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Translated from Thai language 2023

1. Preparation of plantations





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The process of preparing the soil, planting vegetable crops, kitchen gardens includes cleaning the area, digging the soil, digesting the soil. Remove weeds, grow the plot. For vegetables grown on containers, soil mixtures must be prepared for packing in planting containers.

Choosing tools for preparing the soil, planting vegetable crops, kitchen gardens should be selected in accordance with the conditions of the soil. Types of plants and growing characteristics

Preparing the soil for growing vegetables in the kitchen garden that is suitable for the type of vegetables will inevitably result in a good quality harvest.

content

Episode 1 Soil and plant growth

Part 2 Soil preparation process

Part 3 Choosing Tools

Part 4 Preparing the soil for growing vegetable crops

Part 5 Preparing the soil for planting selected vegetable crops

Soil preparation for growing vegetable crops in the kitchen garden is something to consider before taking action. Because if a good start of work affects the growth and yield of vegetables, some vegetables are many years old. Once planted, the harvest can be harvested and utilized for a long time. Therefore, the first work must be started as best as possible.





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1. Soil and plant growth

For example, humans and animals depend on the soil to house houses and dwellings, as well as the source of other necessities such as food, clothing, housing, and medicine. From seed germination until branching and finally yielding.

1.1 The importance of soil to plant growth

The soil is important for the following plant growth:

1.1.1 The soil is the adhesion of plant roots This allows the plant to stabilize upright. Raise the trunk and branches into the air to receive sunlight and break into a bush to bear fruit. Prevents stems from falling tilted. At present, even agricultural technology is advanced. A method for growing crops without the need for soil was invented. Must have materials such as gravel. sand Or crutches. To fasten the stems and as an adhesion of plant roots as well.



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1.1.2 Soil as a source of plant mineral nutrients Nutrient minerals necessary for the growth of almost all plants are obtained from the soil. This is because the soil is formed as a result of the decay and decomposition of various rocks and minerals. Combined with the decay of the remains of living organisms. And these organisms are made up of various minerals. When decayed, they decompose, thus releasing these minerals into the soil.

1.1.3 The soil is a reservoir of water for plants. Plants suck water and minerals to feed their parts through roots in the soil. If there is not enough water inside the soil. The plant will show signs of dehydration, withering, dwarfism. Does not grow and eventually dies.

1.1.4 The soil is a source of air for plants, plant roots can suck water and minerals from the soil to feed the parts, must live and breathe using the oxygen gas contained in the soil. Therefore, the plant will grow well. In the soil there must be enough oxygen gas. Oxygen gas is located inside the space between the soil pellets, as well as water.

1.1.5 The soil is inhabited by microscopic organisms and microorganisms Small organisms that live in the soil, such as insects, earthworms. millipede spider as well as various microorganisms that are beneficial to plants, such as fungi. bacteria yeast These organisms will eat and decompose the remains of the soil to rot and decay. Deposition in the soil and dissolve various nutrients to benefit plants. In addition to that, it helps to make the soil loamy. It is suitable for plant growth as well.

1.2 Features of soil suitable for plant growth

As mentioned above, each plant is different. Optimal soil requirements On plant growth is also different. Some plants need soil with specific properties.

In growth, such as rice. Need soils with specific properties, clay holds water well. There is waterlogging. Desert plants such as cacti date palm Need soil with sandy soil, loamy and airy properties. Good drainage, etc. Therefore, when growing a plant, the grower chooses which crop to plant, it is necessary to first study how well that the plant grows in the soil with its properties. But in general, Most plants need planting soil with the following properties:

1. The soil contains rich plant nutrition minerals. In other words, it is a soil suitable for plant growth. As usual, there are 16 nutrients necessary for plant growth, which can be divided as follows:

1) Minerals that plants need the most and are important components of plants, including carbon (C), hydrogen (H) and oxygen (O).

2) Dietary minerals that plants need in large quantities and play an important role in promoting the growth of plant organs as well as producing yields such as leaves, flowers, fruits. These minerals include nitrogen (N), phosphorus (P) and potassium (K), calcium (Ca), magnesium (Mg), and sulfur (S), but these minerals are often not enough in the soil. Plants are always scarce, especially nitrogen (N), phosphorus (P) and potassium (K). Also easily lost from the soil. Therefore, in growing plants, it is necessary to maintain a sufficient amount of these nutrients in the soil. This is done by adding additional fertilizers to the soil frequently.



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3) Dietary minerals that plants need in very small quantities to grow. If compared to the food of humans or animals, including foods such as vitamins and minerals, which plants are indispensable at all. But only a small amount is needed: iron. (Fe), copper (Cu), molybdenum (Mo), zinc (Zn), boron (B), manganese (Mn) and chlorine (Cl).

In general, these nutrients are already present in the soil in sufficient quantities. Especially soils that contain a lot of organic matter. Soils with a deficiency of these trace elements are usually sandy soils or soils used for growing crops for a long time with a lack of soil nourishment.

