"Quête pour l'excellence"
"Yumi eim blo kasem exselens"

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Central School

Home School Package

Year :12

Ministry of Education and Training/Ministère de l'Education et de la Formation
Republic of Vanuatu/République du Vanuatu

LESSON Plan

Teacher 	Name : Eunice Kalsuak Subject : AGRICULTURE
 Week/ Lesson	**Wk - 6** Lesson number : 1
	Strand : **PLANT PRODUCTION** Sub-Strand 3.1 : Seed Production
 Learning outcomes	1. *Understand the process of seed production* *i) Replanting/ seed harvesting/seed cleaning* *ii) Criteria used for seed production* iii) *Techniques used for seed cleaning, drying, treatments etc…*
 Introduction	Seed production is production of high quality seed fundamental to modern agriculture so that plant may produce many seeds and seed contain embryo later grow into new plant the important of the seed production is it help to preserve some old species of food grains so that seed can use for future generations so that seed will exist .seed quality is very important .Plants make seeds that can grow into new plants, but if the seeds just fall to the ground under the parent plant,they will not get sunlight so preserve seed for the seed production

	Seed production is very important in the agriculture industry because it involves with our life and it is the beginning of plants growing and plants give oxygen for us to breathe.
 Learners notes	Important terms : - Replanting/ seed harvesting/ seed cleaning/ viability/ dormancy The process of seed production involves several important steps : 1. *Seed harvesting- harvest seeds from mature healthy pods,* 2. *Collecting seeds – seeds are selected from the middle of pod* 3. *Seed cleaning- remove any foreign matter* 4. *Seed treatnent- seed treated with fungicides to prevent fungus* 5. *Storing seeds- store in cool dry place away from other strong smelling items* Then ; 6. *Checking for seed viability* 7. *Breaking seed dormancy* 8. *Planting* Proper handling of seeds from harvesting to seed storing is vital to maintain the overall quality of seeds.
 Visual aids	 4. Seed Production Techniques for Vegetables.pdf
 Exercises	1. Define seed harvesting 2. List the criteria used for seed production 3. Discuss the whole process of seed production from seed harvesting for the purpose of replanting
 Assignment	
 Assessment	Assessed on lesson 5, Week 1 Term 2
 References	➢ https://www.youtube.com/watch?v=xenOB7ZKQ0k

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 Week	**Wk - 6** Lesson number : **2/3/4**
	Strand : **PLANT PRODUCTION** Sub-Strand 3.2 : Crop Management
 Learning outcomes	1. *What is crop management* 2. *Identify crop management techniques of a specific plant* 3. *Develop a timeline from planting to harvesting, indicating various husbandary tasks* 4. *Identify crop management at: soil preparation – crop establishment - growth* 5. *Discuss the following crop management steps:* - *Seed treatment* - *Seeding* - *Lime application* - *Fertilizer reccomendations* - *Use of manure* - *Irrigation management* - *harvest*
 Introduction	Crop management the group of agricultural practices used to improve the growth, development, and yield of agricultural crops. The combination, timing, and sequence of the practices used depend on the biological characteristics of the crops (whether winter or spring crops), the harvested form (grains, green feed, and so on), the sowing methods (row, nest, or wide-row), the age of the plants, and the soil, climatic, and weather conditions. The principal crop-managing practices vary according to the class of crops. Winter crops require autumn topdressing with mineral fertilizers to improve winterhardiness of the plants, snow retention, spring topdressing, and harrowing. Solid-planted spring crops call for harrowing and topdressing; in arid regions they additionally need soil packing after planting. For row crops in preemergence, the crust of the soil must be broken up with harrows or rotary hoes; interrow tillage, blocking, thinning of sprouts, and topdressing are also indicated in the postemergence period. Perennial grasses require harrowing in the spring, harrowing after mowing, and topdressing. Special crop-managing practices for individual crops include hilling, suckering, pinching, and chopping. Other field practices include crop irrigation and mechanical, biological, and chemical methods of combating weeds, pests, and diseases.

The Japanese say: "*if a flower is to be beautiful it must be cultivated*"

Learners notes

Management practices/ husbandary tasks :

- watering
- tilling
- ploughing
- prunning
- thining
- weeding
- seed treatment
- seeding
- lime and fertliser application

