



# BEGINNING HYDROPONICS



Illinois Extension  
UNIVERSITY OF ILLINOIS URBANA-CHAMPAIGN

## OBJECTIVES

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

## MATERIALS

4 SHEETS OF COPY PAPER  
1 SHEET OF CARDSTOCK  
1 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.
- 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



## 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 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 WITH WATER.
- COIL THE KITCHEN TWINE INSIDE THE FUNNEL PART OF THE BOTTLE WITH ONE END TOUCHING THE WATER.
- 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 TWINE WILL BRING THE WATER UP TO THE SEEDS BUT DAMPENING THEM TO BEGIN GIVES THEM A HEAD START.
- PLACE YOUR GARDEN IN A BRIGHT SUNNY SPOT AND WATCH YOUR SEEDS GROW.
- WATER WHEN THE BOTTOM PART OF THE 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 HYDROPONIC 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 102 DAYS. THIS SHOULD SPROUT IN A FEW DAYS. PLEASE NOTE: NEW PLANT WILL NOT BE AS BIG AS THE ORIGINAL BUT IS JUST AS EDIBLE. READY TO EAT IN 10-14 DAYS.

# Flowering plant life cycle