2. Loamy soil is well drained and ventilated. Soil loamy has a positive effect on plant growth as follows:

1) Plant roots can grow, branch, and go for more food. This is because loamy soils are soft soils. The root of the plant can easily pierce through Chon Chai. This gives the plant a large number of roots. Able to find more food to build stems, so plants will grow better and faster.

2) Plant roots breathe easily. It can absorb water and food to feed different parts of the plant more conveniently and faster. This is because loamy soil has plenty of air gaps and enough for root respiration. This gives it more energy to suck up food and water.

3. Soil with appropriate chemical properties Chemical properties of the soil that are involved in plant growth. This property directly affects the usefulness of plant nutrition minerals and plant growth. Some plants grow well in acidic soils. Some species thrive in alkaline soils (pH above 7), and soil acidity also affects the usefulness of plant nutrients. Some species do not dissolve when the soil is alkaline, but most plants grow well and have high yields when grown in soil with neutral chemical properties or weak acidity, pH 6.5-7.

2. Soil preparation steps

Soil preparation may differ in terms of tooling. Preparing the soil for planting Garden vegetables is the following.

2.1 Cleaning the area where vegetables will be grown, such as clearing grass, removing wood chips, stones, or other obstructions to facilitate soil preparation.

2.2 Dig up the sun-dried soil to get rid of some germs and insects.

2.3 Soil digestion Keep grass clippings and other materials mixed in the soil.

2.4 Up plots for growing vegetables according to needs Some vegetable crops are planted in holes. The planting distance should be suitable for the type of vegetables; manure or compost should be mixed with the soil before going up the plot or use fertilizer to support the bottom of the pit for planting perennial vegetables.

3. Tool selection

The use of tools to prepare the soil for planting vegetables in the kitchen garden depends on the characteristics of each type of vegetable planting. Growing vegetables for commercial purposes on several acres. It is necessary to use buoyancy machines, such as tractors, walk-behind tractors, using different plows, for example, using pan plows or pig's heads for



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plowing new or hard pioneering soil. Use a rotary shovel. Cultivator plate for soil digestion, but to grow vegetables, kitchen gardens are very popular tools are:

- 3.1 Excavator hoe is a heavy hoe concave cross-section, long hoe used for digging the soil.
- 3.2 Two excavator horns Used for digging clay Hard soil.
- 3.3 A shovel is a lightweight hoe with a short spade with a straight cross-section.
- 3.4 Shovel is used for scooping manure and compost to be mixed with the soil in the planting plot.
- 3.5 **Siem Reap** It is used for digging holes, planting vegetable crops, kitchen gardens that are planted into holes.
- 3.6 Steel rake Tiger hand is used for separating grass clippings and wood. Get out of the soil.
- 3.7 Bucket used for manure, compost, grass clippings.

Commented [A1]: What is siem reap

4. Soil preparation for growing vegetable crops, kitchen garden

Each type of vegetable garden is different. Some vegetables may be planted directly into the plot or planting hole, others need to be seedled first and then transplanted. Some species may be planted on different containers, preparing the soil for growing vegetable crops in the kitchen garden. This can be done as follows:

4.1 Soil preparation for popular garden vegetables such as peppers, kale, eggplant, lettuce greens, cabbage Lettuce basil Onion Soil preparation for planting this vegetable has 2 characteristics: preparing the soil for planting vegetable seedlings and preparing the soil for planting.

4.1.1 Preparing the soil for growing vegetable seedlings, which will be done about 28-35 days before planting, can be done in 2 ways:

1) Preparing the soil for growing seedlings of vegetables in containers such as pickups, peeps. The basket, which is small, can be easily moved. The soil used will be a mixture of loam. Compost or manure Rice husk ash at the rate of 1:1:1 Nowadays, rice husk ash and coconut flakes, at the rate of 1:1:1, put in a container about 2-3 centimeters below the edge.

2) Preparing the soil for growing vegetable seedlings on the seed plot must digest the soil more thoroughly. To keep the vegetable seeds in contact with the soil as much as possible, then sow the vegetable seeds evenly across the plot as needed.

4.2 Preparing the soil for planting garden vegetables that sow seeds directly on the planting plot, such as coriander, morning glory, kale, etc. Preparing the soil for planting these vegetable crops is the same as preparing the nursery plot. The soil texture must be more granular than preparing an ordinary vegetable plot so that the seeds have the greatest chance of contact with the soil and do not fall into the gaps between the colds. This may cause vegetable seeds to germinate slowly or not germinate.



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4.3 Preparing the soil for vegetable crops planted in pits or sprinkled along the grooves Most of them are vegetables with large seeds, such as lentils, peas, pumpkins. Green hatch, sweet corn, zucchini, crab beans, etc. Soil preparation for planting this type of vegetable crops may or may not be plowed or platted. But most prefer to plow the soil to digest the soil first. To make the growth of vegetables good. Plants planted in holes, such as lentils, sweet corn, zucchini, and crab beans, may use a hoe or sieve to dig a hole in the desired planting distance and then sow.

