COOPERATIVE EXTENSION SERVICE
MICHIGAN STATE UNIVERSITY

family Vegetable Garden series

EXTENSION BULLETIN E-824(1)

USE WINTER MONTHS TO...

PLAN AHEAD

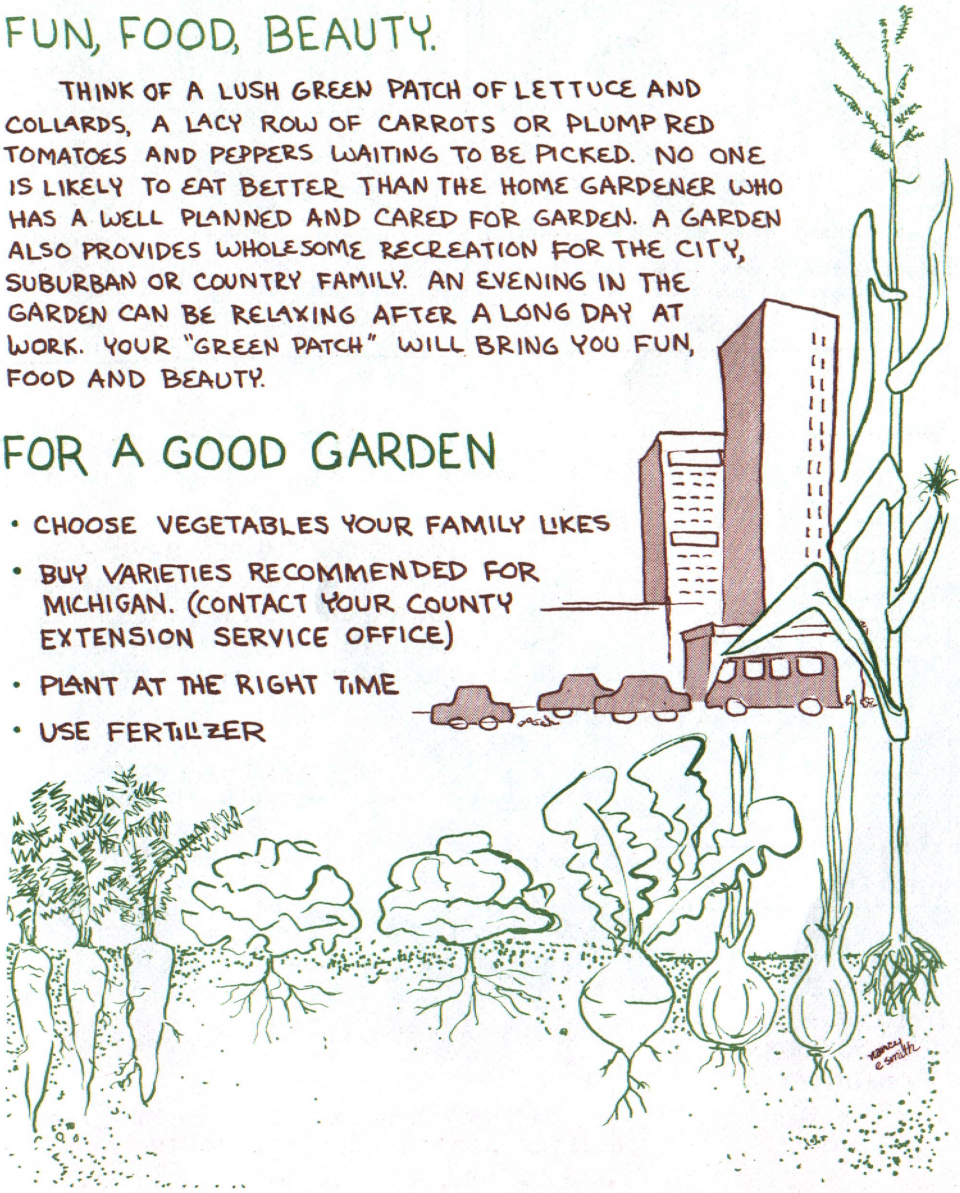
by nancy e. smith and j. lee taylor
DEPT. OF HORTICULTURE

FUN, FOOD, BEAUTY.

THINK OF A LUSH GREEN PATCH OF LETTUCE AND COLLARDS, A LACY ROW OF CARROTS OR PLUMP RED TOMATOES AND PEPPERS WAITING TO BE PICKED. NO ONE IS LIKELY TO EAT BETTER THAN THE HOME GARDENER WHO HAS A WELL PLANNED AND CARED FOR GARDEN. A GARDEN ALSO PROVIDES WHOLESOME RECREATION FOR THE CITY, SUBURBAN OR COUNTRY FAMILY. AN EVENING IN THE GARDEN CAN BE RELAXING AFTER A LONG DAY AT WORK. YOUR "GREEN PATCH" WILL BRING YOU FUN, FOOD AND BEAUTY.

FOR A GOOD GARDEN

- CHOOSE VEGETABLES YOUR FAMILY LIKES
- BUY VARIETIES RECOMMENDED FOR MICHIGAN. (CONTACT YOUR COUNTY EXTENSION SERVICE OFFICE)
- PLANT AT THE RIGHT TIME
- USE FERTILIZER

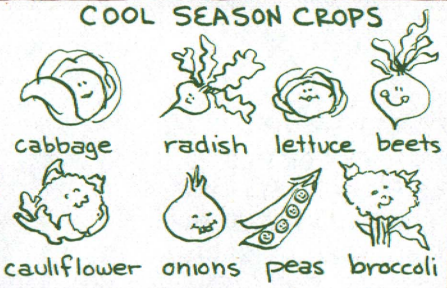


START EARLY

BUYING SEED. EXPERIENCED GARDENERS BUY MOST OF THEIR SEED THROUGH SEED CATALOGUES. THEY OFFER MORE VARIETIES AND TELL YOU WHICH VARIETIES ARE BEST FOR CANNING, FREEZING OR EATING RAW.

FROST (TEMPERATURES OF 32°F) WILL NOT INJURE THESE CROPS. PLANT SEEDS OR TRANSPLANTS OUTSIDE IN APRIL.

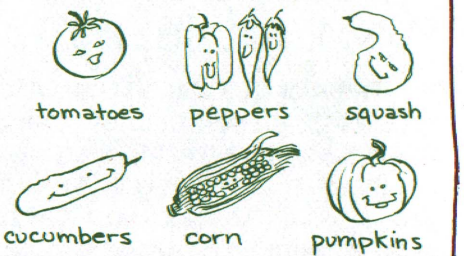
COOL SEASON CROPS



We eat the roots, stems, leaves or very young flowers of most COOL SEASON CROPS

THESE CROPS WILL BE INJURED BY A FROST (32°F). PLANT THESE SEEDS OR TRANSPLANTS OUTSIDE IN MAY.

WARM SEASON CROPS



We eat the fruit of most WARM SEASON CROPS

JANUARY-FEBRUARY
Order seed catalogues

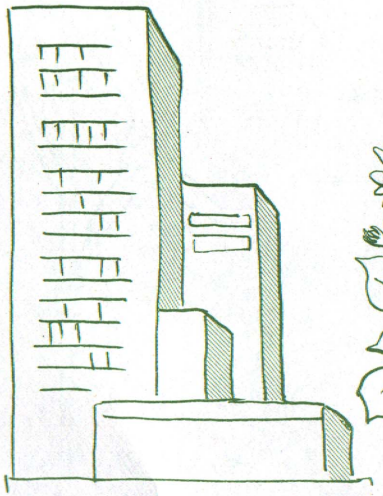
FEBRUARY-MARCH
Order seeds

MARCH-APRIL
Prepare the soil
As soon as it is dry enough.

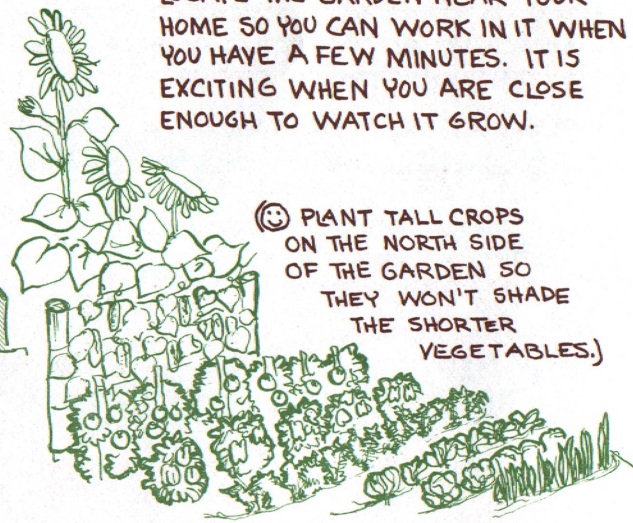
APRIL
Plant Cool Season Crops
check local planting dates

MAY
Plant Warm Season Crops
After danger of frost

WHERE TO PUT THE GARDEN

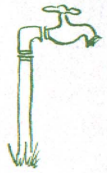


LOCATE THE GARDEN NEAR YOUR HOME SO YOU CAN WORK IN IT WHEN YOU HAVE A FEW MINUTES. IT IS EXCITING WHEN YOU ARE CLOSE ENOUGH TO WATCH IT GROW.



☺ PLANT TALL CROPS ON THE NORTH SIDE OF THE GARDEN SO THEY WON'T SHADE THE SHORTER VEGETABLES.)

LOCATE NEAR A GOOD SUPPLY OF WATER ☺



SUNNY, LEVEL LAND IS BEST. ☺ BUT GENTLE SLOPES WILL DO. SOUTH FACING SLOPES ARE THE SUNNIEST. ☺

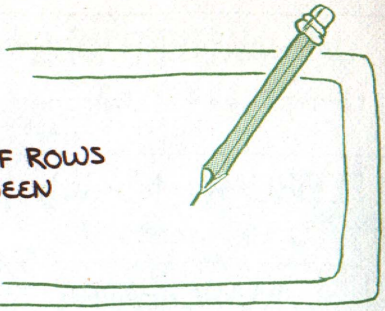
DON'T WORRY IF YOU DON'T HAVE MUCH SPACE. AN AREA AS SMALL AS A COMPACT CAR CAN BE MORE FUN AND FRUITFUL THAN A LARGE GARDEN SEVERAL BLOCKS OR MILES AWAY. PICK A SUNNY SPOT. IF YOU DON'T HAVE A YARD, USE YOUR IMAGINATION... TRY LETTUCE AND GREENS IN A FLOWER BOX OR TOMATOES AND PEPPERS IN POTS ON THE PORCH.

