



# BEGINNING HYDROPONICS



Illinois Extension  
UNIVERSITY OF ILLINOIS URBANA-CHAMPAIGN

## OBJECTIVES

LEARN ABOUT HYDROPONICS.  
EXPLORE A PLANT'S LIFE CYCLE.

## MATERIALS

COPY PAPER  
CARDSTOCK  
PLASTIC WATER BOTTLE  
COTTON KITCHEN TWINE  
COTTON BALLS  
SEEDS (BUSH BEAN SEED IS USED  
IN THIS KIT)

## GUIDING QUESTIONS

1. WHAT IS HYDROPONICS?
2. WHAT HAPPENS WHEN A SEED STARTS TO GROW?

## CONCEPTS

- HYDROPONICS IS A WAY OF GROWING PLANTS WITHOUT SOIL.
- SEEDS ARE ONE PART OF A PLANT'S LIFE CYCLE.

## FACTS

- TO GROW HYDROPONICALLY, YOU NEED PLANTS OR SEEDS, A CONTAINER, WATER, A WAY TO ANCHOR THE PLANTS, NUTRIENTS, AND A LIGHT SOURCE.
- YOU CAN GROW HYDROPONICALLY ALL YEAR LONG.
- NUTRIENTS MUST BE ADDED TO THE WATER IN ORDER FOR HEALTHY PLANTS TO GROW. FOR THIS KIT, NO NUTRIENTS ARE ADDED.
- PLANTS ARE LIVING THINGS THAT GROW AND REPRODUCE, SIMILAR TO ALL OTHER LIVING ORGANISMS ON EARTH.
- IN FLOWERING PLANTS, THE MAIN STEPS IN THEIR LIFE CYCLE ARE:
  - SEED FORMATION
  - SEED GERMINATION
  - NEW SEEDLING
  - MATURE (ADULT) PLANT
  - POLLINATION AND FERTILIZATION (FLOWERS)
  - FRUIT (SEED)
  - PLANT DIES

COLLEGE OF AGRICULTURAL, CONSUMER & ENVIRONMENTAL SCIENCES

UNIVERSITY OF ILLINOIS, U.S. DEPARTMENT OF AGRICULTURE, AND LOCAL EXTENSION COUNCILS COOPERATING  
UNIVERSITY OF ILLINOIS EXTENSION PROVIDES EQUAL OPPORTUNITIES IN PROGRAMS AND EMPLOYMENT.



## INTEREST APPROACH-ENGAGEMENT

ASK A QUESTION(S):

1. WHERE DOES OUR FOOD COME FROM?
2. WHAT TYPE OF PLANTS DO WE EAT?
3. HOW DOES A PLANT GROW?



### ACTIVITY 1: MAKE YOUR OWN HYDROPONIC SYSTEM

- CUT THE TOP 1/3 OFF OF A 16OZ. WATER BOTTLE. SMALLER CHILDREN WILL NEED ASSISTANCE. BOTTLE IN KIT HAS A BLACK MARK WHERE A HOLE HAS BEEN MADE TO INSERT SCISSORS TO CUT.
- PLEASE NOTE THE EDGES OF THE PLASTIC CAN BE SHARP.
- PLACE THE TOP PART OF THE BOTTLE UPSIDE DOWN IN THE BOTTOM OF THE BOTTLE. IT SHOULD LOOK LIKE A FUNNEL.
- FILL THE BOTTLE 1/4 OF THE WAY FULL WITH WATER.
- COIL THE REMAINING THREAD INSIDE THE FUNNEL PART OF THE BOTTLE.
- TAKE THE COTTON BALLS AND PULL AND STRETCH THEM UNTIL THEY ARE FLUFFY.
- PLACE THEM INTO THE FUNNEL PART OF THE BOTTLE.
- TUCK THE BEAN SEEDS INTO THE MIDDLE OF THE COTTON.
- CAREFULLY POUR A SMALL AMOUNT OF WATER ON THE COTTON TO SLIGHTLY DAMPEN THEM. THE THREAD WILL BRING WATER UP TO THE SEEDS DAMPENING THEM TO BEGIN WHICH GIVES THEM A HEADSTART.
- PLACE YOUR GARDEN IN A BRIGHT SUNNY SPOT AND WATCH YOUR SEEDS GROW.
- WATER WHEN THE BOTTOM PART OF BOTTLE IS ALMOST OUT OF WATER.
- SEEDS SHOULD SPROUT IN 7-14 DAYS.

### ACTIVITY 2: CREATE A GARDEN JOURNAL

- TAKE THE CARDSTOCK AND 4 SHEETS OF COPY PAPER AND FOLD IT HAMBURGER STYLE (WIDTH-WISE).
- PUT THE CARDSTOCK ON THE OUTSIDE OF THE COPY PAPER TO MAKE A BOOK.
- EACH DAY WRITE DOWN AND DRAW WHAT YOU SEE.
- WHAT DO YOU NOTICE?
- WHAT QUESTIONS DO YOU HAVE?
- DOES IT REMIND YOU OF ANYTHING?
- PUT THE DATE ON EACH OF YOUR OBSERVATIONS SO YOU HAVE A RECORD OF WHAT HAPPENS. THIS IS WHAT A SCIENTIST DOES WHEN THEY RUN AN EXPERIMENT.

### ACTIVITY 3: PLANT YOUR SEEDLING IN A SUNNY SPOT OR POT

- SINCE WE ARE NOT USING NUTRIENTS IN OUR HYDRPONIC SYSTEM, IF YOU WANT TO ACTUALLY GROW UNTIL IT PRODUCES GREEN BEANS IT WILL NEED TO BE TRANSPLANTED INTO SOIL.

### ACTIVITY 4: GROWING VEGETABLES FROM KITCHEN SCRAPS

- VEGETABLES CAN ALSO BE GROWN FROM COMMON KITCHEN SCRAPS.
- SAVE YOUR AVOCADO PITS. PUT 4 TOOTHPICKS, SPACED EVENLY AROUND THE MIDDLE OF THE PIT. BALANCE PIT ON THE EDGE OF A CONTAINER FILLED WITH WATER. MAKE SURE THE PIT IS TOUCHING THE WATER. CHANGE WATER WEEKLY. THIS SHOULD SPROUT IN 6-8 WEEKS.
- END OF ROMAINE LETTUCE. SET IN A SHALLOW DISH OF WATER. CHANGE OR ADD WATER EVERY 1-2 DAYS. THIS SHOULD SPROUT IN A FEW DAYS. PLEASE NOTE: NEW PLANT WILL NOT BE AS BIG AS ORIGINAL BUT IS JUST AS EDIBLE. READY TO EAT IN 10-14 DAYS.

# Flowering plant life cycle