For plants planted in rows Using a spade, lift the grooves and sprinkle the seeds along the grooves. The distance between the grooves varies depending on the type of vegetable crops, such as peas, sweet corn. To grow this type of plant, a hoe or sieve is used to dig a hole. Then add manure or compost to the bottom of the pit before planting.

4.4 Soil preparation for growing perennial garden vegetables and clump type vegetables It may be branches, underground stems, stems, underground roots, such as ginger, galangal. lemongrass Krachai Cha-om moringa To grow this type of crop, the method of up-plot or digging holes or both is used. But the size of the pit will be much larger than the cultivation of vegetables using seeds.

5. Preparing the soil for planting vegetables selected for planting

Soil is a naturally occurring object. From a mixture of elements and stones. gravel Sand that has decomposed into pieces and decaying organic matter gather together, enveloping the earth's surface. And when water and air are included in the right ratio. The soil will aid in the sustenance and growth of plants.

Soil preparation is very important for growing plants, because if the soil is well prepared and suitable for the type of plant, then the soil will be well prepared. It will make the cultivated plants grow and be healthy, as well as save maintenance costs as well. In addition, growers should learn how to choose tools, materials, and equipment for growing plants. In order to operate more efficiently.

5.1 Soil preparation for planting Chinese morning glory

To grow Chinese morning glory, the method of sowing or sowing morning glory seeds is carried out in rows. Soil preparation is the same as growing vegetables, but the soil must be digested more thoroughly because vegetables are grown by sowing seeds or sowing directly.

5.2 Preparing the soil for planting peppers.

Preparing the planting soil is preparing the planting plot and planting plot. Planting peppers is carried out using the method of digging planting holes. If grown commercially, it is grown in large plots, similar to conventional field crops.

Peppers are plants that do not like very acidic soil. If chemical fertilizers are applied consecutively, lime should be sown throughout the plot. Then mix thoroughly and leave for about 15 days, then add other fertilizers.

Preparation before planting vegetable crops



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1) First of all, you need to consider what kind of soil the vegetables will be planted. Once you have chosen a tree that likes the condition and soil characteristics, you must prepare the soil for planting in that hole by digging a small or large hole according to the size of the tree. A hole should be dug as wide or deep as the length of the glass root. After digging the soil, dry it at the mouth of the pit for about 1 week to remove weeds.

2) After drying the soil for 1 week, add 1 part manure or organic fertilizer, 1 part lime, mix well with the soil and put it on the bottom of the pit. Put the prepared tree on the mixed soil and tie it to the tree so that it does not fall.

3) Put the excavated soil into the earthen pit. Turn over the soil by putting the upper part of the soil downwards. Put the bottom of the bottom of the landfill above. Press firmly so that the tree does not lean back and forth. Find hay, husks, straw, cover the soil to help retain moisture, and water it thoroughly.

4) Should be planted in the evening and if the tree is a rooted tree or a small tree to plant. Sun shelter must be made until the tree stabilizes.

5. 2. Growing vegetable crops on the plot

6) 1) Before planting, the plot must be made wide and long according to the area, but the width should not exceed 1 meter. If the plot is too wide, it will be difficult to maintain, dig up the soil according to the specified size and collect all weeds in the soil, dry the soil for about 1 week, then digest the soil into small cubes, mix the soil with manure, lime and organic fertilizer 1 part each. Prepare to continue growing vegetable crops.

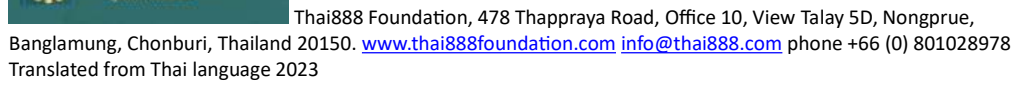
7) 2) Before planting, make sure that the trees to be planted are planted in rows next to each other or far apart. If you are going to plant in rows, make the soil into a trough in a row.

8) 3) Plucking seedlings should be done in the evening and should be dug to have soil attached to it. Do not let the roots be torn. If the roots are broken, it will cause the tree to grow slowly. Plant the seedling into the groove or hole. Once the seedlings have been placed in the hole, press the soil tightly against the soil so that the roots stick to the soil, mulch the soil with grass or straw, then water and shade the seedlings until the plants are stable.

9. 3. Planting plants into pots

10) 1) Before planting a plant in a pot, you must choose a pot that is the right size for the plant. Once you get to the pot, find a broken tile to cover the hole in the bottom of the pot, break the brick into small cubes and put it on the bottom of the pot, about 1 inch high, to help drain the water better.

11) 2) Mix 1 part loam, 1-part decayed leaves, 1 part manure. Put in about half a pot. Put the plant down and put the soil mixture almost full in pots. Press the soil firmly to prevent the tree from falling, water it thoroughly and place



2. Making fences



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Approximate cost of fence construction

Cement pole 2 m. 110 baht // 2.5 should be + a little more

barbed wire #16 coil 42 m. -- 216 baht

for digging a pole grave. Stretching wire -- 50 baht per hole

, try to calculate it. Pole 2 m apart. Barbed wire 4 floors

. PTT 3_4 rai will have a total distance of 800

m. Poles 2 m. Use 400 poles.