Crop management at soil preparation

- tilling/ liming/ weeding/ fertiliser application/ liming

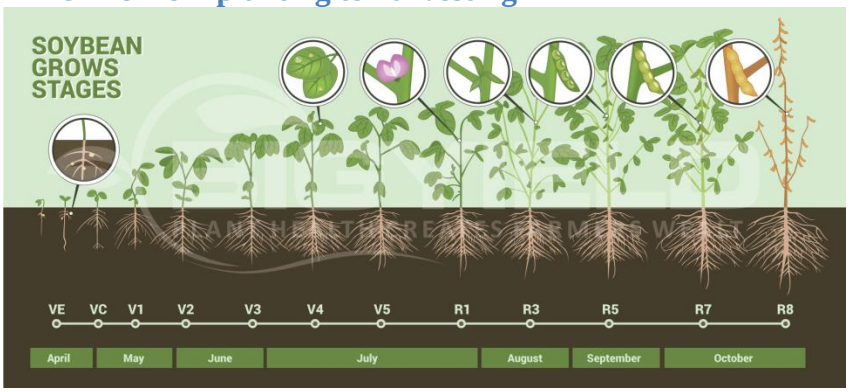
crop managemtn at crop establishment

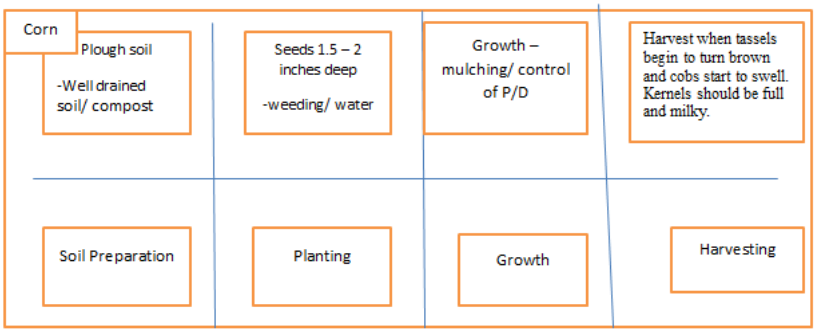
- fertiliser application/ thining, weeding

crop management at growth

- growth hormones/ prunning

Timelime from planting to harvesting





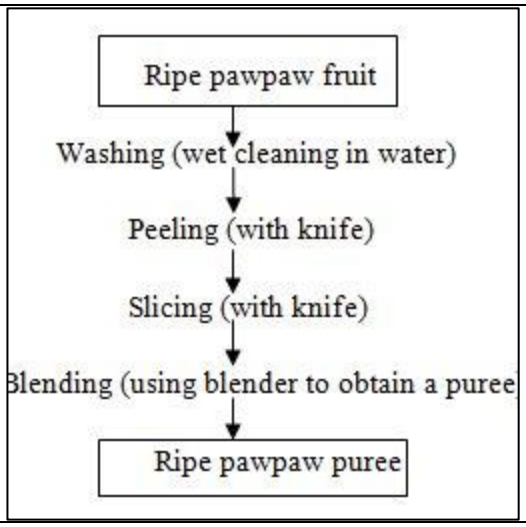
Ecological factors affecting growth and development

1. **Climatic factors** – rainfall, humidity, wind, atmoshperic gas (oxygen, cabondioxide, nitrogen), temperature, light, etc…
2. **Physiographic factors** –altitide, steepness of slope, direction of

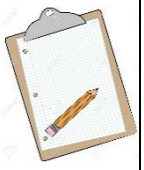
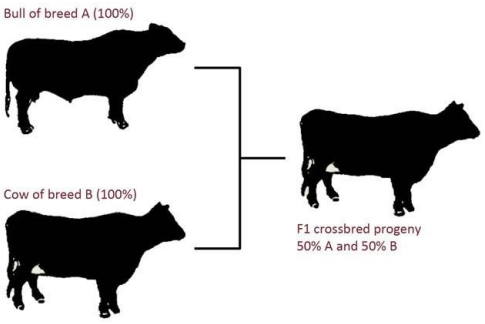
	slope :… Edaphic factors- type of vegetation 3. **Biotic factors** (pollination, dispersal, parasites, grazing, decay of organic matter, nirtogen fixation, plant diseases etc… **Enviromental factors affecting growth and development crops** - Climate - rainfall/ water - temperature - carbondioxide - oxygen etc…
 Exercises	1. Explain how the practices such as : a) Prunning b) Growth of hormones are used to manipulate growth and development of Tomatoe
 Assessment	***IA Task 1- Crop Management (12%) – Lesson 3 & 4***
 References	- *https://www.biologydiscussion.com/plants/growth-of-plants/ecological-factors-that-affect-the-growth-of-plants-with-diagrams/15288*