DON'T PLANT ON STEEP BANKS. RAIN WILL WASH AWAY THE SOIL AND VEGETABLES. ☹

NORTH FACING SLOPES ARE COLD AND SHADED. VEGETABLES WILL NOT GROW WELL HERE. ☹

LOW AREAS ARE WET ☹ AND THE SOIL STAYS COLD.

PLANT YOUR GARDEN ON PAPER FIRST



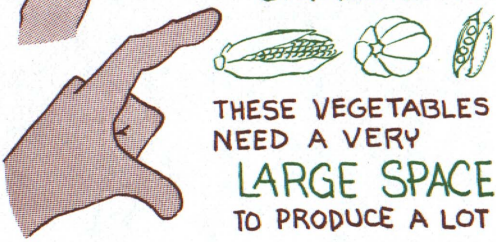
YOUR PLAN SHOULD INCLUDE:

1. ARRANGEMENT OF CROPS, LENGTH OF ROWS
2. SPACING BETWEEN ROWS AND BETWEEN PLANTS IN ROWS
3. VARIETIES TO BE PLANTED
4. PLANTING DATES

HELPFUL HINTS . . . . . .

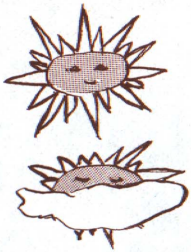
THESE VEGETABLES PRODUCE A LOT IN A SMALL SPACE

TOMATO — TURNIP
RADISH — ONION (SETS)
LETTUCE — GREENS
BEANS (POLE OR SNAP)
BUSH SQUASH



THESE VEGETABLES NEED A VERY LARGE SPACE TO PRODUCE A LOT

PEAS — MELON
POTATO — CORN
VINE SQUASH



YOUR VEGETABLES NEED PLENTY OF SUNSHINE. TOMATOES, PEPPERS, SQUASH AND OTHER "FRUIT" CROPS MUST HAVE FULL SUN. ROOT CROPS LIKE BEETS AND CARROTS CAN BE GROWN IN LIGHT SHADE. LEAFY VEGETABLES LIKE LETTUCE AND COLLARDS WILL GROW IN MEDIUM SHADE.

KEYS TO SUCCESS

START EARLY
BUY RECOMMENDED VARIETIES
USE FERTILIZER

Issued in furtherance of cooperative extension work in agriculture and home economics, acts of May 8, and June 30, 1914, in cooperation with the U.S. Department of Agriculture. Gordon E. Guyer, Director, Cooperative Extension Service, Michigan State University, East Lansing, Michigan 48824. 1P-1:75-50M-UP

COOPERATIVE EXTENSION SERVICE
MICHIGAN STATE UNIVERSITY

Jardín Familiar De Vegetales

EXTENSION BULLETIN E-824(1)

Use los messes de invierno . . PARA PLANEAR

Nancy E. Smith y J. Lee Taylor, Dept. de Horticultura

PASATIEMPO, COMIDA, BELLEZA

Imagínese una exuberante y verde franja de lechugas y acelgas, una encrespada hilera de zanahorias o rojos y rebosantes tomates y ajíes esperando ser cortados. Nadie probablemente coma mejor que el jardinero que ha planeado y cuidado bien su jardín. Un jardín también proporciona saludable recreación para la familia de la ciudad, las afueras y la familia que vive en el campo. Entretenerse en el jardín por las tardes, después de un largo día de trabajo proporciona un agradable descanso a nuestro cuerpo. Su "pedazo verde" de jardín le traerá disfrute, comida y belleza.

PARA TENER UN BUEN JARDÍN

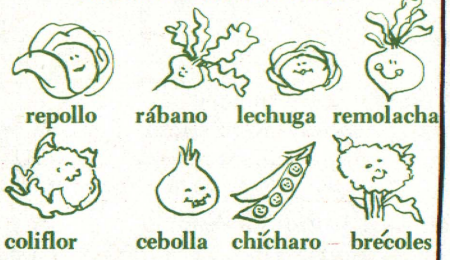
- Escoja vegetales que le gusten a su familia.
- Compre variedades recomendadas para el estado de Michigan. (Comuníquese con la oficina de la Cooperative Extension Service de su area)
- Siempre a su debido tiempo.
- Use fertilizante.

EMPIECE TEMPRANO

COMPRE LAS SEMILLAS. Jardineros de experiencia compran la mayoría de sus semillas por catálogos. Ofrecen mas variedades y le indicarán cuál variedad es mejor para enlatar, congelar o comer fresca.

Helada (temperatura de 32°F) no dañará estas cosechas. Siembre o transplante en Abril.

Cosechas de estación fresca



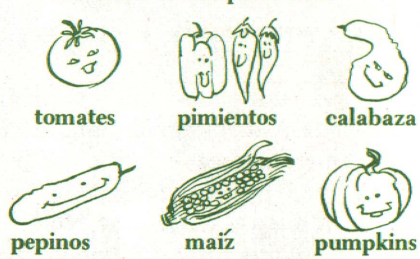
repollo rábano lechuga remolacha

coliflor cebolla chícharo brécoles

Comemos las raíces, tallos, hojas o flores de la cosecha de la estación fresca.

Estas cosechas se dañarán si reciben una helada. (43°F). Siembre o transplante en Mayo.

Cosechas de tiempo de calor



tomates pimientos calabaza

pepinos maíz pumpkins

Comemos la mayoría de las frutas de la estación de calor

ENERO-FEBRERO
Ordene el catálogo de semillas

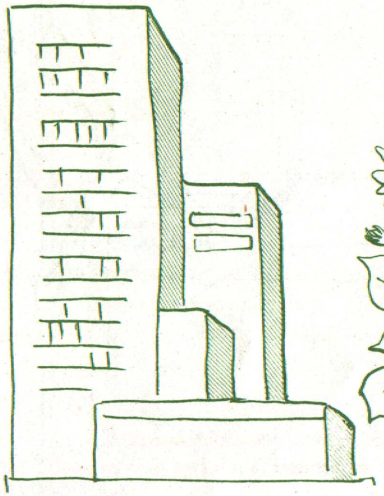
FEBRERO-MARZO
Ordene las semillas

MARZO-ABRIL
Prepare la tierra
Tan pronto como esté bastante seca.

ABRIL
Plante sus cosechas de la estación fresca
Chequee las fechas apropiadas para su area

MAYO
Siembre semillas de tiempo de calor
Después del peligro de una helada

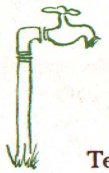
Donde Sembrar Su Jardín



Siembre su jardín en una parte cerca de su casa donde le sea fácil trabajar en él en cuestión de pocos minutos. Usted se entusiasmará mas si lo puede ver crecer.

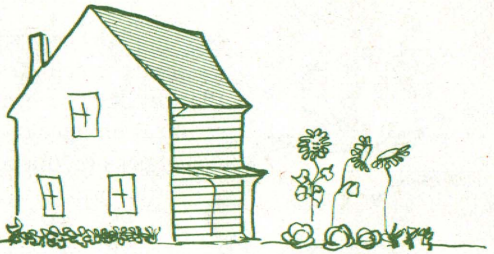
Siembre plantas altas en la parte norte para que no les de sombra a las otras plantas menos altas.

Localice una toma de agua cerca de donde va a sembrar sus vegetales.



Terreno plano y soleado es el mejor para su jardín. Pero las lomas también serán apropiadas. El lado sur de los terrenos empinados es el mas soleado.

No se preocupe si no tiene mucho espacio. Un area pequeña como el tamaño de su carro puede ser mas entretenido y fructífero que un jardín grande a varias cuadras de su casa. Escoja un lugar soleado.
Si no tiene patio, use su imaginación. Siembre lechugas o legumbres en una jardinera o tomates y ajíes en un bote en su portal.

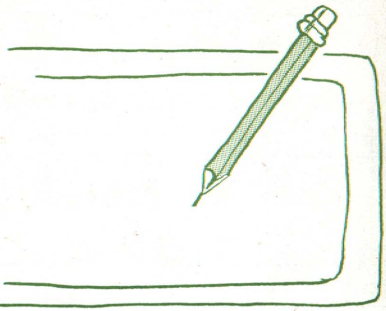


No plante en terrenos empinados. La lluvia se llevará la tierra y la semilla.

Los terrenos en lomas mirando al norte son fríos y sombreados. Sus vegetales no crecerán bien allí.

Los terrenos bajos son húmedos y la tierra permanece fría

PLANEE SU JARDÍN EN UNA HOJA DE PAPEL PRIMERO



Su plan debe incluir:

1. *Plan de siembra, medida de los surcos.*
2. *Espacio entre surcos y entre semilla y semilla.*
3. *Variedades que se van a sembrar.*
4. *Cuando se debe sembrar cada variedad.*

TENGA PRESENTE QUE:

Estos vegetales producen mucho en

ESPACIO PEQUEÑO

tomate
rábano
lechuga
frijol (en vainas)
Calabacitas tiernas
acelgas
cebolla

Estos vegetales necesitarán un

ESPACIO GRANDE

para producir mucho

papa
calabaza (enredadera)
melón
maíz

Sus vegetales necesitan mucho sol. Los tomates, pimientos, calabaza y otra "fruta" necesitan estar completamente al sol. Plantas de raíz como remolachas y zanahorias se pueden sembrar en ligera sombra. Plantas de hojas como lechuga y acelgas a media sombra.

PARA TENER ÉXITO:

- **Comience temprano.**
- **Compre variedades recomendadas.**
- **Use fertilizante.**

Editado para promover los programas de la Cooperative Extension Service en agricultura y economía del hogar, Mayo 8 y Junio 30, 1914, en cooperación con el Departamento de Agricultura de los Estados Unidos. Gordon E. Guyer, Director, Cooperative Extension Service, Michigan State University, East Lansing, MI 48824.

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EXTENSION BULLETIN E-824 (2)

START WITH SOIL

by nancy e. smith and j. lee taylor
DEPT. OF HORTICULTURE

SOIL ...