Every 10 trees + 2 comers $40+8 = 48$ Tree // 448 trees Approximate price of 2 m pole

$448 \times 110 = 49280$ Barbed wire $800 \times 4 = 3200$ m $= (3200/42) = 76$ curl up Hit 77 curl for $77 \times 216 = 16632$

baht Labor cost $50 \times 448 = 22400$ baht

will cost roughly $49280+16632+22400 = 88312$ Baht

Various equipment used.

1 x Water tank

The 5000 ml water tank is thick and sun resistant. Rain can be used over a period of years.

Price 32,000 ฿ / bucket



2. Other accessories



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- Planting spoon
- Fork shovel
- spade
- rake
- shovel
- Bucket
- hoe
- Watering cans





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3. Preparation of water resources in agriculture



Connecting water systems for cultivation



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Approximate cost of water systems

1. Pool digging, and pool edge decoration are charged by the hour.

Plan to dig a pond size 15x27 meters, depth 4 meters, raise the rod around the pool about 5 meters, height 1 meter. But the right side of the place to fill the full area and the soil dug deeply to fill the place to plant a house size 25x25 meters, 1 meter high, always rod the edge of the pond

leveling. Total remaining space Cut down unwanted trees, dig up stumps and spread the area. I made a plan to see as shown in the picture,

the total price is 70000 baht.

Although Thailand is known as a fertile country and is strategically located for growing a variety of crops, we cannot invest in agriculture completely. They hope to rely only on natural rainwater. To this end, systematic management of agricultural water systems. Therefore, it helps to enable everyone to do sustainable farming in all areas. Able to deliver the target output throughout the year. To help everyone manage water quality.

This article will tell you 5 things you should know about Prepare for laying agricultural water system with [pipes on](#) to let everyone know.

Before installing [pipes](#), the source water source must be prepared as mentioned at the beginning that we cannot rely solely on rainwater for farming. The beginning of the preparation of agricultural water systems Therefore, finding other water sources to support To create a source water source to connect pipes on To transport water to various points in our area There are 3 types of water sources suitable for serious agricultural use as follows : **Natural water sources:** These natural water sources are creeks, swamps, canals, swamps that occur naturally. For anyone who is close to these water sources, I must say that I am very lucky because just by installing a water pump, I can pump water up to use as the source of water. However, the eye

1. Ensure that those water sources do not dry out quickly and that there are water sources that flow to fill up all the time, so that you do not invest in wasted PE pipes
. You don't have to worry about managing your agricultural water system or not being able to find the source of water. Because we can drill for groundwater sources for our own use as well. But be careful, you have to choose a professional driller. Look at the water and find the groundwater source immediately on the first hole so that you don't waste money on many drilling operations. Ponds This method can be used in all areas



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when digging your own pools or reservoirs: Another method for finding a source water source to manage agricultural water systems is to dig your own wells.

2. **Select an agricultural water system before installing [the pipes](#)**

. The next step before we install [the upper pipe is](#) to know which agricultural water system we will choose to install because each type of plant needs different water. Drip irrigation system: This system is the most water-efficient, especially suitable for arid areas, and can be used on all types of soil. The irrigation method sends water through a conveying pipe to the drip nozzle installed at the base of the tree. Approx. 4 – 20 liters/hour the pressure is 0.3 – 2 bar. Agricultural Squinting Water System: This system provides more water distribution and coverage than drip irrigation systems, but overall, it behaves exactly like drip irrigation.

3. **Know the exact distance of the crop to measure the size and length of the [pipe](#)**

. Because it is a factor that affects the growth of plants. This information also affects the installation of agricultural water systems because it must be calculated to measure the size and length of the upper pipe to suit the distance of each plant. If not the same measurements and length are not passed. This will cause each separate pipe to have an uneven distribution of water. It directly affects the growth of each plant and will cause each point to have a different growth rate.

Choose the right water pump for the pipe size [On](#)

another thing to know For the installation of agricultural water system is to choose the pipe size on the chairman and the size of the pump relative to each other because the water pressure determines the strength of water to be transported in different pipes. Or if we choose a big water pump, but the supporting water pipe is too small, it will not be able to bear that pressure and eventually break. Therefore, choosing the pump size to match the upper pipe is important to study well before starting to install agricultural water systems.

4. **Start designing and preparing equipment for agricultural water systems with [pipes on](#) it, once you have everything ready, all you have to do is take action. This process takes all the knowledge that we have prepared and sketches it into a model to actually make it. Choosing the right water system for cultivated plants Measuring the upper pipe distance to be equal to the distance [of the planted plants and selecting the pump in relation to the pipe](#) size. At this stage, there are many other things that we need to buy to complete the installation of agricultural water systems, such as mini sprinklers, tubular sprinkler heads, upper valves, upper elbows, and upper straight joints, etc.**



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4. Making a poultry house



Because eggs can be used to cook a variety of dishes, that makes eggs have a constant demand for consumers, especially during the last lockdown, there are times when the price of chicken eggs has skyrocketed because of lack of market and there is a lot of demand.