 Week / Lesson	**Wk - 6** Lesson number : 5
	Strand : **PLANT PRODUCTION** Sub-Strand 3.3 : Value Adding products
 Learning outcomes	1. *Understand what is post-handling and its importance* 2. *Understand what is Value-added product and its importance* 3. *What are the post-handling steps* 4. *Value added processes of different crops* 5. *Value added process for different market opportunities*
 Introduction	**Value added** refers to "extra" feature(s) of an item of interest (product, service, person etc.) that go beyond the standard expectations and provide something "more", even if the cost is higher to the client or purchaser. Value-added features give competitive edges to companies with otherwise more expensive products. This can be raw agricultural products that have been modified or enhanced to have a higher market value and/or a longer shelf life. Some examples include fruits made into pies or jams, meats made into jerky, and tomatoes and peppers made into salsa.
 Catch phrase	Value added tax (VAT) is a tax on sales. It works by being charged on the sale price of new goods and services, whether purchased by intermediate or final consumers. However, intermediate consumers may reclaim VAT paid on their inputs, so that the net VAT is based on the value added by producing this goods or service. This should not be confused with the original term 'Value Added' afforementioned
	**Post-harvest handling (crops)** -Agricultural products (crops) are perishable therefore proper handling of is important as it will determine the end product quality - Value adding is important as it helps add more value to agriculture products therefore increasing the cost for the farmer Post-harvest handling steps 1. Recieveing and washing 2. Sorting and selection (presizing)

Learners notes	3. Grading/ Sizing 4. Waxing 5. Packaging 6. Cooling *Special treatments - ethylene 7. Storage and shipping Value added process for tomato paste First Washing Second Washing Screening Pulping Pre-heating Refining Holding Evaporation Holding Sterilizing/cooling Packaging Storage Chocolate Bar  Canned coconut milk  Ripe pawpaw puree

	
Exercises	1. Describe post harvest handling steps for tomato 2. Describe the processes in value add to make tomato paste 3. Discuss the importance of value added in cocoa pods.
References	➢ https://en.wikipedia.org/wiki/Value_added ➢

 Week / Lesson	**Wk - 7** Lesson number : 1/2
	Strand : **ANIMAL PRODUCTION** Sub-Strand 3.4 : Production of livestock offspring
 Learning outcomes	1. *Define what is livestock breeding* 2. *Identify the different breeding systems* 3. *Identify the different breeding methods* 4. *List down the steps of a breeding method* 5. *Be able to state the importance of breeding selection* 6. *Understand the suitable breeding methods used in small and large farms* 7. *List the different rearing systems in commercial farms*
 Introduction	The livestock sector globally is highly dynamic. In developing countries, it is evolving in response to rapidly increasing demand for livestock products. In developed countries, demand for livestock products is stagnating, while many production systems are increasing their efficiency and environmental sustainability. Historical changes in the demand for livestock products have been largely driven by human population growth, income growth and urbanization and the production response in different livestock systems has been associated with science and technology as well as increases in animal numbers. There has been rapid global expansion of production and consumption of animal products which is expected to continue to grow. While traditional livestock systems contribute to the livelihoods of 70% of the world's rural poor, increasingly the emerging large-scale operations with sophisticated technology and international trade cater for the rapidly growing markets for meat, milk and eggs. Livestock production currently accounts for one third of the global crop land which is used to produce feed for animals and competes for land, water, energy and labour, and is being challenged by the vagaries of climate change and socio-economic pressures.

 Catch phrase	Animal products not only represent a source of high-quality food, but, equally important, they are a source of income for many small farmers in developing countries, for purchasing food as well as agricultural inputs, such as seed, fertilizers and pesticides.(FAO)
 Learners notes	Livestock breeding - the mating and production of offspring by animals. Breeding systems – Natural breeding/ Selective breeding/ Paddock or pen mating Breeding methods – Cross breeding/ inbreeding/ Linebreeding can be done using paddock mating or artificial insemination Cross breeding process   Two breed cross occurs where breed A and breed B are two purebreeds and the F1 progeny (AB) contains equal parts of the two breeds. Selective breeding is a direct way to determine if a specific trait can evolve in response to selection. A single-generation method of breeding is not as accurate or direct. The process is also more practical and easier to understand than sibling analysis. Selective breeding is better for traits such as physiology and behavior that are hard to measure because it requires fewer individuals to test than single-generation testing. However, there are disadvantages to this process. Because a single experiment done in selective breeding cannot be used to assess an entire group of genetic variances, individual experiments must be done for every individual trait. Also, because of the necessity of selective breeding experiments to require maintaining the organisms tested in a lab or greenhouse, it is impractical to use this breeding method on many organisms. Controlled mating instances are difficult to carry out in this case and this is a necessary component of selective breeding. **Pig Mating Systems** A breed is defined as a group of animals sharing a common ancestry that have distinguishable, fixed characteristics who when mated with a member of the same breed will produce

offspring with the same characteristics (Damron, 2013). Breeding or mating systems are the approach taken to pairing individuals for breeding in order to incorporate or maintain desired traits. There are two main type of mating strategies— positive assortive mating and negative assortive mating. In positive assortive mating we breed like to like in order to narrow the genetic pool so that the desired traits express themselves more frequently. In negative assortive mating we breed unlike to unlike in order to correct a deficiency or improve expression of a specific trait. Through these mating strategies five basic breeding systems arise (NSIF 2003):

1. Inbreeding—breeding individuals who are very closely related within the breed.
2. Linebreeding—a form of inbreeding which attempts to concentrate the inheritance of one ancestor or line of ancestors within a herd.
3. Outcrossing—breeding individuals that are less closely related within the breed.
4. Random mating within a breed—mating individuals within a breed without considering their pedigree.
5. Crossbreeding—a planned approach to mating pigs of very different genetic backgrounds which typically results in heterosis. Heterosis is the improved performance of offspring compared to the average of their parents (NSIF, 2003).