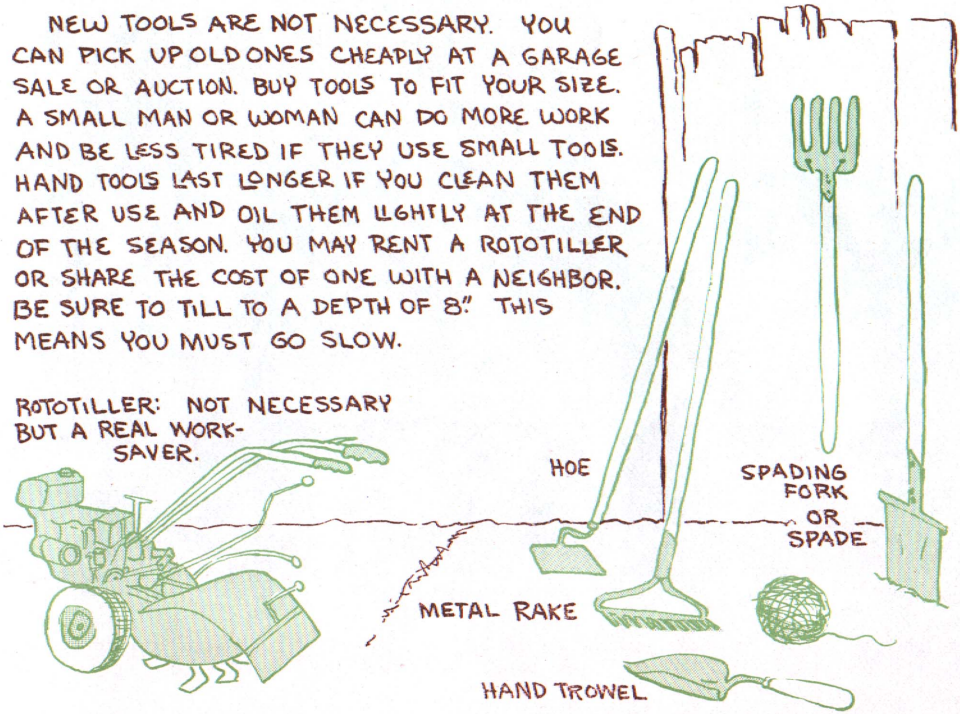
SOIL IS ALIVE!

IT IS A SPECIAL MIXTURE OF MINERALS, DECAYING LEAVES, PLANT STALKS, ANIMAL WASTES, AIR, WATER AND MANY VERY TINY LIVING PLANTS AND ANIMALS. SOIL GIVES YOUR VEGETABLES THE NUTRIENTS AND WATER THEY NEED TO GROW.

YOU CAN HELP THE SOIL. SPADE OR TILL IT TO LOOSEN IT UP SO WATER CAN SEEP IN. KEEP THE SOIL LOOSE AND HEALTHY BY ADDING SOME ORGANIC MATTER. MOST SOILS DO NOT HAVE ENOUGH NUTRIENTS TO GROW LOTS OF REALLY GOOD VEGETABLES. SO, IT IS IMPORTANT TO USE FERTILIZER.

TOOLS YOU WILL NEED

NEW TOOLS ARE NOT NECESSARY. YOU CAN PICK UP OLD ONES CHEAPLY AT A GARAGE SALE OR AUCTION. BUY TOOLS TO FIT YOUR SIZE. A SMALL MAN OR WOMAN CAN DO MORE WORK AND BE LESS TIRED IF THEY USE SMALL TOOLS. HAND TOOLS LAST LONGER IF YOU CLEAN THEM AFTER USE AND OIL THEM LIGHTLY AT THE END OF THE SEASON. YOU MAY RENT A ROTOTILLER OR SHARE THE COST OF ONE WITH A NEIGHBOR. BE SURE TO TILL TO A DEPTH OF 8". THIS MEANS YOU MUST GO SLOW.



FERTILIZERS

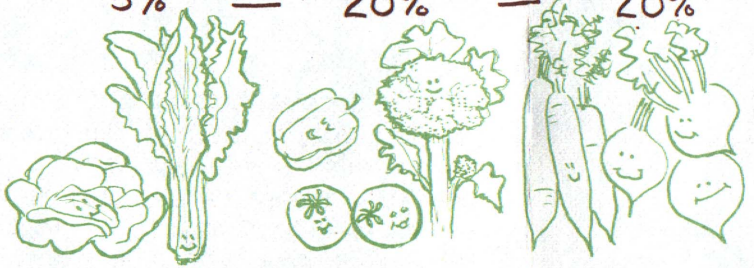
FERTILIZERS OR PLANT FOOD SUPPLY VEGETABLES WITH THE THREE MOST IMPORTANT NUTRIENTS: NITROGEN, PHOSPHORUS AND POTASH. THE LABEL TELLS HOW MUCH OF EACH NUTRIENT IS IN THE FERTILIZER.

WHAT THE LABEL MEANS

Frankly, I don't know what the numbers mean unless its the odds on the weeds winning!

THE 3 NUMBERS STAND FOR THE
% NITROGEN
% PHOSPHORUS
% POTASH
IN THE FERTILIZER.

1ST: NITROGEN 5% — 2ND: PHOSPHORUS 20% — 3RD: POTASH 20%



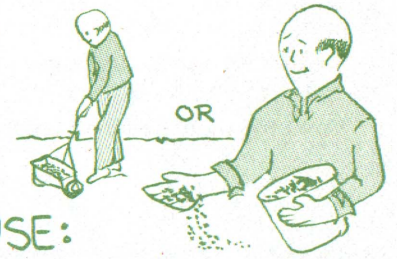
NITROGEN MAKES LEAVES GROW.

PHOSPHORUS MAKES FRUITS AND FLOWERS GROW.

POTASH MAKES ROOTS GROW.

SPREADING FERTILIZERS

MEASURE OUT THE CORRECT AMOUNT AND SPREAD THE FERTILIZER EVENLY OVER THE GROUND. YOU CAN TOSS IT FROM THE PAIL BY HAND OR USE A SPREADER.

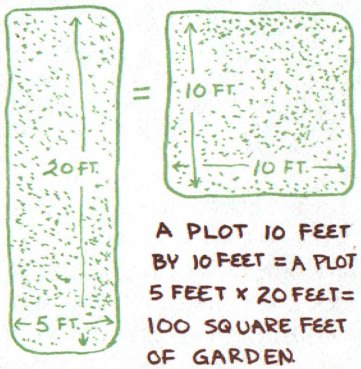


HOW MUCH TO USE:

USE 2 LBS. 5-20-20 FOR EVERY 100 SQUARE FEET.
OR 3 LBS. 8-16-16
OR 4 LBS. 5-10-5

ADD THE CORRECT AMOUNT. TOO MUCH WILL KILL THE PLANTS.

2 CUPS = 1 LB.
4 CUPS = 2 LBS. OF FERTILIZER

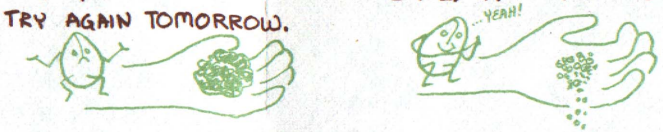


A PLOT 10 FEET BY 10 FEET = A PLOT 5 FEET x 20 FEET = 100 SQUARE FEET OF GARDEN.

PREPARE THE SOIL

FIRST: CLEAR THE GARDEN OF CANS, STICKS, ROCKS AND ANY OTHER TRASH.

NEXT: PICK UP A HANDFUL OF SOIL. SQUEEZE IT. IF THE SOIL FALLS OUT IN PIECES, IT IS DRY ENOUGH TO DIG. IF IT STAYS IN A MUD BALL, IT IS TOO WET. TRY AGAIN TOMORROW.



WHEN THE SOIL IS DRY ENOUGH: SPREAD 1/2 THE FERTILIZER AND ORGANIC MATTER OVER THE GARDEN SURFACE THEN,

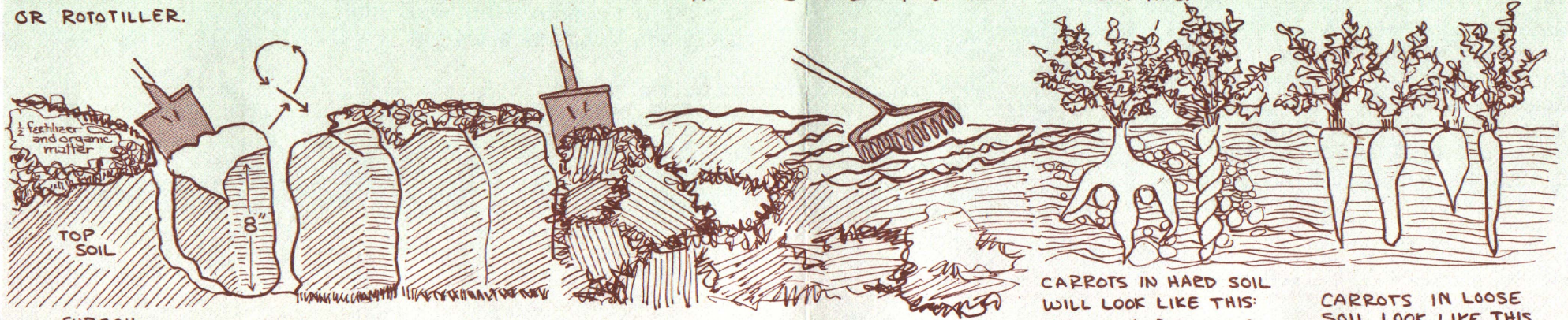
DIG IN ↓↓↓

1. TURN OVER THE SOIL TO A DEPTH OF 8". USE A SPADE OR ROTOTILLER.

2. APPLY OTHER HALF OF THE FERTILIZER AND ORGANIC MATTER.

3. WORK THESE INTO THE SOIL AND RAKE UNTIL SMOOTH AND FREE OF LARGE STONES

4. CONTINUE RAKING INTO THE SOIL UNTIL IT IS SMOOTH AND READY FOR PLANTING.



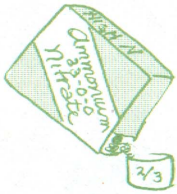
CARROTS IN HARD SOIL WILL LOOK LIKE THIS: FORKED AND TWISTED.

CARROTS IN LOOSE SOIL LOOK LIKE THIS.

A BOOSTER FERTILIZER... for mid season

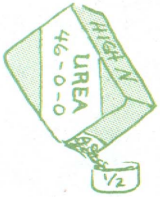
THE NITROGEN-PHOSPHORUS-POTASH MIXTURE IS THE MAIN FERTILIZER TO USE BEFORE PLANTING. YOU WILL ALSO NEED A HIGH NITROGEN BOOSTER FERTILIZER IN MID SEASON.

ABOUT THE 4TH OF JULY



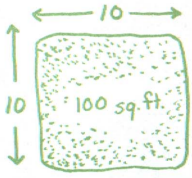
OR

APPLY
⅓ LB = ⅔ CUP
AMMONIUM NITRATE
(33-0-0)



OR
¼ LB = ½ CUP
UREA (46-0-0)

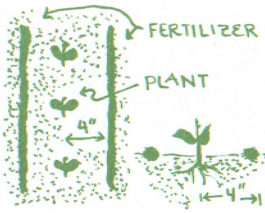
FOR



FOR EACH 100 SQUARE FEET OF SOIL

THE "PUT-ON"

AMMONIUM NITRATE AND UREA ARE STRONG FERTILIZERS AND MAY BURN THE PLANTS. TO PREVENT BURNING, PLACE THE FERTILIZER IN A STRIP OR RING ABOUT 4" FROM THE PLANT.



