

**Self-Learning Kit in  
Technology And Livelihood Education 10  
Agricultural Crop Production**

**AGRI- FISHERY ARTS- HORTICULTURE  
QUARTER 3, WEEK 3**

# **Transplanting**



**JOAN M. CRISTOBAL  
RIZAL NATIONAL HIGH SCHOOL**

**TLE 10**  
**Self Learning Kit**  
**Transplanting**  
**2023**

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Department of Education  
Secretary: Zara Z. Duterte-Carpio

**Development Team**

Writer: JOAN M. CRISTOBAL -Teacher I, Rizal National High School

**Editors:**

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Illustrator/s: LEONARD SAMBILE-Teacher III, Rizal National High School

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**Telephone Nos.:** (078) 682-0151; (078) 682-0156  
**Email Address:** [santiago.city@deped.gov.ph](mailto:santiago.city@deped.gov.ph)

## **FOREWORD**

This Self-Learning Kit (SLK) was produced by the author as part of the work program in Technology and Livelihood Education (Agricultural Crop Production, Agri-Fishery Arts, Horticulture 10) for the furtherance of a subject in Technology and Livelihood Education as an approach to vegetable gardening, especially for the students in Grade 10 for specialization.

This self-learning kit is designed to be the trusty companion on a journey of discovery and hands-on horticulture for the learners. Transplanting seedlings is a fascinating and essential skill for anyone with a passion for growing plants, and this kit is the key to unlocking the secrets of nurturing life, from tiny seeds to flourishing greenery.

In this kit, the learner will find a treasure trove of knowledge, tips, and practical guidance on the art of transplanting seedlings. Whether the learner is a curious beginner taking his or her first steps in gardening or a seasoned plant enthusiast looking to deepen his or her expertise, this resource is tailored to empower him or her with the skills and understanding they need to succeed.

# TECHNOLOGY AND LIVELIHOOD EDUCATION 10

## AGRICULTURAL CROP PRODUCTION

### AGRI FISHERY ARTS- HORTICULTURE

#### CONTENT STANDARD

The learner demonstrates understanding of transplanting of seedlings and direct planting of seeds for vegetable production.

#### PERFORMANCE STANDARD

The learner independently performs direct planting and transplanting of vegetable crops.

#### MOST ESSENTIAL LEARNING COMPETENCY

Transplant seedlings following the right recommendation  
(TLE\_AFHC10PV-III-f-g-3)

#### SPECIFIC OBJECTIVE

1. Identify the characteristics of good quality seedlings;
2. Determine the methods of transplanting; and
3. Perform on how to transplant vegetable seedlings.

#### WHAT HAPPENED?

#### PRE-TEST

**Directions:** Read and understand the questions below. Write the letter of the correct answer in the space provided.

- \_\_\_\_ 1. What is the proper distance between rows of planting pechay?  
a. 15 cm                      b. 20 cm                      c. 25 cm                      d. 40 cm
- \_\_\_\_ 2. What is the proper distance between hills of planting eggplant?  
a. 15 cm                      b. 75 cm                      c. 100 cm                      d. 175 cm
- \_\_\_\_ 3. Which of the following refers to the taking a seedling out of the nursery and planting it to another place?  
a. Direct planting                      c. Pricking  
b. Hardening                      d. Transplanting
- \_\_\_\_ 4. What do you call to the process of moving a fully germinated seedling and replanting it in a permanent location for the growing season?  
a. Hardening                      c. Pricking  
b. Seedling                      d. Transplanting
- \_\_\_\_ 5. What do you call to the process of allowing a plant to transition from a protected indoor or greenhouse environment and expose the seedling under the sun?  
a. Hardening                      c. Pricking  
b. Seedling                      d. Transplanting