Plan before raising laying hens.

Of course, before doing anything, a plan is required. At first, we may have to think about what breed of chickens to raise and how many. Learn and multiply and study behavior, feeding. Diseases that may occur, including preventive care. It is also recommended to grow bananas. To be used as main feed and supplement to laying hens.



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What breeds of laying hens are there?

In our home, there are 3 popular breeds of laying hens, namely Thai Road chicken, Thai egg chicken, Department of Livestock Development, and small white horn egg chicken, crested chak.

1. Thai Road Chicken

It is a purebred, semi-meat, half-egg chicken, which if anyone wants to use both meat and eggs, choose to raise this breed of chickens. The first eggs are given at about 168 days of age, with a yield rate of 94% or 240 eggs per animal per year.

2. Thai Laying Chicken Department of Livestock

A characteristic feature of this breed of chicken is light brown to dark brown feathers. Dark brown necklace, bright red big red crest, big red wattle red earrings are slightly white, skin and tibia are yellow, tail tips are black. Light brown eggshells give the first eggs at about 169 days of age, yielding about 290 eggs per animal per year.

3. Laying hens, small, horn, white-crested, chakra

It is purebred chicken. Small body, white feathers, eggshell white, fecundity egg, give eggs quickly, giving the first eggs at the age of 4 months to 5 months, productivity is about 300 eggs per animal per year

, how to feed laying hens.

Laying hens can be free-range or greenhouse-raised, both of which are different.

1. Free-range laying hen farming

It is a popular method because it puts chickens in a good mood, has good mental health, strength, good effect on productivity, makes the egg yolks dark, convex, egg whites in a clear thick color, and when used in cooking, it will get delicious food. The ideal breed to be raised freely is the Rhode Thai laying hen breed. Thai Bar Chicken, Thai Plymouth Rock Chicken and Department of Livestock Laying Chicken because these breeds of chickens can find



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their own natural food. Therefore, they can be released in open courtyards covered with grass, but only at a distance from residential houses. It is also important to ensure that the area should not be chemically free for at least 3 years, and that the soil must not be contaminated with chemicals or heavy metals.

2. Growing laying hens in a house

For the house to be used for keeping wax chickens, it must be strong and durable, resistant to wind, sun, rain, as well as animals that will disturb and harm the laying hens, including the house must be easy to clean. Stay away from the community to prevent bad odors. For the greenhouse, it will be concrete and primed with rice husk about 3-5 inches thick, with 1 ovary per 4 hens and 2 doors to enter and exit to allow for circulation of chickens to the free plot.

Water and feed for laying hens

Laying hens at the age of 5 months and older need about 0.5 liters of water per day per animal. If dehydrated during the egg period of only 3-4 hours, it will make the eggs small. Water for feeding laying hens should be clean water. As for the food, if it is at the beginning of the egg feeding period, it will be a diet with a protein percentage of 13-15%. Pelletated feed or ready-made food and supplements, **other things that need to be prioritized in laying hens.**

temperature

Chickens are animals without sweat glands. Cooling from the body cannot be discharged through the skin like a person. Therefore, cooling is removed from the body by breathing air into the lungs, into the air sac, and some of the water ingested by the chicken will evaporate together with the air that the chicken exhales because the chicken body does not have heat (evaporation of water occurs requires heat). Therefore, breathing will also bring out heat. It regulates the body temperature of chickens by the hypothalamus gland. The pituitary gland acts as a control center, adjusting the temperature of the chicken body to a relatively constant level, transfer or ventilation. Laying hen houses deserve to take into account ventilation. If you create airy good air circulation The exhaust air is expelled outside the house and fresh air from outside will replace it by removing the heat from inside the house. Laying hens need to be increased when they are 6-22 weeks old by gradually adding 1/2-1 hour of light per week until 4 hours are complete, including 12 hours of natural light per day, for a total of 16 hours.



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Relative humidity: The optimum relative humidity is about 50-80 %, which if the air humidity is low, the cooling from the body will drain better. Thailand often faces the problem of humidity in the rainy season (hot-humid). Feeding laying hens, the main goal of the feed used to feed laying hens must be to keep production costs as low as possible and production efficiency in order to get the lowest 1 egg. However, the cost of producing 1 egg is about 60% of the cost of feed, so it will affect the egg yield rate and the size of the chicken as well. Seasonality is also an important factor.

Diseases and their prevention

1. Newcastle disease

It is the most contagious disease of chickens in Thailand. It is caused by a type of virus. The epidemic is rapid by breathing in infection and other excreta of sick chickens. Sick chickens develop respiratory and neurological symptoms, such as difficulty breathing. The noisy time for laying hens laying eggs decreases suddenly and usually dies within 3-4 days of showing signs of illness.