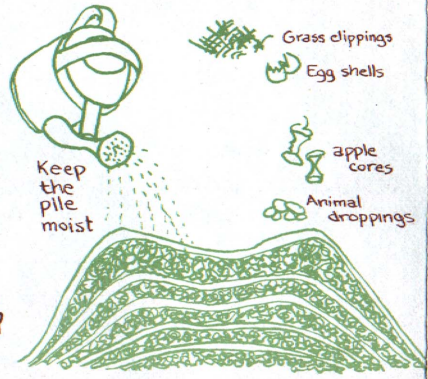
STRIP

RING

ORGANIC MATTER

YOU CAN MAKE COMPOST BY COLLECTING LEAVES, STRAW, GRASS CLIPPINGS, VEGETABLE PEELINGS AND ANIMAL DROPPINGS IN A PILE. ALTERNATE LAYERS OF COMPOST WITH LAYERS OF FERTILIZER. (ABOUT 3 CUPS FOR EACH BUSHEL OF COMPOST.). WHEN THE ORGANIC MATTER (COMPOST) HAS DECOMPOSED, SPREAD A TWO-INCH LAYER OVER THE GARDEN. ORGANIC MATTER IS GOOD FOR THE SOIL. IT HELPS DRY SANDY SOILS TO HOLD WATER LONGER - THE VEGETABLES WON'T GET SO THIRSTY. HARD WET CLAY SOIL IS LOOSENED UP BY O.M. SO THE VEGETABLES WON'T DROWN.

NATURE'S GARBAGE DISPOSAL



Compost pile showing layers of organic matter and fertilizer.

KEYS TO SUCCESS

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EMPIECE CON LA TIERRA

Nancy E. Smith y J. Lee Taylor, Dept. de Horticultura

TIERRA. . .

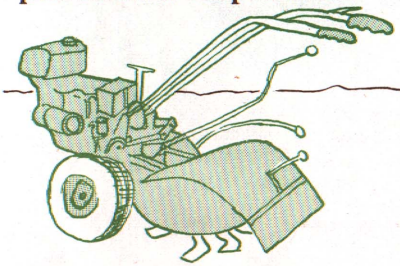
La tierra es un elemento viviente!

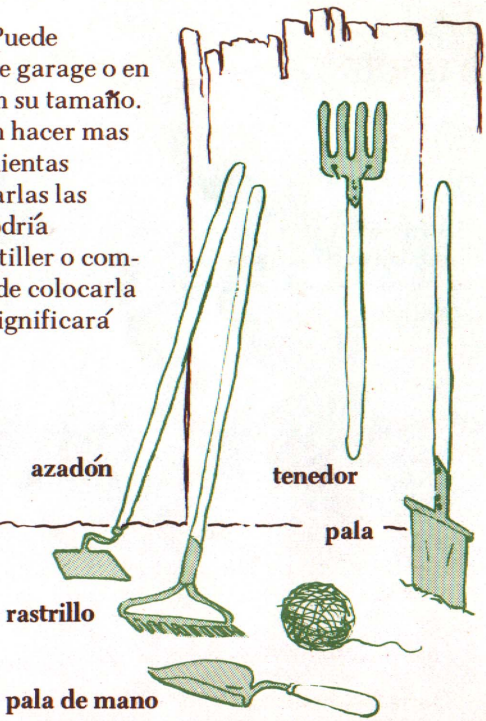
Es una mezcla especial de minerales, hojas, plantas, desecho animal, aire, agua y de muchas pequeñas planticas y animales. Ella le dá a sus vegetales la nutrición y agua que ellos necesitan para crecer. Usted puede ayudar a su tierra. Escárdela, desmorónela para aflojarla y que el agua pueda penetrar en ella. Manténgala suelta y saludable añadiéndole un poco de abono. La mayoría de los suelos no tienen suficiente nutrición por sí solos para hacer crecer buena calidad de vegetales. Por eso es importante usar fertilizante.

HERRAMIENTAS QUE NECESITARÁ

Heramientas nuevas no son necesarias. Puede comprar algunas baratas en las ventas de garage o en algún remate. Cómprelas de acuerdo con su tamaño. Un hombre pequeño o una mujer pueden hacer mas trabajo y cansarse menos si usan herramientas pequeñas. Durarán mas si después de usarlas las limpia y aceita al final de la estación. Podría también rentar un arado de mano o rototiller o compartir su costo con su vecino. Asegúrese de colocarla a una profundidad de 8 pulgadas. Esto significará que usted irá despacio.

Rototiller o arado de mano no necesario pero ahorrará tiempo si lo usa





FERTILIZANTES

Los fertilizantes o alimento de plantas, proveen a los vegetales con los tres elementos mas importantes: nitrógeno, fósforo y potasio. La etiqueta de su fertilizante le dirá cuanta cantidad de cada elemento hay en el fertilizante.

QUE SIGNIFICAN LAS ETIQUETAS

Qué significan los 3 números en el paquete?

Los 3 números significan:
% de nitrógeno
% de fósforo
% de potasio
en el fertilizante

1º : nitrógeno — 5%

el nitrógeno hace crecer las hojas

2º : fósforo — 20%

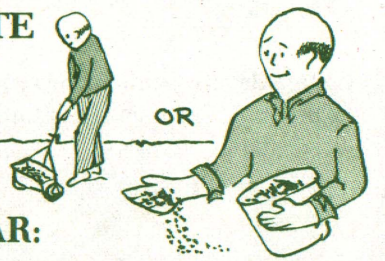
el fósforo hace crecer las frutas y flores

3ro : potasio — 20%

el potasio hace crecer las raíces

COMO APLICAR EL FERTILIZANTE

Mida la cantidad correcta y extiéndalo parejo sobre la tierra. O puede arrojarlo con la mano o usar un regador.

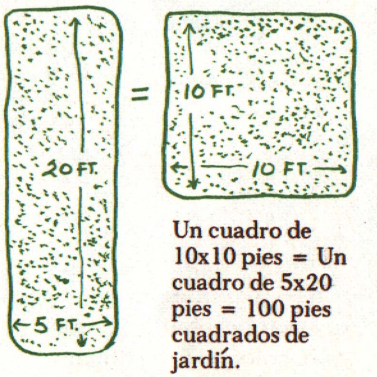


CUÁNTO DEBE USAR:

Use 2 lbs. 5-20-20 por cada 100 pies cuadrados
o 3 lbs. 8-16-16
o 4 lbs. 5-10-5

añádale la cantidad correcta. Demasiado matará sus plantas

2 tazas = 1 lb
4 taxas = 2 lbs
de fertilizante



Un cuadro de 10x10 pies = Un cuadro de 5x20 pies = 100 pies cuadrados de jardín.

PREPARE LA TIERRA

primero: despeje el jardín de latas, piedras, palos y otras basuras.

segundo: coja un puñado de tierra. Apriétela. Si se desmorona en pedazos está suficientemente seca para escardarla. Si se queda en pelotas, está muy húmeda. Pruebe de nuevo al día siguiente.

Cuando la tierra esté suficientemente seca extienda la mitad del fertilizante y el abono orgánico sobre su jardín, entonces

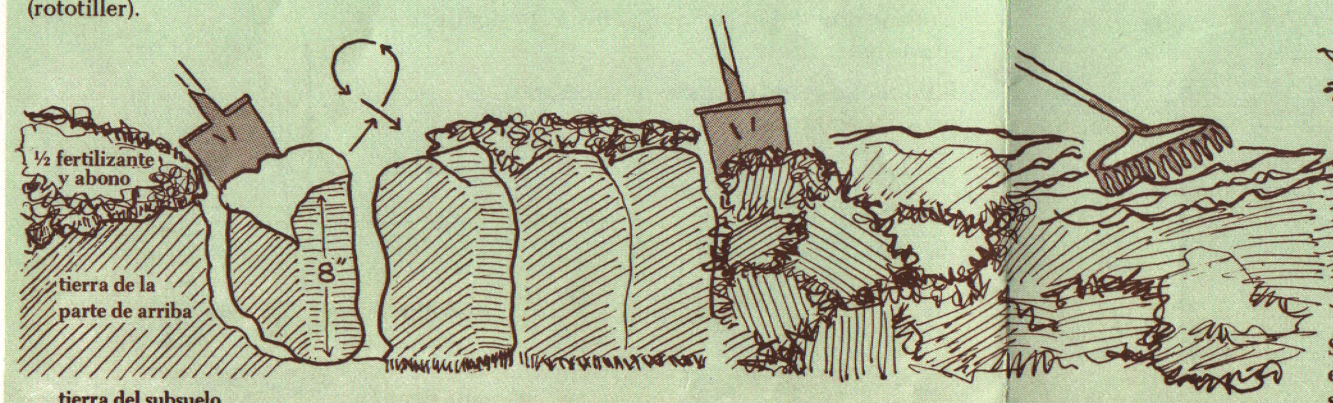
ESCÁRDELO ↓↓↓

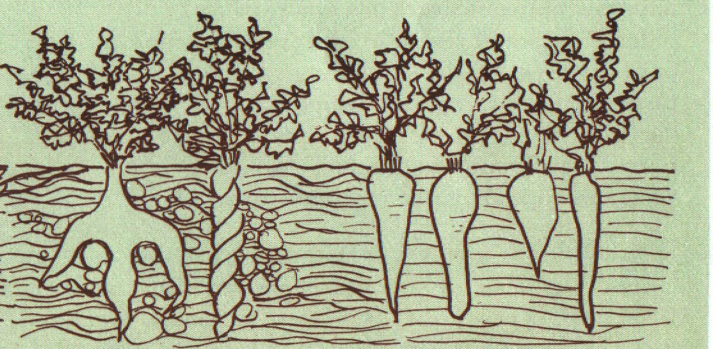
1. Voltee la tierra a una profundidad de 8 pulgadas. Use un tenedor o arado de mano (rototiller).

2. Aplique la otra mitad del fertilizante y abono orgánico.

3. Mezcle esto con la tierra y rastríllela hasta que esté pareja y libre de piedras.

4. Continúe rastrillando la tierra hasta que esté completamente pareja y lista para sembrar.





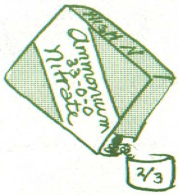
Si la tierra está muy endurecida sus zanahorias saldrán como éstas: divididas y torcidas

Zanahorias sembradas en terreno suelto crecerán como éstas.