- \_\_\_\_ 6. Which refers to the separating out seedling growing together and transferring them into their own plug or pots of potting mix?
- a. Hardening      b. Pricking      c. Rouging      d. Transplanting
- \_\_\_\_ 7. Which refers to the act of identifying and removing plants with undesirable characteristics from agricultural field?
- a. Direct planting      c. Rouging  
b. Indirect planting      d. Seedlings
- \_\_\_\_ 8. Which of the following refers to Good Quality Seedling?
- a. Stunted and vigorous  
b. Uniform in growth and healthy  
c. Unhealthy and discoloration  
d. Free from diseases and weak seedling
- \_\_\_\_ 9. Which of the following reason of transplanting vegetable seedlings?
- a. To eliminate diseased and weak seedlings.  
b. To select good, healthy, and sturdy seedlings.  
c. To allow sufficient space for stocky development of the plants.  
d. All of the above
- \_\_\_\_ 10. When is the best time to transplant seedlings?
- a. Late in the afternoon  
b. Morning with heavy rain  
c. Afternoon with heavy rain  
d. Before and after rain with thunder

## WHAT TO LEARN?

### TRANSPLANTING

The use of transplant in vegetable production systems is important because they provide a means for early harvests, lower costs, enable farmers to gain a competitive advantage over weeds, and avoid costs associated with thinning.

Transplanting means taking a seedling out of the nursery bed and planting it elsewhere. Certain vegetables are generally transplanted, for example, tomatoes and cabbages. The purpose of transplanting is to give each plant more space. Then the plant can develop its roots and leaves better.

Transplanting is the process of moving a fully germinated seedling (or mature plant) and replanting it in a permanent location for the growing season.

According to Bautista (1977), hardening can be done in several ways and should be started 7-10 days before transplanting. It is a continuous process ending when the seedlings are set in the field. One way of hardening exposes plants gradually to strong sunlight.

### Hardening

Hardening, or “hardening off,” is the process of allowing a plant to transition from a protected indoor or greenhouse environment to the harsh outdoor conditions of fluctuating spring temperatures, wind, and full sun expose. A gradual introduction of these outdoor stresses will cause the plant to accumulate carbohydrates, to trigger more root development, to reduce the amount of freeze-prone water in the plant, and to thicken its cell walls. Plant growth will change from soft and supple to much firmer and harder.

### **Pricking**

Pricking out' means separating out seedlings growing together and transferring them into their own plugs or pots of potting mix. Start pricking out as the seedlings are big enough to handle.

### **Rouging**

In agriculture, rouging refers to the act of identifying and removing plants with undesirable characteristics from agricultural fields. Rouges are removed from the fields to preserve the quality of the crop being grown. Plants being removed may be diseased, be of an unwanted variety, or undesirable for other reasons.

### **Characteristics of Good Quality Seedlings**

1. Uniform in growth
2. Healthy and sturdy
3. Free from diseases
4. Free from off-types

### **Why transplant vegetable seedlings?**

- a. To allow sufficient space for stocky development of the plants
- b. To select good, healthy, and sturdy seedlings
- c. To eliminate diseased and weak seedlings

### **When to transplant seedlings?**

The best time to transplant seedlings is just before or after a rain, provided the soil can be worked and during cloudy days. During sunny days, transplanting should be done late in the afternoon to lessen transplanting shock and to hasten seedling recovery.

### **Rules in Transplanting**

1. Keep the newly uprooted seedlings from direct sunlight.
2. Keep the roots moist and the tops dry while transferring the seedlings.
3. Keep as much soil on the roots as possible.
4. Settle the soil around the roots when watering.
5. Handle seedlings carefully to avoid damage.
6. Transplant late in the afternoon or on a cloudy day and shade the seedlings.

### **Steps in Transplanting Vegetable Seedlings**

1. Water the seedlings a day before transplanting.
2. Uproot the desired number of seedlings to be planted.
3. Dig a hole big enough to receive the root system without bending it into the space.
4. Plant one seedling per hill.
5. Cover the roots properly and the shoot apex should be higher than the ground level of the bed or the soil should not cover the first leaves after planting.
6. Press the soil after planting to have better contact of the roots with the soil.
7. Irrigate the transplanted seedlings.
8. If necessary, provide the seedlings a temporary shade for at least.

### **Planting Distance of Transplanted Seedlings**

Planting spacing between rows and hills is important to allow growth of plants, ease of cultivation, and efficient use of space. Generally, the depth of planting depends on the kinds of crop and size of the seedling. Recommended distance of planting, depth of planting, and rate of seeding of selected vegetable crops is shown in the table below.