2. Contagious bronchitis

It is the most prevalent respiratory disease. It can occur in chickens of any age but is often severe in chicks. It has a very high mortality rate. Chickens with this disease will have symptoms of opening their mouths and neck when breathing. When breathing, there is a groaning sound in loss of appetite. In laying hens, eggs are suddenly reduced prevention by vaccination against bronchitis.

3. Chicken cholera

It is a kind of serious contagious disease. Caused by bacteria entering the body through food and water. Chickens with this disease will have drowsiness, lethargy, and loss of appetite. Extreme thirst, diarrhea, yellow stools, dewlap darker than usual. If chickens have serious diseases Chickens may die without showing signs of illness, treatment is evident. Use antibiotics Clotetracycline or oxytetracycline or use sulfa drugs such as sulfameracine or sulfametharine Prevention by vaccination against cholera.



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4. Chicken pox

It is a disease that usually affects chicks and young chickens, caused by the virus transmitted by contact, such as flocks and mosquitoes as carriers of bite diseases. The disease does not show signs of fatal malaise. Chickens with this disease show symptoms of blisters with gray spots on the face, crest, wattle and skin, and when the spots expand and break into scabs, the chicks become crested. Do not eat and eventually die.

Summary of simple care for laying hens

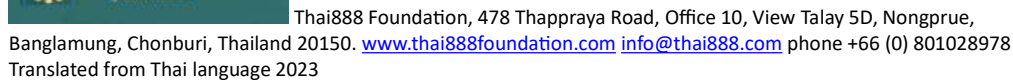
1. Make a liver cage for 1-2 chickens per compartment, size 50 cm wide and 66 cm high, using wood that we have such as bamboo. Eucalyptus wood with liver cage holder with a height of 50 cm. The feeding device uses bamboo cut in half, providing water using used water bottles.
2. Use a net cover to keep mosquitoes away from chickens at night, feeding laying hens the hen stage, protein generations. 13-15 percent, 80-100 g/day, morning and afternoon Observe the diet of chickens. Wash the gutter 1 time a day.
3. Deworm the outside inside of the chicken before the chicken gives eggs and vaccinate the chicken cholera. Keep an eye on the health of the chickens. During the climate change, give vitamins to dissolve water to chickens, during the chicken period when the chicken starts to give eggs (20-22 weeks), change the diet to the diet of laying hens, the egg feeding period is 14-15 percent protein, give 150-200 grams per day.
4. During week 28-31 weeks, feed the chickens in increments according to the number of eggs given. Collect eggs at least 2 times a day, during the day and before work. Clean the food trough if wet food is stuck on the trough.
5. If there are enemies destroying chickens, such as dogs, snakes, and silver ones, take precautions such as making a pen or prevent them from destroying chickens.

The cost of keeping chickens

It is estimated cost if there is an additional number of chickens. Carrefour business, for example.

Poultry equipment: including 2-layer liver cage, gutter and feeding trough cost an average of 65 baht per animal, so = 500 x 65 = 32,500 baht.

Price of young laying hens: 16-week-old laying hens currently cost 185 baht each. 500 characters, about 92,500 baht



How many months do laying hens raise: This young laying hen needs to be raised for another 2 weeks to be ready to lay eggs. So, 14 days x 900 Baht = 12,600 Baht

Current expenses





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Description: Pig house What are the common types? **Easy to follow** Raising pigs to be completely healthy at that age in addition to the previous diet. Another important factor is the construction of a house for pigs to live properly and hygienically. It can hold up to the number of pigs raised and must also have a strong construction that can block the sun and wind. Protects against the danger of pigs. Therefore, we will show everyone what a typical pig house looks like. If you're ready, let's go ahead and follow along.



What is a pig house?



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Housing or shelter for pigs in a house-like style using structural materials from wood or steel with strength, the inside of the house must be able to ventilate well and not uncomfortable. The pig house will protect against too strong sunlight and prevent rain and various weather conditions that occur. Having a good greenhouse will make your farm easier to manage and the pigs in the pen can live comfortably, however, each person's style of building a house is different.

How to prevent odor removal and waste from pig farms

At present, there is a problem of the smell of pig manure that disturbs the villagers in the neighborhood, as well as the wastewater that has drained from the farm to the river. As a result, pig farms must have a well-managed approach so as not to affect the surrounding environment. Management suggestions are as follows:

- 1. Gas Pond:** If large pigs raise bags of pigs of one thousand or more, a biogas pond should be built. To collect pig manure and take energy from biogas ponds in the gas group converted into electrical energy. To be useful in working on pig farms. The resulting gas can be used for cooking and brooding piglets. for example
- 2. Wastewater Treatment Pond Farming,** regardless of farm, should have a wastewater treatment pond only for pig farms that raise pigs near the river. Fermentation and desiccating ponds Water to wash the treated pig stall will reduce dirt and reduce the putrid smell of pig manure.
- 3. Crusted ponds:** In pig farms of smallholder farmers who cannot build biogas ponds or wastewater treatment ponds, they should build crusted ponds for pigs. The size of the crusted pond will depend on the number of pigs raised. The appearance of the crusted pond is the same as the cesspool used in people's homes, which consists of 2 ponds. The second pond is a liquid that flows from the first well and seeps into the soil or continues to connect to the outside drain.
- 4. The use of microbial substances** such as E.M. to be poured or sprayed at the pig house, along the pig mule pile, or poured on the sewage pond that supports the pig mul.