DELE UN FERTILIZANTE ACTIVANTE A SU JARDÍN. . .EN LA MITAD DE LA ESTACIÓN

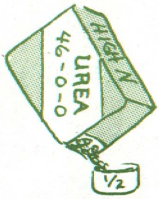
La liga de nitrógeno-fósforo y potasio es el principal fertilizante para usar antes de plantar. También necesitará un fertilizante alto en nitrógeno hacia la mitad de la estación.

alrededor del 4 de Julio



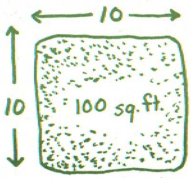
Aplique ⅓ lb = ⅔ taza nitrato de amonio (33-0-0)

o



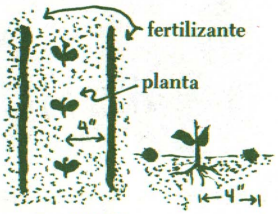
o ¼ lb = ½ taza urea (46-0-0)

Para



Para cada 100 pies cuadrados de tierra

El nitrato de amonio y la urea son fertilizantes fuertes y pueden quemar las plantas. Para evitar esto, coloque el fertilizante en surcos o anillos como a 4 pulgadas de la planta.



surcos

anillo

MATERIA ORGÁNICA (ABONO)

Usted puede hacer esta composición coleccionando hojas, paja, hierba, cáscara de vegetales y estiércol animal en una pila. Alterne capas de esta composición con capas de fertilizante (aproximadamente 3 tazas por cada bushel de composición). Cuando el abono se haya descompuesto, extienda una capa de 2 pulgadas sobre su jardín; lo cual es muy bueno para su tierra. Ayuda a los terrenos arenosos a mantener el agua por mas tiempo. Los vegetales no necesitarán tanta agua. La tierra barrosa se aflojará con el abono y así sus vegetales no se ahogarán con tanta agua.

DESECHOS NATURALES

Pilas mostrando capas de abono y fertilizante

PARA TENER ÉXITO:

- Empiece temprano
- Compre variedades recomendadas
- y use fertilizante

Editado para promover los programas de la Cooperative Extension Service en agricultura y economía del hogar, Mayo 8 y Junio 30, 1914, en cooperación con el Departamento de Agricultura de los Estados Unidos. Gordon E. Guyer, Director, Cooperative Extension Service, Michigan State University, East Lansing, MI 48824.

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COOPERATIVE EXTENSION SERVICE
MICHIGAN STATE UNIVERSITY

family Vegetable Garden series

EXTENSION BULLETIN E-824 (3)

PLANTING

by nancy e. smith and j. lee taylor
DEPT. OF HORTICULTURE

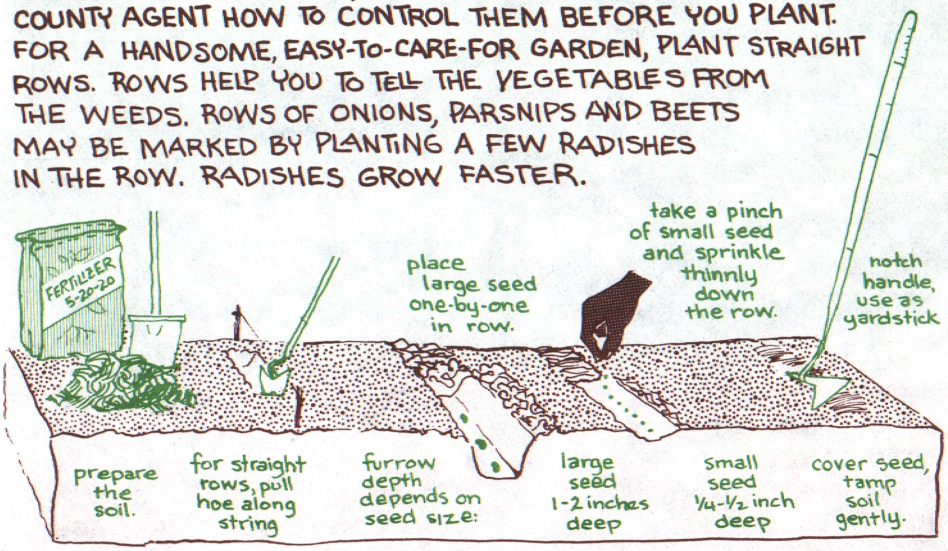
BUYING SEED

BUY RECOMMENDED VARIETIES PACKAGED BY COMPANIES LOCATED IN STATES WITH CLIMATES LIKE MICHIGAN. ASK YOUR COUNTY AGENT FOR A LIST. TESTS SHOW THESE VARIETIES DO BEST IN OUR STATE AND MANY ARE DISEASE RESISTANT. SEED CATALOGUES USUALLY OFFER BETTER SELECTIONS AND VARIETIES, ESPECIALLY IF ORDERS ARE PLACED BY LATE FEBRUARY. YOU MAY BE "TAKING A CHANCE" WITH LOCAL SEED RACKS. IF YOU USE SEED LEFT OVER FROM LAST YEAR, YOU'D BE WISE TO TEST IT.

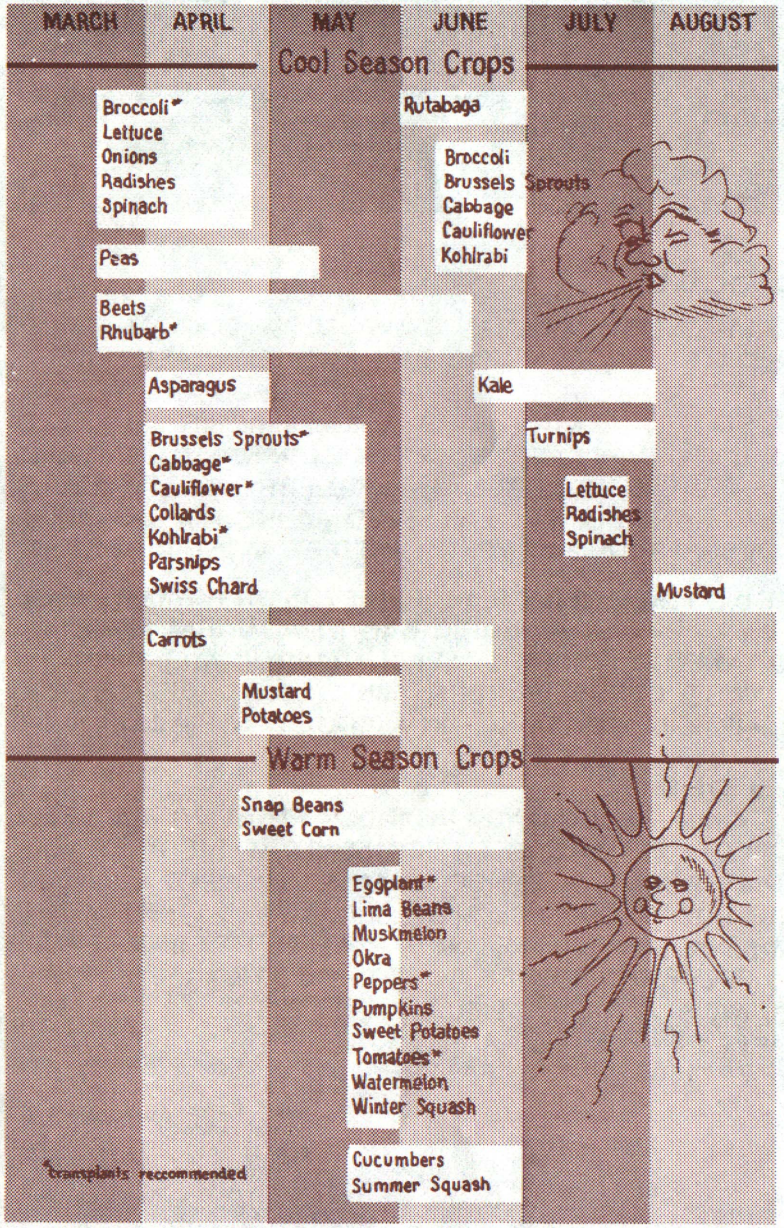
TO TEST SEED... PLACE TEN OR MORE SEEDS ON A MOIST PAPER TOWEL. ROLL UP. PUT IN A PLASTIC BAG IN A WARM PLACE. THEY SHOULD TAKE NO LONGER TO SPROUT (GERMINATE) THAN NEW SEED WOULD IN THE GARDEN. HINT: STORE LEFT-OVER SEED IN AN AIRTIGHT CONTAINER IN A COOL DRY PLACE.

PLANTING SEEDS

PREPARE ONLY THE SOIL YOU INTEND TO PLANT WITHIN A FEW DAYS SO THE WEEDS DON'T GET A HEADSTART. IF THE AREA WAS NOT PLANTED LAST YEAR, SOIL INSECTS MAY BE PRESENT. ASK YOUR COUNTY AGENT HOW TO CONTROL THEM BEFORE YOU PLANT. FOR A HANDSOME, EASY-TO-CARE-FOR GARDEN, PLANT STRAIGHT ROWS. ROWS HELP YOU TO TELL THE VEGETABLES FROM THE WEEDS. ROWS OF ONIONS, PARSNIPS AND BEETS MAY BE MARKED BY PLANTING A FEW RADISHES IN THE ROW. RADISHES GROW FASTER.



When to Plant... based on conditions in southern lower Michigan.