Inbreeding and linebreeding encourage uniformity within the genetic pool and can be used to develop new breeds of pigs. However, as uniformity within the genetic pool increases, the potential for expressing undesirable genes also increases. This in turn can lead to a decline in performance commonly known as inbreeding depression (Buchanan, 2006). Outcrossing and random mating within a breed is used to maintain genetic diversity within a breed of pigs. While breeding like to like can support uniform transmission of superior traits to all offspring, usually some level of inbreeding depression occurs whenever breeds or lines within breeds are kept pure. Thus, crossbreeding is by far the most common form of mating strategy used in the U.S. swine industry because of the advantages of heterosis.

Heterosis

Heterosis or hybrid vigor is the improved performance of offspring compared to the average of their parents (NSIF, 2003). Heterosis occurs when unrelated lines or breeds of pigs are bred to each other and can be thought of as the recovery of performance depressed by inbreeding in the parent populations. This advantage typically occurs via expanded genetic diversity. Table 1 and 2 summarize heritability and

heterosis estimates for important swine production parameters. Heterosis tends to be largest for traits with low heritability such as prewean mortality and 21-day litter weight. For traits with high heritability—for example average daily gain—heterosis tends to be less.

For most farms not raising animals primarily for breeding or show stock, a crossbreeding system is used because it provides significant improvements in traits relating to reproductive performance and mothering ability. Table two presents estimates of heterosis advantage for selected production traits under different breeding scenarios. The values presented in the table are percentages. For example, if a purebred sow was bred to a boar of the same breed and she gave birth to 10 live pigs, that same sow would be expected to give birth to 0.5% more pigs for a litter size of 10.05 pigs if she was bred to a boar of a different breed. Alternatively, if a crossbred sow was mated to a boar of a completely different breed we would expect an 8% advantage over the purebred scenario or 10.8 live born pigs.

Crossbreeding Strategies

Because of hybrid vigor, crossbreeding systems are used on almost all U.S. pig farms. There are several different approaches to crossbreeding that producers may use, each with different advantages and challenges.

Terminal System

One of the most common crossbreeding strategies in the U.S. swine industry is the terminal system. In this system crossbred females are bred to a terminal sire (either purebred or crossbred) and all the offspring are sold. This is a simple system to manage, will create genetically uniform groups of pigs from year to year, and captures 100% of available hybrid vigor in the females and all offspring. The drawback to this system for small and beginning farmers is that you will have to purchase all replacement gilts and boars. Regularly purchasing replacement gilts may be cost prohibitive and increases the potential for introducing novel pathogens into your swine herd.

Rotational Systems

Many small pig farms use a rotational system. In this system boars of selected breeds are rotated into the herd with each generation of replacement gilts. Replacement, cross-bred gilts are raised on-farm which helps support herd biosecurity. Table three summarizes various crossbreeding strategies in terms of complexity and percent heterosis maintained in the offspring. As the number of breeds included in the rotation increases, the

amount of heterosis maintained also increases. A rotational system does not allow maximization of hybrid vigor but is a common system due to the potential for lower cost when compared with purchasing replacement animals. If natural service is used a large number of boars (at least one of each breed used in the crosses) may need to be kept on the farm in order to maintain the planned genetic program. Table four provides an example of a three-breed rotation. Historically the cost of purchasing and maintaining multiple boars and the level of record keeping necessary to track each generation of offspring led to most farms settling on a three breed rotation (Ahlschwede, 1988). Using artificial insemination allows a wider variety of boars to be accessed without having to maintain those individuals on site. Today with the availability of purchased semen and personal computing technology some of the barriers to more complex breed rotations have been reduced.

Combination System

There is also the option of utilizing a combination of the two systems. A small subset of the herd is kept in a rotational system that is used primarily to produce replacement gilts for the entire farm. Some of the replacement gilts are kept within the rotational system, but most are bred to a terminal sire with 100% of the offspring being marketed. This combination allows you to raise your own replacement gilts and maximize hybrid vigor in most of the pigs raised for market. For producers managing a small group of sows and gilts, this system can become cumbersome and difficult to manage well. Detailed recordkeeping and management are needed to insure the success of this system.