References: Department of Livestock, Ministry of Agriculture and Cooperatives, Pig Farming Page 22-29, Retrieved September 14, 2022, And here's **the characteristic. Pig houses What are the common types? We have deposited 5** different styles and also have different characteristics but are meant to be suitable to protect the boundary light, rain and external threats. In addition, we have introduced various interesting information such as the type of house for each generation



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of pigs and the elimination of the smell of waste from pigs that pig farmers will encounter this problem very often. If anyone has read and understood, it will definitely be applied to their own farm.

Feed for feeding pigs.

Feed Feed for fattening pigs may use ready-made bags of feed from the company or buy concentrated feed heads (36% protein to mix yourself or buy various raw materials and mix them all by yourself. If you buy ready-to-feed feed, it may not be profitable, but if the price of pigs is good, it may be profitable. In today's conditions, farmers find it difficult to buy raw materials and may be irregular, such as corn and bean meal. Fish meal, acacia leaves, minerals, vitamins, but everywhere there is bran. For example, weaned piglets should get 18% protein, young pigs use 15-16% protein, 50-60 kg pigs have 13-14% protein, and 60-100 kg pigs have 12-13% protein.

Example recipe (when using pork feed tuber, including 36% protein)

Formula 1 Formula 2 Formula 3 Formula 4

Fine Bran 35 40 45 36

Grits (or corn) 35 40 45 37

Rubber seed meal 20

Feed Head (36% Protein) 30 20 10 7

Total 100 100 100 100
% Protein 18 15 13 13

Feeding fattening pigs is preferable to give 2 times a day, morning and evening. On average, weaned piglets eat 0.5 kg/day, 1-1.5 kg/day, 2.5 3 kg/day and should provide them with enough clean water at all times. Bathing is not necessary, but if the weather is very hot, it may be possible to take a bath. In addition, vegetables or grass should be cut for pigs to eat, such as sweet potato tubers, carrot leaves, hairy grass, napier grass, seaweed, etc.

B. Breeding pigs

Breeding pigs for breeding or to produce purebred piglets and piglets. 2-3 pedigrees for sale It is a cumbersome task and requires a lot of knowledge and tools.



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1. Initiation and preparation Breeding pigs must begin with well-bred pigs. It may start with the purchase of weaned piglets (p.n. 10-15 kg), young pigs, or mother pigs (Um Thong). A good breed of piglets must have the same characteristics as the breed. It has a large skeleton. Straight abdomen, curved back, long body, large rump, straight legs, strong, wide chin. Wool and leather are fine in it.

Clear eyes, no cloudiness, no hernia or navel There are many breasts (L 4-16 breasts), and the nipples can be arranged in stages, evenly sized evenly. Having purchased weaned piglets, deworming is carried out. After another week, vaccination against swine cholera should be carried out (if the previous owner has not yet been vaccinated).

2. Pig breeds that should be raised

2.1 Large White breed is a breed of white pigs with erect ears. Tall figure Long, large, fruity, fast-growing, strong, with high meat exchange rate, good carcass quality.

2.2 Landrace is a white breed of pigs with large ears and normal ears, large body, long and deep body, large hips. Short body, short legs, prolific and good at raising children, growing quickly, high meat exchange rate, good carcass quality, it is thin, has a lot of red meat, but has the disadvantage that the legs are usually soft because the big body weighs a lot.

2.3 Duroc Jersey breed It is a large pig with brown skin and fur.

Red, medium-sized ears, slightly forward. The body is shorter than the large pig, but it is stronger, grows faster and is more resistant to the Thai weather than the two varieties mentioned above, so it is suitable to be mixed with the large and landrace breeds to make pigs of 2 and 3 pedigrees.

3. Greenhouses and equipment: Greenhouses for breeding pigs can be thatched houses. Zinc or tile is fine, but for permanence, it should be made of concrete or masonry. The major greenhouses are breeders' houses, weaning piglets, food storage, supplies and possibly sick pig pens. The shed should be built along the west-exit line, may provide a walkway in the middle 1 meter wide, two sides are stalls for breeders and breeders, the stall should be 2×3 meters wide, which can be used as a breeding ground. If using a round stick to block the stall, it must be separated in a standing line so that the stall is about 1-1.20 meters high. If separated by brick blocks. You have to put plaster on the pole to fix it strongly. The stall floor should be poured with concrete so that it slopes very far towards the back and there is 1 drainage/droppings hole through which piglets cannot run out. The equipment inside the stall has a water trough, a food trough, a gutter should be placed behind the stall and a food trough should be placed in front near the central path.