Vegetable	10-foot Row Will Give You About:	No. Seeds per Foot of Row	Depth to Plant (inches)	Days to Harvest	PLANTING DISTANCE(INCHES) In Rows After Thinning	PLANTING DISTANCE(INCHES) Between Rows
Asparagus	3lbs.	1 crown	6 to 8	(2 to 3 yrs.)	12 to 18	36 to 80
Beans, Lima	1 lb. shelled	6	1 to 2	65 to 90	3 to 4	18 to 24
Beans, Snap	5 lbs.	6	1 to 2	50 to 70	3 to 4	18 to 24
Beets	10 lbs.	10	½ to 1	60 to 80	2 to 3	18 to 24
Broccoli	4 lbs.	-	(plants)	55 to 75	18 to 24	30
Brussels Sprouts	2½ lbs.	-	(plants)	55 to 75	18 to 24	30
Cabbage	5 heads	-	(plants)	65 to 100	18 to 24	24 to 30
Carrots	10 lbs.	15-20	½ to 1	65 to 85	1 to 2	18 to 24
Cauliflower	5 heads	-	(plants)	60 to 95	18 to 24	30
Collards	8 lbs.	6	½	75	6 to 8	18 to 24
Cucumbers	6 lbs.	3-4	1 to 2	50 to 70	12	48 to 72
Eggplant	4 fruit/plant	-	(plants)	70 to 80	24 to 30	24 to 30
Kale	10 bunches	12	½ to 1	55 to 60	8 to 15	18 to 24
Kohlrabi	20 stems	12	1 to 1½	55 to 65	4 to 8	18 to 24
Lettuce (head)	10 heads	12	¼ to ½	70 to 85	8 to 15	18 to 24
Lettuce (leaf)	5 lbs.	12	¼ to ½	45 to 55	6	12 to 18
Muskmelon	3-5 fruit/hill	5 every 3 ft.	1 to 2	80 to 90	36 to 48	48 to 60
Mustard	5 lbs.	6	½	35 to 45	6 to 8	18 to 24
Okra	6 lbs.	6	½	50 to 60	12 to 15	24 to 30
Onion (sets)	5 lbs.	6	1 to 2	90	2	12 to 18
Onion (transplants)	8 lbs.	-	(plants)	90 to 115	2 to 3	12 to 18
Onion (seeds)	8 lbs.	18	½	105 to 130	2 to 3	12 to 18
Parsnips	10 lbs.	12	½	100 to 120	3 to 4	18 to 24
Peas	2½ lbs.	18	1 to 2	55 to 70	2 to 3	12 to 18
Peppers	6 lbs.	-	(plants)	60 to 80	14 to 18	24 to 30
Potatoes	10 lbs.	1-2 seed pieces	4	100 to 120	10 to 12	24 to 36
Potatoes, Sweet	4 lbs.	-	(plants)	150	12 to 18	36
Pumpkins	2-3 fruit/hill	4-6 every 3 ft.	½	100 to 120	36 to 48	60 to 96
Radishes	10 lbs.	12	½	25 to 30	1 to 2	6 to 12
Rhubarb	1 lb.	-	(plants)	(1 to 2 yrs.)	36 to 48	48
Rutabaga	10 lb.	9	½	90 to 95	4 to 6	18 to 24
Spinach	5 lbs.	12	¼ to ½	40 to 50	3 to 6	12 to 18
Squash (Summer)	12 fruit/hill	6-8 every 3 ft.	1 to 1½	45 to 60	36 to 48	36 to 48
Squash (Winter)	2-3 fruit/hill	6-8 every 3 ft.	1 to 1½	85 to 110	48 to 60	60 to 72
Sweet Corn	2, 10 ft. rows = 16 ears	2	2 to 2½	65 to 95	10 to 12	30 to 36
Swiss Chard	9 lbs.	6	½	50 to 60	6 to 8	18 to 24
Tomatoes	¾ bushel	-	(plants)	60 to 90	24 to 36	36 to 48
Turnips	10 lbs.	2-3	1 to 1½	40 to 60	4 to 6	18 to 24
Watermelon	2 melons/hill	6-8 every 6 ft.	1 to 2	85 to 95	72 to 96	72 to 96

HILLS ARE GROUPS OF SEEDS, NOT ACTUALLY HILLS OF SOIL. THIN OUT THE WEAKEST SEEDLINGS IN THE HILL.

SPREAD OUT THE HARVEST

BY REPEATED PLANTINGS. PLANT LETTUCE IN LATE MARCH AND MID-APRIL FOR HARVEST IN MID-MAY AND LATE JUNE. A THIRD PLANTING IN JULY WILL PUT LETTUCE ON THE TABLE IN SEPTEMBER. OTHER VEGETABLES ALSO LEND THEMSELVES TO SUCCESSIVE PLANTINGS. (SEE "WHEN TO PLANT.")

COOL SEASON CROPS GROW BEST IN COOL WEATHER. FROST WILL NOT INJURE THEM.

WARM SEASON CROPS GROW BEST IN WARM WEATHER. THE SEEDS DO NOT GERMINATE WELL AT LOW TEMPERATURES. AND PLANTS ARE KILLED BY FROST.

BUYING TRANSPLANTS

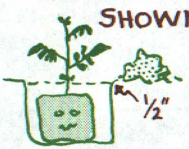
YOU CAN USUALLY BUY BETTER QUALITY TRANSPLANTS THAN YOU CAN GROW. SELECT SHORT, STOCKY PLANTS. AVOID YELLOW SPINDLY OR TALL PLANTS. CHOOSE RECOMMENDED VARIETIES. BUY PLANTS ABOUT A WEEK BEFORE PLANTING THEM. USE THIS WEEK TO GET PLANTS ADJUSTED TO THE OUT-OF-DOORS. SET THEM OUTSIDE FOR A FEW HOURS EACH DAY TO "HARDEN" THEM OFF.

PLANTING TRANSPLANTS

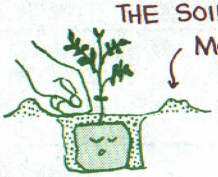
TRANSPLANT IN THE EVENING OR ON A CLOUDY DAY

HINT: Black plastic is an excellent mulch for warm season crops and should be applied before transplanting. Details in "Summertime" (#4 in this series)

1. SET ½ INCH DEEPER AS SHOWN.

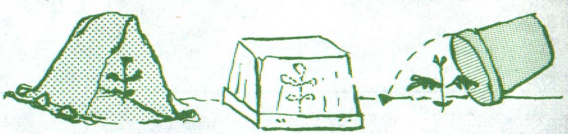


2. FIRM, DON'T PACK THE SOIL. A CIRCLE MOUND WILL HELP HOLD WATER.



3. WATER IF POSSIBLE WITH A STARTER SOLUTION SO NUTRIENTS ARE AVAILABLE TO HELP YOUNG PLANTS GET OFF TO A FASTER START. THIS FERTILIZER SHOULD BE HIGH IN PHOSPHORUS (LIKE 10-55-10). BUY A DRY FORM THAT CAN BE DISSOLVED IN WATER (WATER SOLUBLE). IT'S USUALLY CHEAPER.

4. PROTECT AGAINST CUTWORMS WITH COLLARS MADE FROM A PAPER CUP WITH THE BOTTOM CUT OUT; OR APPLY AN INSECTICIDE RECOMMENDED BY YOUR COUNTY AGENT.



5. PROTECT PLANTS FROM EARLY SEASON FROST WITH PLASTIC TENTS, BOXES OR POTS. REMOVE AS THE TEMPERATURE RISES.

KEYS TO SUCCESS

PLANT AT THE RIGHT TIME
SELECT RECOMMENDED VARIETIES
USE FERTILIZERS

Over 20 other bulletins in this series provide additional information on vegetable gardening.

Issued in furtherance of cooperative extension work in agriculture and home economics, acts of May 8, and June 30, 1914, in cooperation with the U.S. Department of Agriculture. Gordon E. Guyer, Director, Cooperative Extension Service, Michigan State University, East Lansing, Michigan 48824. 1P-4:75-50M-UP

COOPERATIVE EXTENSION SERVICE
MICHIGAN STATE UNIVERSITY

family Vegetable Garden series

EXTENSION BULLETIN E-824 (4)

KEEP 'EM GROWING

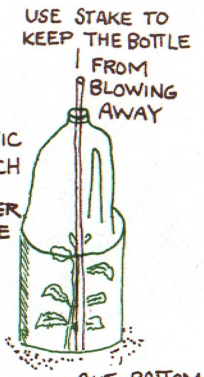
by nancy e. smith and j. lee taylor
DEPT. OF HORTICULTURE

ROOM TO GROW

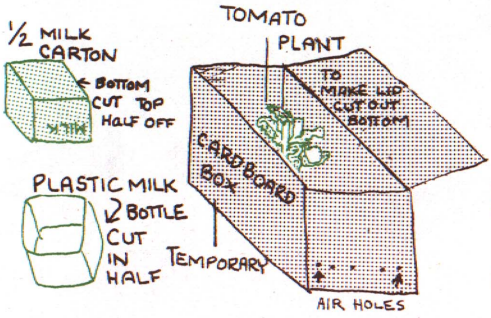
CROWDED SEEDLINGS DO NOT GROW WELL. WHEN THEY ARE 1 OR 2 INCHES TALL, CAREFULLY PULL OUT THE SMALLER PLANTS. IT IS BEST TO THIN WHEN THE SOIL IS MOIST. THE RIGHT SPACING IS LISTED IN "PLANTING" (NO. 3 IN THIS SERIES), AND PROBABLY ON THE SEED PACKET. IF YOU ARE CAREFUL, YOU CAN TRANSPLANT OR EAT THE THINNINGS.

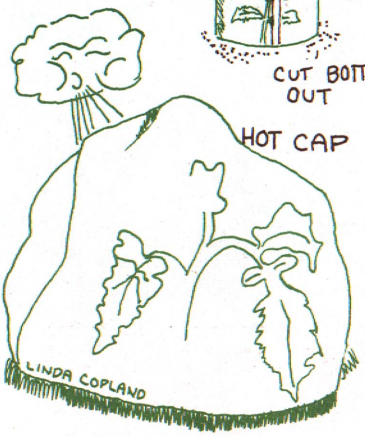
FROST AND WIND PROTECTION

MOST TRANSPLANTS NEED PROTECTION FROM WIND AND COLD. COVER TOMATOES, PEPPERS AND MELONS WITH A TRANSPARENT MATERIAL STURDY ENOUGH TO WITHSTAND WINDS. MAKE SMALL HOLES IN THE SIDES TO PROVIDE AIR. HOT CAPS OR HOT TENTS ARE AVAILABLE FROM GARDEN STORES. IF YOU DO NOT USE COVERS, AND A FROST IS FORECAST, COVER PLANTS OVERNIGHT WITH NEWSPAPER TENTS, PLASTIC OR PAPER MILK CONTAINERS, STRAW, CARDBOARD BOXES, ETC. BE SURE TO UNCOVER THE PLANTS THE FOLLOWING MORNING.