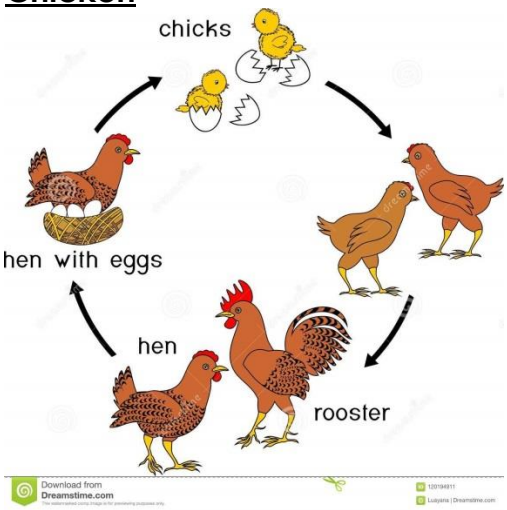
Summary

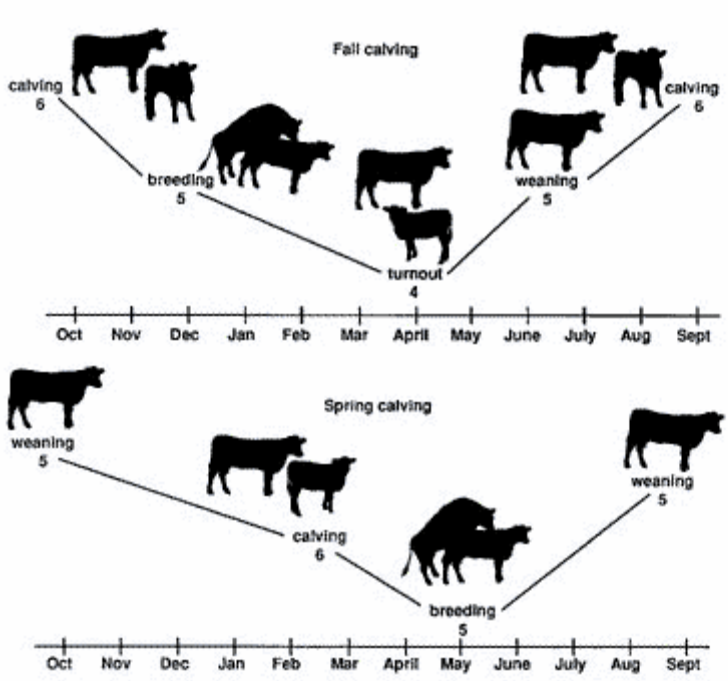
Pig breeding systems influence the genetic background of your pigs and thus play an important role in performance and meat quality. Because of the advantages of heterosis—particularly for traits related to mothering ability—crossbreeding systems are most commonly used in the U.S. A rotational system of crossbreeding is generally the most practical option for small and beginning farmers, especially if artificial insemination is used.

Farming systems – Extensive/ Semi intensive/ Intensive (battery & Deep litter)

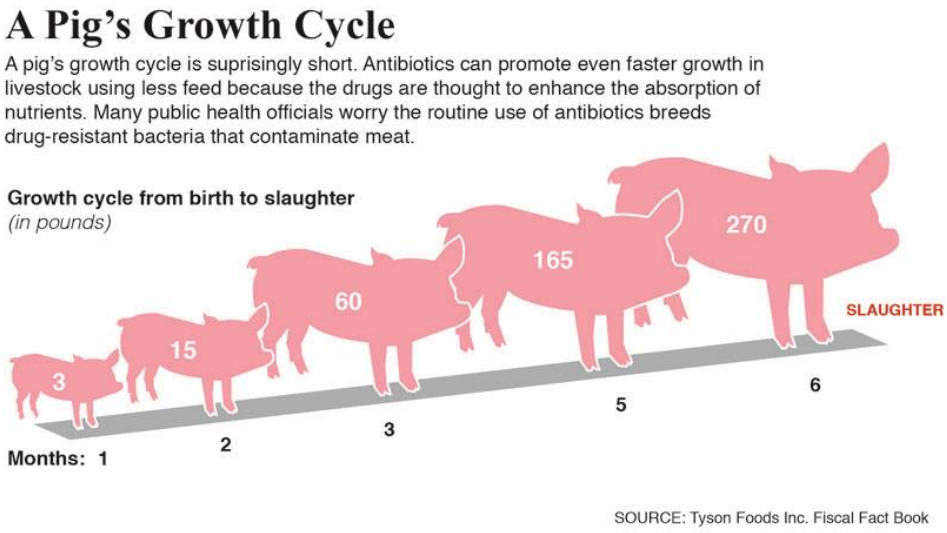
 Exercises	1. Describe the process of artificial insemination in livestock breeding 2. Discuss the selection of breeding animals with consideration of the passing and the inheritance of productive traits with examples 3. Describe a suitable breeding system practiced in small scale farms
 References	➢ http://www.fao.org/AG/againfo/themes/en/animal_production.html ➢ http://www.fao.org/3/v8180t/v8180t07.htm ➢ https://en.wikipedia.org/wiki/Selective_breeding ➢ http://porkgateway.org/resource/pig-breeding-systems-for-small-and-beginning-pig-farmers/