Other equipment and chemicals for raising pigs to produce offspring include syringes. Scissors or umbilical cord knife Piglet fang cutter Ear cutters to make pig numbers Tincture, iodine for wounds and umbilical cords, surgical blades for pigs. Wound healing and fly repellents, such as Negasant, for tying umbilical cords. Antiseptics, iron supplements such as



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ions, determines, phydex, etc., vaginal stuffing drugs such as utoseals, antiseptics, pneumonia, and others such as oxytetracycline, terramycin, farmosin. anthelmintics, sulfa drugs and others.

Pigs are animals that eat a lot to gain a lot of weight. The more, the better. Of course, pig feed heads must also be in large quantities.



In pig farming, the feeding of pigs will be pure feed head because they want the pigs to mature, in time to gain good weight, and most importantly, beautiful pork, low fat.

But if the villagers want to raise pigs and want to feed pure food heads, it is possible, but if you invest yourself, the profit will be small, the capital will be a lot because one bag of food heads is 400 baht or more, but the price depends on each brand as well.

A 1-month-old pig will start eating food head No. 1 will be the most expensive number and must eat pure food head only. During these 1-2 months, you must make that group grow to full before getting all the nutrients. Otherwise, if there is a small pig. That pig will grow slowly and become a pig that does not lose weight at all.

Pigs aged 2 months and older can already mix other foods to eat, but when mixing other things, they will add more head feed. 3 - 4 months

Pigs of 3-4 months or more will be able to mix other foods and reduce the head of feed. The reason is that pigs will eat a lot more, which causes us to waste more food and food bounty. Even if the price has been reduced from 1 - 2 months ago.



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Let's take a look at the ingredients of pig feed heads used in the mixture.

1. Pig feed head
2. soft bran
3. Grits.

Ways and recipes

At home, use the recipe Bran: Food head: Grits is 3: 1.5: 1 is a recipe of pork 3 months or more.



How at home is

1. Stack the bran for each of them.
2. Then add the grits and pork feed head.
3. Then mix well and that's it.

Each mix will be more or less, it depends on the amount of pork. Some villagers do not have money to buy food heads, they only use bran and grits, but if there is a quality head of food and meat of pork, it is better because even though bran and grits are pig's food and contain nutrients, it will actually contain pig supplements. It makes good pork grow fast and low fat.

Another secret recipe at home is to add salt to it. Dad said it would help the pigs get thirsty, and they ate more water. Our pigs will be healthy, just as people drink a lot will be healthy.

How are the recipes and tips for raising pigs like the villagers of dreams If anyone wants to feed, I don't want to pay a bounty on pure food. It reduces costs a lot.



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ชนิด/รายการ	สุกรขนาดต่างๆ					หมูพันธุ์ (แม่)	
น.น.ตัว (Kg)	5-10	10-20	20-35	35-60	60-100	ท้อง	กำลังเลี้ยงลูก
โปรตีน (C.P.,%)	22	18	16	14	13	14	15
พลังงาน (D.E. (Kcal/kg.)	3500	3500	3300	3300	3300	3300	3300
แคลเซียม (Ca, %)	0.80	0.65	0.65	0.50	0.50	0.75	0.60
ฟอสฟอรัส (P, %)	0.60	0.50	0.50	0.40	0.40	0.50	0.40
แคโรทีน (CAROTENE mg/100.อาหาร)	4.4	3.5	2.6	2.6	2.6	8.2	6.6
Vit.A (I.U./100.อาหาร)	2200	1750	1300	1300	1300	4100	3300
Vit.D (I.U./ 100.อาหาร)	220	200	200	125	125	275	220
เกลือแกง %	?	0.15	0.15	?	?	?	?

หมายเหตุ : - ให้สุกรได้กินอาหารอย่างเต็มที่ (Ad libitum)

- ? = ความต้องการแท้จริงไม่แน่นอน

- พ่อพันธุ์ให้อาหารที่มีโปรตีน 14 - 15 %

The procedure for cleaning the pigsty and pigsty equipment.

In the face of an epidemic, there are the following steps: 1. Remove the manure from the stall and pile it together. Keep it dry in the sun. Dispose of by burning or burying away from the grazing area, 2.Equipment inside the house such as maternity pouches, standing pouches, food troughs to be washed, left to dry and wait for disinfectant sprayed, 3.Spray disinfectant that is easy to find such as hyder (whitewashing products) by mixing 2 caps per 1 liter of water, pour or spray disinfect the equipment thoroughly, 4.Use a high-pressure cleaner. 5. Repeat steps 3 and 4 every 3 days until 30 days have elapsed. Surface swab samples collected on the farm If no contaminated virus is found, pigs can be reared.

CAUTION: Do not expose caustic soda to metal equipment, The selection of each type of disinfectant has a different proportion of mixing, it must be mixed correctly as recommended by the manufacturer. All in all. If a diseased pig is found, you should inform your nearest livestock as soon as possible.

The cost of growing pigs

- Making greenhouses



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- Purchase of various equipment was about 10000 baht.
- Buying a small pig weighing 10-10.5 kg, the wholesale price is 2500-3500 baht.
- Total estimated expenditure 100,000 baht