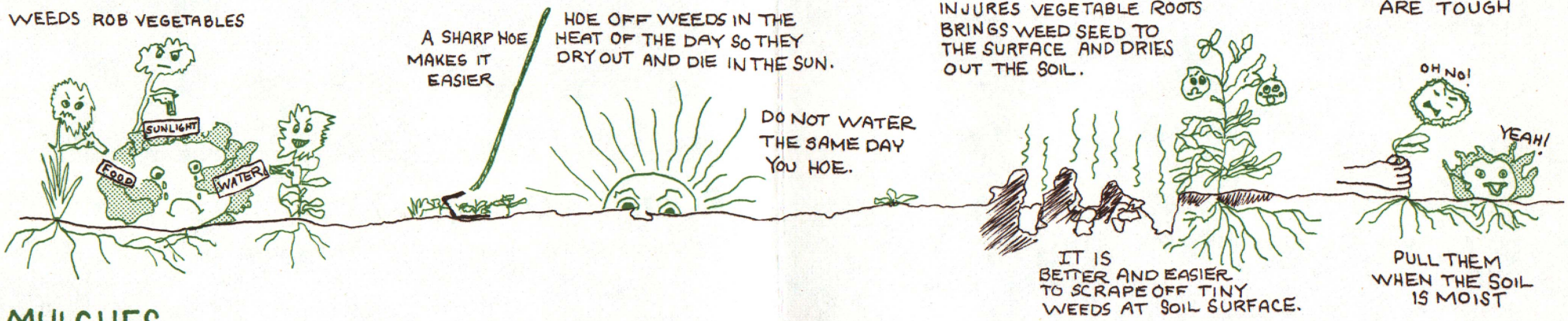


A CARDBOARD BOX, UPSIDE DOWN PROTECTS FROM WIND, FROST, AND BIRDS.





"AWAY WITH WEEDS"



MULCHES . . .

A MULCH IS A MATERIAL THAT IS SPREAD OVER THE SOIL AROUND PLANTS. A MULCH CAN BE USED TO PREVENT WEEDS FROM GROWING, AND TO KEEP THE SOIL MOIST. USE 3 TO 4 INCHES OF STRAW, 2 INCHES OF GRASS CLIPPINGS OR SAWDUST, 4 TO 6 SHEETS OF NEWSPAPER, OR A SINGLE LAYER OF BLACK PLASTIC. NEWSPAPER OR BLACK PLASTIC MUST BE HELD DOWN WITH SOIL OR ROCKS.

MULCHES THAT DECAY . . . FOR COOL SEASON CROPS ONLY

(SEE NO. 2 IN SERIES)

ORGANIC MULCHES SUCH AS GRASS CLIPPINGS, STRAW AND SAWDUST HELP TO KEEP THE SOIL COOL AND MOIST. SOME VEGETABLES THAT DO WELL IN COOLER SOILS ARE LETTUCE, CABBAGE, SPINACH, PEAS, AND CARROTS. IF THE MULCH IS NOT WELL ROTTED, ADD ABOUT 2/3 CUP OF LAWN FERTILIZER (OR OTHER HIGH NITROGEN FERTILIZER) FOR EVERY 100 SQUARE FEET OF GARDEN. TO FIGURE SQUARE FEET, MULTIPLY LENGTH X WIDTH. DO NOT USE A WEED AND FEED TYPE FERTILIZER. THE WEED KILLER WILL INJURE YOUR VEGETABLES. WORK MULCH INTO SOIL AT END OF SEASON.

BLACK PLASTIC MULCH . . . FOR WARM SEASON CROPS ONLY

(SEE NO. 2 IN SERIES)

DIG A 4 TO 5 INCH TRENCH WITH A HOE ALONG SIDES AND ENDS WHERE PLASTIC WILL BE LAID. ROLL OUT PLASTIC EVENLY, BURYING THE EDGES. A LARGE PLASTIC TRASH BAG ALSO WORKS WELL.

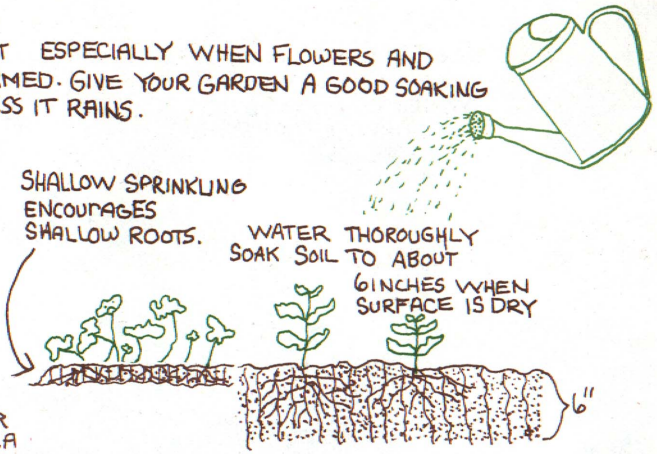
BLACK PLASTIC WARMS THE SOIL IN SPRING AND KEEPS IT WARM IN SUMMER. SOME VEGETABLES THAT DO WELL IN WARMER SOILS ARE TOMATOES, PEPPERS, SQUASH, PUMPKINS, MELONS, AND CUCUMBERS. THE FRUITS STAY CLEAN AND YIELDS ARE INCREASED (REMOVE BLACK PLASTIC AT THE END OF THE SEASON.)

TURN LAWN INTO GARDEN . . . THE EASY WAY

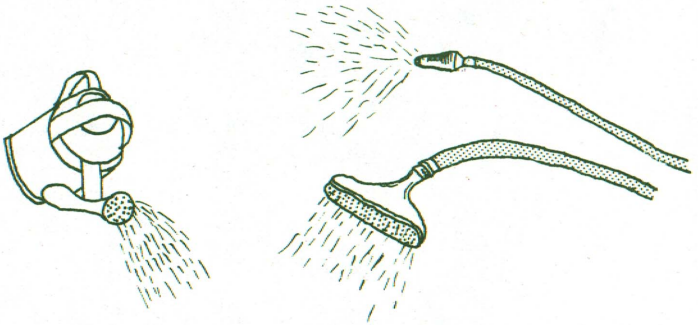
WATER...

WATER IS IMPORTANT ESPECIALLY WHEN FLOWERS AND FRUIT ARE BEING FORMED. GIVE YOUR GARDEN A GOOD SOAKING ONCE A WEEK UNLESS IT RAINS.

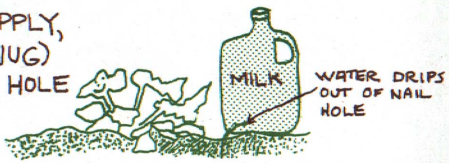
MEASURE THE AMOUNT OF WATER APPLIED WITH LAWN SPRINKLER BY PLACING A CAN OR A JAR BETWEEN THE GARDEN ROWS



USE SPRINKLER NOZZLE ON THE CAN OR HOSE SO SOIL ISN'T WASHED AWAY.



DRIP WATERING: FOR A CONTINUOUS SUPPLY, PLACE A WATER JUG (PLASTIC MILK JUG) NEAR PLANTS. WATER DRIPS OUT NAIL HOLE IN BOTTOM OF JUG.



REMINDER: FERTILIZE ABOUT THE 4th OF JULY WITH A HIGH NITROGEN FERTILIZER SUCH AS UREA DISCUSSED IN NO. 2 IN THIS SERIES.

KEYS TO SUCCESS

- THIN
- WATER
- FERTILIZE
- CONTROL WEEDS AND OTHER PESTS.

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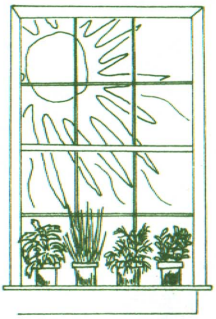
COOPERATIVE EXTENSION SERVICE
MICHIGAN STATE UNIVERSITY

family Vegetable Garden series

EXTENSION BULLETIN E-824 (5)

Herbs

by Lowell E. Spotts, Genesee Co. Ext. Hort. Agent
and J. Lee Taylor, Dept. of Horticulture



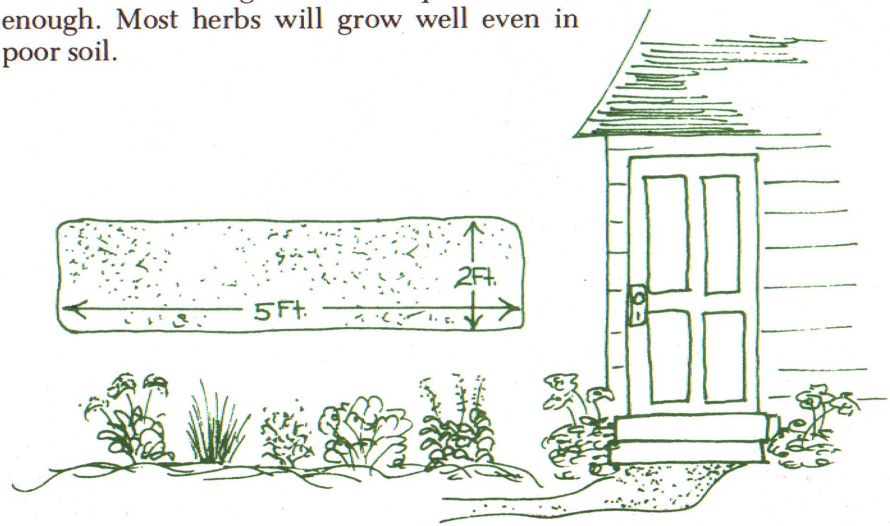
HERBS are truly a cook's "Secret Weapon." They give foods a better flavor, dress up the simplest dishes, and can be used to decorate the home indoors and outdoors. They require little space and can be easily grown in an apartment-sized plot, among flowers, as part of the vegetable garden, or in pots and containers in a window.

Herbs are needed only in small amounts to flavor foods. Three to four plants of most herbs provide enough seasoning for the average family until the next season. Herbs may be annual, biennial, or perennial as indicated in the herb chart (inside).

WHERE TO GROW

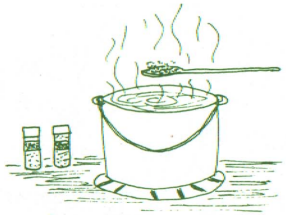
Indoors in a window with lots of sun or bright light; in well-drained soil that does not hold water in large amounts.

Outdoors in full sunlight or sometimes semi-shaded areas. Be sure soil is well-drained. Grow herbs near the house so they are close-by for easy care and harvesting. A 10-foot square area is enough. Most herbs will grow well even in poor soil.



PROPAGATING HERBS

Herbs are commonly propagated by seeds, layering, cuttings, and division. Follow directions on packets when propagating by seeds. Many herbs reseed themselves, so once they become established, they may persist for a long time even though they are annuals (chives and dill for example).



HARVESTING

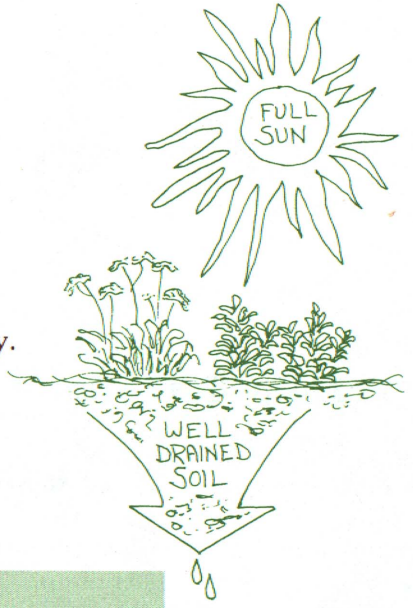
Cut leaves as needed after plants have grown enough to have a good number of leaves. Harvest herbs like rosemary and thyme by cutting the tops at full bloom. Harvest basil, sage, and marjoram before the flowers open up.