 Week / Lesson	**Wk - 7** Lesson number : 3/4
	Strand : **ANIMAL PRODUCTION** Sub-Strand 3.5 : Livestock Management
 Learning outcomes	1. *Define body conformation* 2. *Growth and development of chicken, cattle, pig and Goat* 3. *Factors that influence growth and development of livestock animals* 4. *Management practices that affect growth and development of livestock* 5. *Physical/ Environmental factors that affect growth and development of livestock* 6. *Nutritional requirement of livestock animals* 7. *What is food conversion efficiency* 8. *Importance of hygiene on growth and development*

 Introduction	Livestock is commonly defined as domesticated animals raised in an agricultural setting to produce labor and commodities such as meat, eggs, milk, fur, leather, and wool. The term is sometimes used to refer solely to those that are bred for consumption, while other times it refers only to farmed ruminants, such as cattle and goats.
	Animals improve the health of the soil food web in three ways: they **graze**, they **trample**, and they **digest**.
 Learners notes	**<u>Body conformation</u>** -physical characteristics (shape or structure) of an animal, refers to: Body size **<u>Growth and development of chicken, cattle, pig and Goat</u>** **<u>Chicken</u>**  Cattle - dairy



Pig

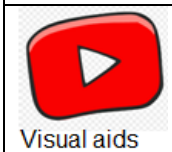


<u>Factors that influence growth and development of livestock animals</u>

a) Environmental factors – climate/ humidity/ rainfall/temperature
b) Physical factors – management practices/ injury
c) Nutrition
d) Diseases (health)
e) Genetics

<u>Management practices</u> that affect growth and development of livestock

- Castration
- Identification
- Weaning
- Debeaking

	- Pairing - Drenching - Clipping eye teeth - De-horning etc… **<u>Nutritional requirement of livestock animals</u>** The nutritional requirements of most animals are relatively extensive and complex compared with the simple requirements of plants. The nutrients used by animals include carbohydrates, lipids, nucleic acids, proteins, minerals, and vitamins. **<u>What is food conversion efficiency</u>** The efficiency with which a food (e.g., meal, grain or feed) is converted into animal protein. Or The feed conversion ratio (FCR) is the amount of feed ingested by an animal which can be converted into one kilo of live weight. **<u>Importance of hygiene</u>** Animal diseases devastate some of the world's poorest communities and damage international trade. Preventing and controlling diseases grows economies, bolsters local communities, and improves the health of vulnerable populations. Securing a safe and nutritious food supply depends on healthy, productive animals Good hygiene is important for physical, social and psychological reasons. Poor hygiene leads to the spread of disease and infections
 Visual aids	➢ https://www.youtube.com/watch?v=jscHbXWSiqA ➢ https://www.youtube.com/watch?v=Bc1UJZTcHkc ➢ https://www.youtube.com/watch?v=yXLR3-1mZwE ➢
 Exercises	1. Describe how a physical factor affect growth and development of livestock 2. Describe how breeding improve growth and development of livestock 3. Discuss the relationship between nutritional value of feedstock and growth and development of livestock and recommend the balanced feed ration for livestock farmers in the locality with examples 4. Compare food conversion efficiency of two different feed on selected livestock 5. Describe the importance of hygiene on growth and development of selected livestock
	-Sub strand 3.4 and 3.5 – Assessed on Week 8 Lesson 1 Week 7 Lesson 5 – Complete exercises on substrand 3.4 and 3.5 and do private

Assessment	study
 References	➢ http://www.regenerateland.com/why-livestock-are-necessary-for-food-production-to-be-sustainable/ ➢ https://petersonfarmblog.wordpress.com/2014/12/01/why-do-we-raise-animals-for-food-and-products/ ➢ https://www.cliffsnotes.com/study-guides/biology/biology/nutrition-and-digestion/nutrition-in-animals ➢

