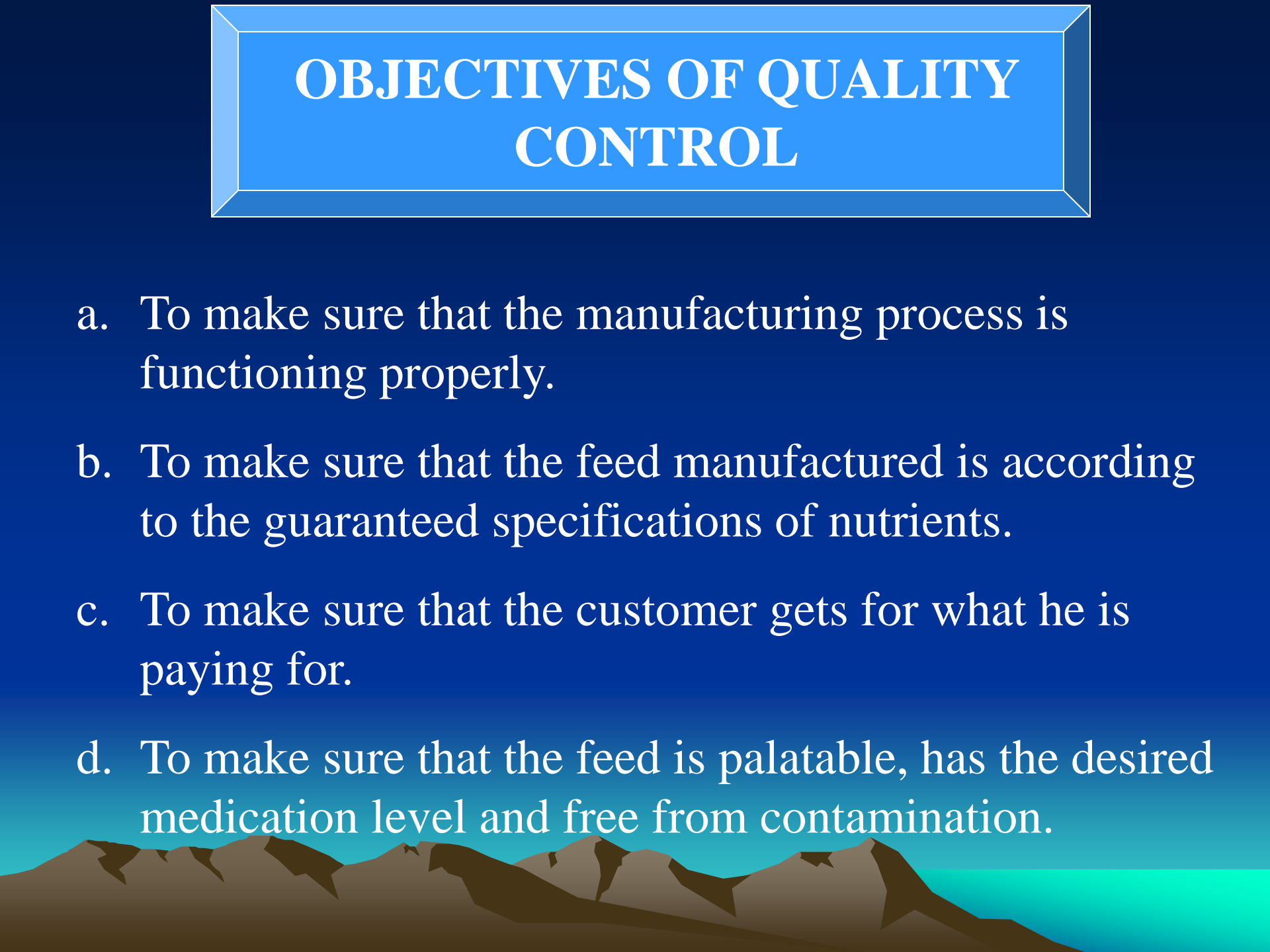
*P*

*Salt*

*Toxin*


4. Analysis for Amino Acids.
5. Assay for Vitamins / Drugs.
6. Check against standards.

# OBJECTIVES OF QUALITY CONTROL

- a. To make sure that the manufacturing process is functioning properly.
  - b. To make sure that the feed manufactured is according to the guaranteed specifications of nutrients.
  - c. To make sure that the customer gets for what he is paying for.
  - d. To make sure that the feed is palatable, has the desired medication level and free from contamination.
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# CURRENT GOOD MANAGEMENT PRACTICE (CGMP)