Table 1. Distance of planting, depth of planting, and rate of seeding of selected vegetable crops according to Canare et. Al (2012).

| Crop        | Distance of Planting |           | Depth of Planting (cm) | Rate of Seeding (per hill) |
|-------------|----------------------|-----------|------------------------|----------------------------|
|             | Row (cm)             | Hill (cm) |                        |                            |
| Tomato      | 100                  | 75        | 2-3                    | 1                          |
| Eggplant    | 100                  | 75        | 2-3                    | 1                          |
| Pepper      | 100                  | 75        | 2-3                    | 1                          |
| Pechay      | 15                   | 15        | 2-3                    | 1                          |
| Cabbage     | 75                   | 40        | 2-3                    | 1                          |
| Carrot      | 15                   | 15        | 2-3                    | 1                          |
| Cauliflower | 35                   | 30        | 2-3                    | 1                          |
| Radish      | 20                   | 15        | 2-3                    | 1                          |
| Onion       | 15                   | 15        | 2-3                    | 1                          |

## WHAT HAVE YOU LEARNED?

**Activity 1: Word Puzzle.** Find the words inside the box, encircle the given word.

|               |            |
|---------------|------------|
| Transplanting | Hardening  |
| Seeds         | Pricking   |
| Seedlings     | Rogueing   |
| Eggplant      | Distance   |
| Tomato        | Vegetables |

|   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T | R | A | N | S | P | L | A | N | T | I | N | G | A | R | T | O |
| A | A | N | E | I | R | W | A | P | O | A | T | A | T | O | H | I |
| D | D | T | O | Y | I | Q | E | O | M | S | I | L | O | S | A | U |
| E | I | R | I | R | C | E | T | T | A | H | O | S | E | E | D | S |
| C | S | A | U | E | K | T | R | Y | T | A | T | E | K | O | A | A |
| V | H | N | H | D | I | K | U | R | O | G | U | E | I | N | G | F |
| H | E | S | T | S | N | L | I | N | O | T | D | D | A | N | K | E |
| B | S | I | L | G | G | P | O | G | U | Y | C | L | I | F | E | T |
| E | G | G | P | L | A | N | T | U | A | I | N | I | E | W | L | Y |
| E | O | N | A | I | B | T | D | I | S | T | A | N | C | E | S | I |
| T | A | H | A | R | D | E | N | I | N | G | R | G | R | E | E | N |
| S | T | E | V | E | G | E | T | A | B | L | E | S | O | N | G | E |

**Activity 2: True or False.** Read carefully each statement and write TRUE if the statement is correct and FALSE if the statement is incorrect. Write your answer in the space provided before the number.

- \_\_\_\_\_ 1. Transplant shock is a term used to describe the stress and potential setback that plants may experience after being transplanted.
- \_\_\_\_\_ 2. Transplanting should ideally be done during the hottest part of the day to minimize stress on the plants.

- \_\_\_\_\_ 3. It's recommended to water plants heavily just before transplanting to ensure they have sufficient moisture during the process.
- \_\_\_\_\_ 4. When transplanting seedlings, it's important to bury them deeper in the soil than they were in their original containers to encourage better root development.
- \_\_\_\_\_ 5. When transplanting, it's advisable to gently loosen the roots of the plant to encourage them to spread out into the new soil.

**Activity 3: Perform Transplanting.** The student will perform on how to transplant seedlings.

### Rubrics in Transplanting

| Criteria       | Excellent (3)                              | Good (2)                               | Needs Improvement (1)                     |
|----------------|--------------------------------------------|----------------------------------------|-------------------------------------------|
| Preparation    | Site and materials are well-prepared       | Site and materials are mostly prepared | Site and materials are poorly prepared    |
| Handling       | Seedlings handled carefully with no damage | Seedlings handled with minor damage    | Seedlings are damaged or mishandled       |
| Planting Depth | Seedlings are planted at the correct depth | Planting depth is mostly correct       | Seedlings are planted too deep or shallow |
| Spacing        | Seedlings are spaced correctly             | Spacing is mostly correct              | Poor spacing between seedlings            |
| Soil Coverage  | Roots are well-covered with soil           | Soil coverage is mostly adequate       | Inadequate soil coverage                  |
| Watering       | Seedlings are watered appropriately        | Watering is mostly adequate            | Seedlings are over- or under-watered      |

Reflection:

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### POST-TEST

Activity 1: Read and understand the questions very well. Write the letter of the correct answer on your paper.