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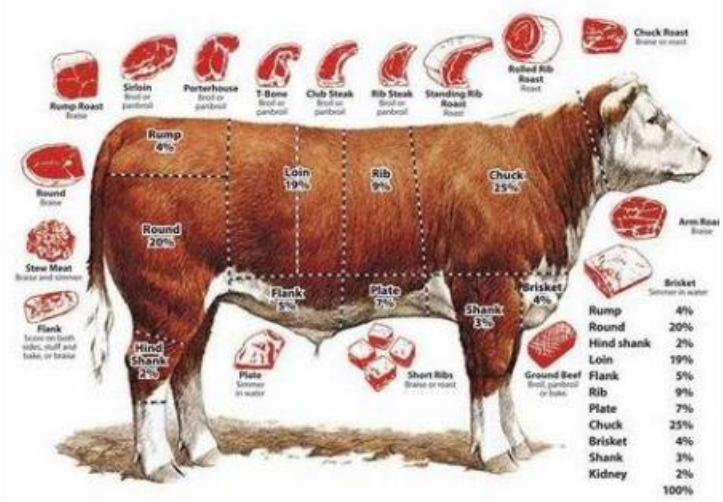
 Week / Lesson	**Wk - 8** Lesson number : 1
	Strand : **ANIMAL PRODUCTION** Sub-Strand 3.4 : Production of livestock offspring Sub-strand 3.5 : Livestock Management
 Learning outcomes	1. *Define what is livestock breeding* 2. *Identify the different breeding systems* 3. *Identify the different breeding methods* 4. *List down the steps of a breeding method* 5. *Be able to state the importance of breeding selection* 6. *Understand the suitable breeding methods used in small and large farms* 7. *List the different rearing systems in commercial farms* 8. *Physical/ Environmental factors that affect growth and development of livestock* 9. *Nutritional requirement of livestock animals*

	10. *What is food conversion efficiency* *11. Importance of hygiene on growth and development*
 Assessment	*Duration of 1 hour* *Answer questions on Assessment paper*
 References	➢ http://www.fao.org/AG/againfo/themes/en/animal_production.html ➢ http://www.fao.org/3/v8180t/v8180t07.htm ➢ https://en.wikipedia.org/wiki/Selective_breeding ➢ http://porkgateway.org/resource/pig-breeding-systems-for-small-and-beginning-pig-farmers/ ➢

 Week / Lesson	**Wk - 8** Lesson number : 2/3
	Strand : **ANIMAL PRODUCTION** Sub-Strand 3.6 : Value adding to end products
 Learning outcomes	1. *Identify chronological steps in post-slaughter handling* 2. *Describe each post-slaughter handling process* 3. *Explain the importance of post-slaughter handling process* 4. *Discuss the processing techniques on meat from small and large livestock*

 Introduction	Livestock is commonly defined as domesticated animals raised in an agricultural setting to produce labor and commodities such as meat, eggs, milk, fur, leather, and wool. The term is sometimes used to refer solely to those that are bred for consumption, while other times it refers only to farmed ruminants, such as cattle and goats.
	*Do you know that the delicious, nutritious beef meat on the table is the result of various physical and chemical treatment methods?*
 Learners notes	**CATTLE POST-SLAUGHTER HANDLING PROCESS** Beef Is the culinary name for meat from bovines, ecpcially cattle. Beef is an excellent source of protein an dvitmain B12 and a vvery good cource of zinc and selenium. In addition, beef is a good source of riboflavin, vitamin B6, niacin, iron and phosphourous.  The beef meat processing stages 1. Before slaughter – a animal is examined to make sure it is fit for human consumption – healthy 2. Slaughter – stunning – and animal throat slits – 3. animal is hanged by its hind feet to bleed 4. skinning 5. **EVISCERATION**- internal organs are removed and carcass is split to half then carcass is sprayed with water to rinse away the blood and bone chips 6. Aging (beef is tagged and hung in large cooler for a week to age inorder to improve the flavour and make meat tender (enzyme breaks down the meat) 7. Beef cutting – (handled in a variety of ways, such as smoking, salting, pickling or ground

Beef meat processing stages – treatments

- Chopping
- Seasoning
- Mixing
- Tumbling
- Stuffing into casings
- Smoking ….

All is done to enable consumers to enjoy tender tasty beef, beef steak, beef sausage and other beef products.

Importance of post-slaughter handling processes

Abbattoirs are regulated by laws to ensure good standards of hygiene to prevent the spread of diseases and to minimize needless animal cruelty. The methods of slaughtering and handling of carcasses play an important role in product quality and shelf-life of meat products.

CHICKEN POST-SLAUGHTER HANDLING PROCESS

STEP 1: ARRIVAL AT THE PROCESSING PLANT

Just as careful attention is paid to the welfare of chickens while being raised on the farm, the same is true for their short trip to the processing plant. This trip is typically less than 60 miles away, so the birds don't travel long distances.

STEP 2: STUNNING

Once birds arrive at the processing plant, workers trained in humane handling carefully suspend them by their feet on a moving line. In a matter of seconds, the chickens become calm due to "rub bars," which provide a comforting sensation on the chicken's chest. This, combined with low lighting, is used to keep birds calm.