## Objectives:

- To adhere to a current general standard of manufacturing
  - To ensure that the products meet the intended specifications
  - To maintain integrity of the product manufactured
  - To maintain integrity of feed manufacturer
  - To prevent non-permissible residue levels
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HANDLING OF FEED ADDITIVES –  
RECEIPT FORM – REQUEST FORM

COMPLAINT FILES FOR MEDICATED  
FEEDS

CUSTOMER COMPLAINT FORM

WITHDRAWAL FEED FORM


FEED LABEL



# STORAGE OF FEEDSTUFFS

- To control the condition of storage
- To maintain original quality of the products
- To minimize deteriorative changes

## Factors affecting storage of feedstuffs

- Moisture
  - Temperature
  - Oxygen supply
  - Conditio
  - Engineering aspects
  - Bulk storage
  - Physica barriers
  - Rodents
  - Micro-organisms
  - Birds
  - Human
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# Procedures To Control Pests

Storage must be free from debris – maintain cleanliness

Remove and destroy all sweepings and spillage

Before intake of commodities – examine for excessive moisture content – insect infestation

Moisture high – drying

Any form of infestation – reject – fumigate

Do not store infested commodities with non infested commodities



Store bagged commodities instack for ease of inspection

Label all stacks clearly

Name of commodity

Quantity

Date received into storage

Original

Any control measure done

Inspect all commodities in storage regularly – for moisture accumulation and deterioration

Avoid long term storage

Train a warehouse staff in hygiene management in the warehouse – prime responsibility

# CONTROL OF RODENTS

General hygiene

Proofing of premises

Trapping

Poisoning

Treatment with poison

Treatment with anticoagulants

Follow up treatment

Rodent tracking dusts

Repellents

Fumigation

Keeping records





# STOCKING GRAINS / FEEDSTUFF / MANAGEMENT

Be prepared

First in first out

Routine silo maintenance

Clean ingredients before storage

Dry before storage

Watch for hot spot

Ventilation of silo



# BAGGED GRAIN STORAGE

Monitoring – at receipt and periodic inspection – in warehouse

Housekeeping – proper sizing, spacing, stacking, labelling, date of receipt

Rodent and bird control – more important in bagged grain warehouses




# MAINTAINING GRAIN QUALITY DURING STORAGE

*Component of QMP – Technical - Managerial*

## **(a) Technical component**

1. Inspection – grain quality & facility
2. Sanitation – cleanliness & orderliness
3. Grain conditioning – cleaning – drying – cooling
4. Chemical treatment – surface sprays, space sprays, protectants, fumigants & rodenticides

## **(b) Managerial component**

1. Delegation of responsibility – supervision, inspection etc
  2. Documentation – inspection forms (grain / facility), chemical stock records, chemical use records
  3. Supervision – scheduling – follow-up etc
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### **Practical infestation control of pests in feedstuffs during storage is an integration of**

1. Adequate drying of the commodity to be stored
2. Use of suitable storage facilities
3. Improvement of suitable storage facilities
4. Improvement of storage facilities to an acceptance standard
5. Use of aeration / physical methods practicable
6. Good warehouse keeping
7. Regular inspection for infestation and deterioration
8. Use of residual insecticides
9. Use of commodity protectants
10. Fumigation if infestation are established

A large herd of brown and black cows is grazing in a lush green field. The field is filled with tall grass and several palm trees are scattered throughout. A dirt path winds through the field. In the center of the image, there is a yellow banner with the text "THANK YOU" in blue capital letters.

**THANK YOU**