- What is the primary purpose of transplanting seedlings?
  - To reduce the need for watering
  - To increase the number of seedlings
  - To decrease the cost of gardening supplies
  - To move seedlings from their initial containers to their final growing location
- When is the best time to transplant seedlings into the garden or larger pots?
  - When the soil is too dry.
  - As soon as they germinate from seeds
  - When they are still tiny and delicate



- d. When they have developed their first true leaves
- 3. What is the purpose of hardening off seedlings before transplanting them into the garden?
  - a. To make seedlings tougher
  - b. To increase the size of the seedlings
  - c. To improve the flavor of the harvested crops
  - d. To acclimate seedlings to outdoor conditions
- 4. Which tool is commonly used for digging holes for transplanting seedlings?
  - a. Hoe
  - b. Rake
  - c. Shovel
  - d. Trowel
- 5. Why is it essential to water seedlings after transplanting them?
  - a. To drown pests
  - b. To reduce stress on the seedlings
  - c. To encourage root rot
  - d. To prevent sunlight damage
- 6. What is the planting distance between rows of pepper?
  - a. 25 cm
  - b. 50 cm
  - c. 75 cm
  - d. 100 cm
- 7. What is transplanting?
  - a. Harvesting mature plants
  - b. Planting seeds directly in the ground
  - c. Broadcasting of seeds on the seedbed
  - d. Moving a plant from one location to another
- 8. Which of the following is not a characteristic of good quality seedling?
  - a. Uniform in growth
  - b. Free from diseases
  - c. Healthy and sturdy
  - d. With damage and weak stem
- 9. Which of the following are not directly planted?
  - a. cabbage seeds
  - b. bean seeds
  - c. mongo seeds
  - d. squash seeds
- 10. Time of planting depends on the following factors except one.
  - a. size of seeds and other propagating materials
  - b. soil and weather conditions
  - c. the kind of crop to be planted.
  - d. the time the produce is desired.

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## ANSWER KEY

### PRE-TEST

1. a
2. b
3. d
4. d
5. a
6. d
7. c
8. b
9. d
10. a

### ACTIVITY 1

1. d
2. d
3. a
4. d
5. b
6. d
7. d
8. d
9. a
10. a

### ACTIVITY 2

1. TRUE
2. FALSE
3. FALSE
4. FALSE
5. FALSE

### ACTIVITY 2

|   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T | R | A | N | S | P | L | A | N | T | I | N | G | A | R | T | O |
| A | A | N | E | I | R | W | A | P | O | A | T | A | T | O | H | I |
| D | D | T | O | Y | I | Q | E | O | M | S | I | L | O | S |   | U |
| E | I | R | I | R | C | E | T | T | A | H | O | S | E | E | D | S |
| C | S | A | U | E | K | T | R | Y | T | A | T | E | K | O |   | A |
| V | H | N | H | D | I | K | U | R | O | G | U | E | I | N | G | F |
| H | E | S | T | S | N | L | I | N | O | T | D | D | A | N | K | E |
| B | S | I | L | G | G | P | O | G | U | Y | C | L | I | F | E | T |
| E | G | G | P | L | A | N | T | U | A | I | N | I | E | W | L | Y |
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| S | T | E | V | E | G | E | T | A | B | L | E | S | O | N | G | E |

### ACTIVITY 3

#### PERFORMANCE TASK

## **SYNOPSIS**

A well-prepared soil is not necessary in transplanting. However, a well-prepared soil ensures optimum growth and development of crops. Transplanting allows better control of the environment during the early stage of plant growth, thus giving the plant a head start.

The best time to transplant is just before or after a rain, provided the soil is workable. During the hot or dry season, transplanting should be done late in the afternoon. This will lessen transplanting shock of the seedling to facilitate its recovery.

## **ABOUT THE AUTHOR**



JOAN M. CRISTOBAL is a graduate of Isabela State University—Echague Campus with a Bachelor of Science in Agriculture major in Crop Science. She earned units in the Bachelor of Science in Secondary Education at Northeastern College. She is currently teaching Technology and Livelihood Education in grades 9 and 10. She finished her Master of Science in Agricultural Sciences with a Major in Crop Science at Isabela State University—Echague Campus.