In modern poultry processing plants, every attempt is made so that chickens are processed quickly and painlessly. First, they are rendered unconscious and unaware of pain, prior to slaughter.

There is one primary method of stunning broilers prior to slaughter in the U.S. and that is "electrical stunning." It is the predominant method of rendering birds unconscious. There are a limited number of facilities in the U.S. that

	utilize controlled atmosphere stunning (CAS) systems for broilers. These systems utilize carbon dioxide to render birds insensible. Another CAS system utilizes a reduction of atmospheric pressure to stun birds. When operating properly, both systems are equally humane as both require monitoring, proper adjustment and management to ensure they are meeting humane care standards. **STEP 3: SLAUGHTER** Technology makes slaughter extremely quick to minimize discomfort. While making a single cut to the throat of an unconscious bird is largely effective, should the blade miss for any reason, trained workers stand by to quickly euthanize remaining birds. Proper maintenance of equipment and this back-up "human" system is key to a fast and humane slaughter process. **STEP 4: "EVISCERATION"** After slaughter, birds enter a process where their feathers are removed. This is necessary in order to prepare the bird for processing. This begins by putting the chicken through a bath of hot water, which is designed to help loosen feathers. Feather removal is performed by a machine called a "picker," which includes hundreds of little rubber "fingers" that rotate around to remove the feathers. After feathers are removed, the birds are sent to an "eviscerating" line which removes internal organs and feet, also known as "paws." Every single part of the bird is used —for example, chicken feet are considered a delicacy in Asian countries, and feathers are rendered and used as protein in some animal feed. **STEP 5: CLEANING AND CHILLING** After the organs are removed, the carcasses are then cleaned before being inspected. As an added measure to further reduce bacteria, water and an organic rinse may be applied to each bird. Any substance used for this purpose is closely regulated by both the USDA and Food and Drug Administration (FDA) and has been approved for use in food production. Research has confirmed that the use of these rinses do not pose human health concerns; rather their use does improve the wholesomeness of finished products. Before this process, which includes chilling the birds to a lower temperature to keep fresh and clean, company quality assurance and food safety personnel inspect them once again for quality, food safety and wholesomeness. They follow strict regulatory and company standards

	for each bird entering the chilling process. **STEP 6: INSPECTION BY THE U.S. DEPARTMENT OF AGRICULTURE (USDA)** During the evisceration process, each bird is inspected by both a member of the processing plant and a USDA inspector. USDA inspectors visually evaluate every inch of each chicken to look for diseases, fecal matter or bruising. Any birds flagged with issues are removed from the line, condemned, and the issue addressed. It's important to remember that chickens today are the healthiest they've ever been – condemned parts are only a fraction of one percent of total production.
Visual aids	Importance of post-slaughter handling process.pdf Infographic-Poultry-Processing-Line.pdf
Exercises	1. Identify choronoligical steps in post-slaughter handling to prepare beef into a marketable product 2. Describe the post-slaughter handling such as quarantine requirements for beef cattle 3. Explain the importance of post-slaughter handling process in preparing beef into a marketable product 4. Discuss how processing to add value in chicken is different from beef
Assessment	Strand Test – Week 8 Lesson 5 (Sub strand 3.1, 3.2, 3.3, 3.4, 3.5, 3.6) Week 8 Lesson 4 – Private study
References	➢ https://www.slideshare.net/Bidyutivri/value-addition-in-meat ➢ https://www.meat-machinery.com/meat-processing-insight/beef-processing-insight.html ➢ https://www.chickencheck.in/faq/how-chickens-slaughtered-processed/ ➢ ➢

Week / Lesson	**Wk - 8** Lesson number : 5
	STRAND : PLANT AND ANIMAL PRODUCTION
 Learning outcomes	Students should be able to : - Describe the plant and animal production processes in agricultural systems - Analyse their interactions with resources (soils, climate, farm structures etc..) and microbes/pests that exist in most farm enviroments.
 Assessment	**STRAND TEST** Duration – 1 hour

WEEKLY CHECKLIST For Parents:

Term: 2 Week number 6 Date: 22/06 to 26/06 Month: June

Subject	Number of lessons	Days	Tick when activity is complete	Parents comment	Signature
	1				
	2				
	3				
	4				
	5				

Term: 2 Week number 7 Date: 29/06 to 3/07 Month: June - July

Subject	Number of lessons	Days	Tick when activity is complete	Parents comment	Signature
	1				
	2				
	3				
	4				
	5				

Term: 2 Week number 8 Date: 6/07 to 10/07 Month: July

Subject	Number of lessons	Days	Tick when activity is complete	Parents comment	Signature
	1				
	2				
	3				
	4				
	5				