

Organic Seeds Production Workshop

Seeds Production and Organic Farmer Network

Organized by
Maejo University, Chiang Mai, Thailand
22 - 23 March 2018



Technical Support and Exchange
Towards Organic Asia (TOA)

Background

The workshop aims to share the knowledge and skills for seeds saving to prevent biodiversity loss, to share and exchange seeds within the seeds production network, and to utilize seeds for organic agriculture.

We have lost seeds varieties and food security from the mainstream agriculture systems. Seeds production becomes limitation and professionalization, and good quality seeds become commercialization, in the market the good hybrid tomato seeds can be costly from 400,000 - 10 million baht per kilogram. For this matter, Maejo University as an academic sector and responsible for knowledge sharing and technologies transfer would like to conduct the seeds workshop on seeds production to share the knowledge and skills, and build the network of organic farmers and seeds saving among the participants.

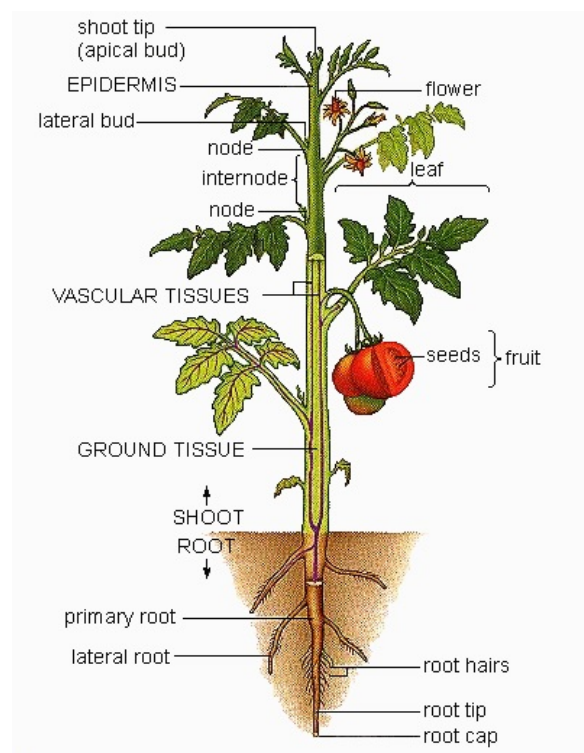
The Components of Plant

- Plants have various types in term of variety and species
- Each variety grows well in different environment
- Each specie grows well in different environment

The environment (such as soil, sun light, organic matters / minerals, moisture / water, and temperature) and management systems are important factor for the quality of plants

However, species would also be another key important factor for plant to grow well, and have good yields.

Therefore, the differentiation of plant depends on environment, management, and specie.



Plant Propagation

1. Sexual reproduction- seeding
2. Asexual reproduction- stem cutting, layering, and grafting

Sexual Preproduction / Seeding

- Self- pollinated crops- all varieties of bean
- Cross pollinated crops- cucumber, pumpkin, melon, watermelon, corn, etc.

The Benefits of Seeds Production





- Increasing germination and growth rate
- Increasing disease and pests resistance
- Improving taste and shape of products
- Improving quality, such as higher yields, nutrition, long lasting product, etc

However, it's very difficult and there will not be a perfect plant variety or species that contain all good qualities in it.

Type of Seed

1. F1- Hybrid





- F1 hybrid is the result of crossing two pure lines to achieve the desired result
- The uniformity in shape or size have made hybrid vegetables extremely suitable for mechanical harvesting
- The seed is more expensive

	F	F
f	 Ff	 Ff
f	 Ff	 Ff

genotypic ratio - all Ff
phenotypic ratio - all purple

2. Open Pollinated (OP)

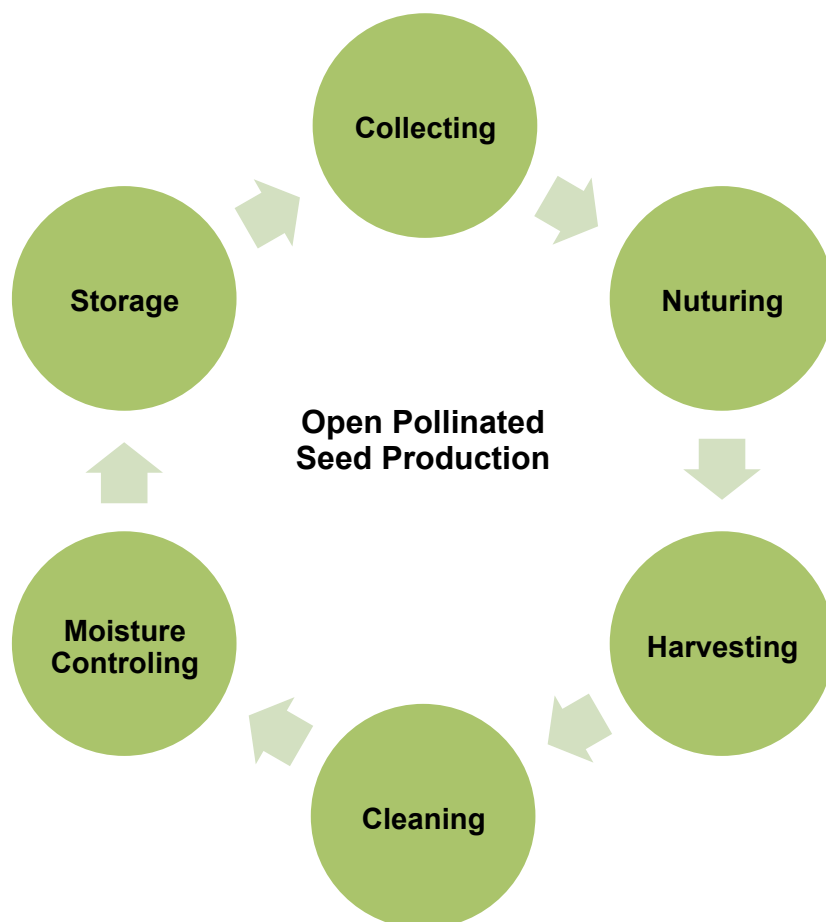
- The plants, which are either self-pollinating or cross-pollinating with their neighbours.
- Widely in their characteristics, uniformity and maturity.
- The seed is more cheaper
- Grower can save you own seed

	F	f
F	 FF	 Ff
f	 Ff	 ff

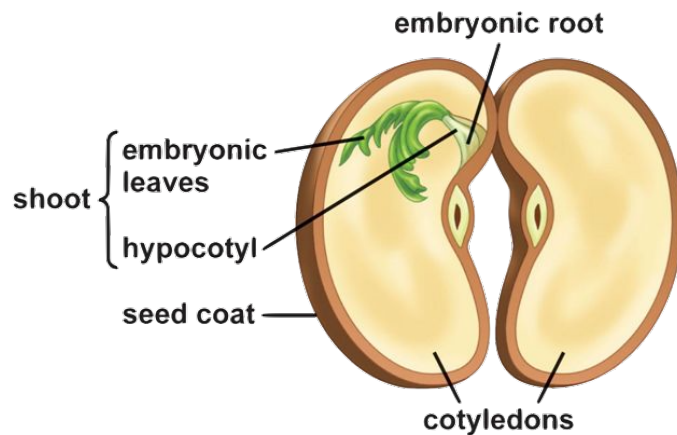
genotypic ratio - 1FF: 2Ff: 1ff
phenotypic ratio - 3 purple: 1 white

Open Pollinated Seed Selection:

- Selection good local variety
- Cross breeding from 2 varieties 7-8 crops



Seed Anatomy



Tips:

- Chili 15-20 seeds per piece
- Eggplant 700 seeds per piece (200-300 piece)
- Long bean 10 seeds per piece
- Lettuce 10,000-15,000 seeds

Physiological Maturation (PM) of Fruit and Seed

- Long bean should be harvested 16 days after anthesis/flowering
- Bitter Gourd should be harvested when the seed becomes red color
- Cucumber should be harvested when the skin becomes yellow color
- Lady finger should be harvested before the fruit is damaged/open
- Gourd / Pumpkin should be harvested when its ripe (white/powder on its skin)

Reproductive Isolation

1. Isolation Distant, the minimum separation required between two or more varieties of the same species for the purpose of keeping seed pure
 - Bean = 10 meters
 - Cucumber = 400-1,000 meters
 - Lettuce = 30-60 meters
 - Lady finger = 10 meters
 - Chili = 400 meters
 - Tomato = 30-60 meters
2. Isolate in Time, growing in different time/season
3. Using Net or Tent Isolation



Roughing, the removal of plants those are different from the variety under production, in term of shape, size, and color in the different stage: Seeding, Growing, Flowering, and Harvesting

Post-harvest processing

1. Seed Cleaning

Dry-seeded crops, seeds are usually mixed with other plant materials such as sticks and leaves, dirt, stones, and weed seeds that are inadvertently collected with the harvested seed. The seed is then cleaned (separated from the other material) by techniques based on differences in weight, size, or shape of the seed.

Wet-seeded crops, Removal: Wash the fruit, then break open the fruit and remove the seeds. Clean pulp residue from seed by washing or fermenting.

Fermentation: Seeds such as tomato, pepper, cucumber, and squash are typically processed by fermentation as it facilitates removing the pulp from the seed. (use the juice from the fruit, no need to add more water, let the seed fermented for 1 day, tomato seed might need to be fermented for 2 day)



2. Seed Drying

- The seeds out on a tray or a bag, and let dry for 2-3 days
- Shouldn't dry seeds with the sun light directly
- Seeds should not reach temperatures over 95 F.



3. Seed Storage, seeds must be kept in the dry place, cool temperature, sealed in the bag and container without air, and clearly labeled (using pencil is recommended): Variety and Species, Harvesting Date (Expired date is about 2 years), and Germination Rate

4. Seed Quality Testing

Sampling

- 4 Samplings 100 x 4 = 400 seeds
- 4 Samplings 50 x 4 = 200 seeds
- 4 Samplings 25 x 4 = 100 seeds

Germination Rate, Checking duration and percentage



Seed growers and organic farmer network, workshop participants #3, 22-23 March 2018