HOW TO CARE FOR

Care for an herb garden just as you would a vegetable or flower garden. Remember, choose a sunny location with well-drained soil.

Fertilizers are not usually needed except on herbs which are cut many times such as chives or parsley. Too much fertilizer can hurt flavor.

Mints may spread fast, especially in moist soil. Grow them in containers sunk in the soil to keep them from getting weedy.



BASIL

DILL

CHIVES

HERB HARVEST CHART

HERB	HEIGHT (Inches)	SPACING BETWEEN: Rows (Inches)	Plants (Inches)		USE
				ANNUAL HERBS	
Anise	24	18	10	Clip leaves when plants start to flower.	Leaves in salads; seeds for cookies, pastries.
Basil, Sweet	20-24	18	12	Cut 6" above ground.	Leaves in soups, stews, salads, fish sauces, meats.
Borage	24	18	12	Harvest young leaves when in flower.	Leaves in salads or cooked like spinach.
Coriander	36	24	18	Cut stalks when seeds are ripe.	Crushed seeds in meat sauces, pickles, cookies, breads.
Dill	24-36	24	12	Pick whole stems and hang upside down to dry.	Seed heads in cheese, eggs, pickles; seeds in soups, gravies, vegetables.
Fernel, Sweet	60	18	18	Harvest leaves when plants start to flower.	Leaves and seeds for seasoning vegetables, fish.
Summer Savory	18	18	18	Harvest young shoots when plant starts to flower.	Leaves fresh or dried with meats, fish, soups, beans.
				BIENNIAL HERBS	
Caraway	12-24	18	10	Cut seed heads before dry.	Leaves in salads, seeds in breads, cakes, soups.
Parsley	6	18	6	Cut as needed or dry in oven.	In salads or dried as addition to vegetables, sauces.
				PERENNIAL HERBS	
Chives	12	12	12	Cut leaves as needed for fresh use. Can also be frozen.	Leaves in soup, salads, omelets, sauces.
Garlic	30	12	8	Harvest bulbs after leaves have dried down.	Cloves in meats, stews, salads.
Lavender	24	18	18	Harvest flower spikes when in full bloom.	Flowers in potpourris, sachets, flower arrangements.
Lemon Balm	24	24	12	Cut tips.	Leaves in soups, meats, tea, summer drinks.
Oregano	24	18	9	Use leaves fresh or dried.	Leaves in soups, roasts, stews, salads.
Peppermint	18	24	9	Harvest young sprigs and leaves until plant starts to flower.	Leaves fresh or dried in potpourris, fruit cocktails, or with ice cream.
Rosemary	36	18	12	Cut leaves just before flowering.	Leaves and small stems in meat, sauces, soups.
Sage	18	24	12	Cut young tips; dry.	Leaves in meats, teas, fish, dressings, stews.
Spearmint	18	24	9	Same as for peppermint.	Leaves for garnishing iced drinks; lamb, jelly.
Sweet Marjoram	12	18	12	Use fresh or dried leaves.	Leaves in salads, soups, dressings.
Tarragon	24	24	24	Harvest leaves anytime (best time is when plant starts to flower).	Leaves fresh or dried in salads, with fish.
Thyme	8-12	18	12	Cut shoots when first flowers open.	Leaves in soups, salad dressing, gravies, breads, sauces.

**This is just a partial list of herbs, others are discussed in various books & bulletins.*

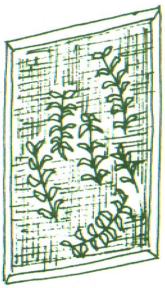
GARLIC

SAGE

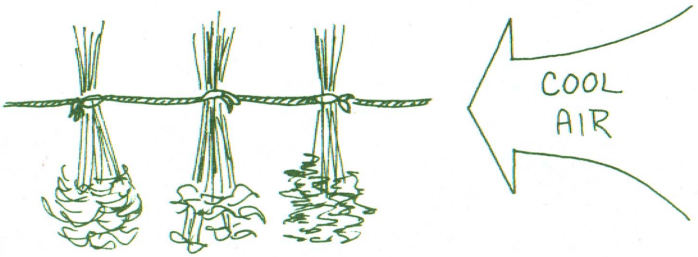
PARSLEY

PRESERVING HERBS

Most herbs are preserved by drying. To dry herbs, tie loosely in small bunches and hang upside down in an airy, dust-free room, or spread the herbs loosely on a screen or cheese cloth. Be sure the room is cool. Do not apply heat or let sunlight hit plants or some flavor will be lost. When leaves have dried enough to become brittle, crush the leaves and flowers and place in tightly covered glass jars and store in a dark location to keep the leaves from fading. Label each jar.



Sprigs of most herbs can also be frozen. Chives are usually chopped before freezing. Blanching may help retain flavor.



KEYS TO SUCCESS

- **Start with only a few kinds**
- **Grow in full sunlight**
- **Pick at the right time**
- **Use sparingly**

Other bulletins in this series provide additional information on vegetable gardening.

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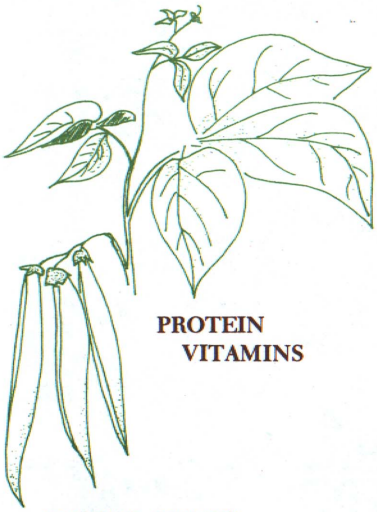
COOPERATIVE EXTENSION SERVICE
MICHIGAN STATE UNIVERSITY

family Vegetable Garden series

EXTENSION BULLETIN E-824(6)

Garden Beans

by Raymond E. Vasold, Saginaw Co. CED, and
James E. Motes, Dept. of Horticulture



GREEN BEANS

WHY BEANS?

Beans are easy-to-grow, high yielding and a good source of protein and vitamins. Make small plantings (10 to 20 feet of row) every two weeks in June and early July to provide beans all summer and early fall.

VARIETIES

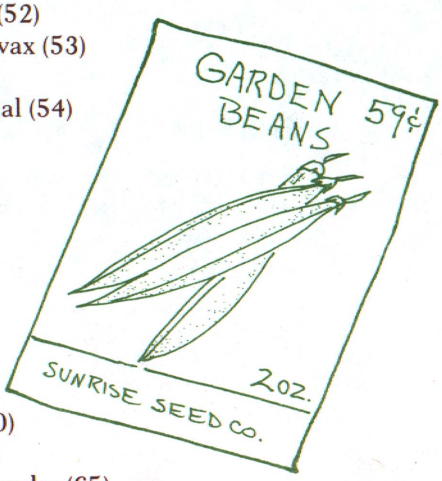
One or more of the following varieties are available through seed catalogs and garden stores. Numbers in ( ) indicate approximate number of days to harvest from seeding.

Bush Green

Provider (50)
Spartan Arrow (51)
Bush Romano (52)
Contender (53)
Tendercrop (53)
Tenderette (53)
Improved Tendergreen (56)
Bush Blue Lake (58)

Bush Yellow

Cherokee Wax (52)
Eastern Butterwax (53)
Goldcrop (54)
Kinghorn Special (54)



Pole

Blue Lake (60)
Romano (64)
Kentucky Wonder (65)

Horticultural (Shell Beans)

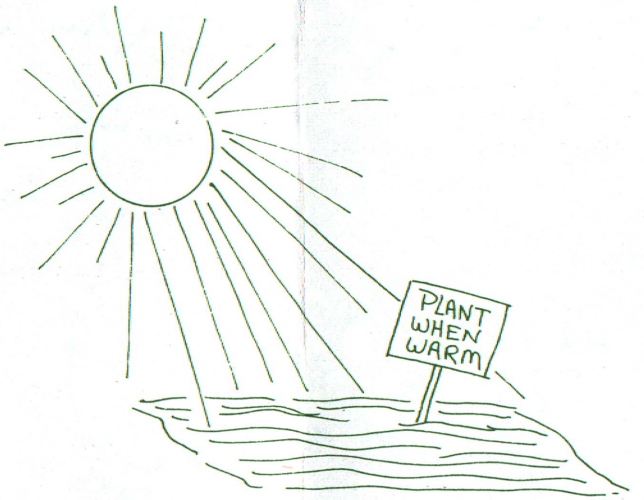
French Horticultural (68)

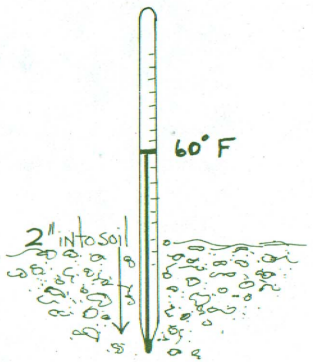
GOOD SOIL . . . FOR BETTER BEANS

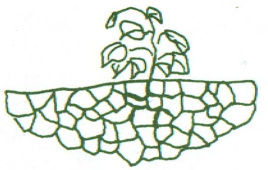
The right soil is very important. Beans will not do well on very acid soil. Ask your Cooperative Extension Agent if a soil test is necessary.

A well-drained, loose soil is ideal for beans. Sticky clay soils need compost or well rotted manure added if available. See bulletin No. 2 "Soils" for more ideas on soil preparation.

Unless soil is sandy or light, do not plant early in the spring. Beans must be planted in a sunny place. Beans are a warm temperature crop and will not do well until the soil temperature reaches 60°F (usually in late May). Any thermometer can be used to get temperature. Place bulb 2 inches into soil for temperature reading.







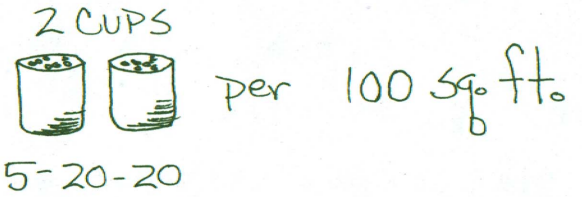
TIGHT SOIL
NO AIR OR WATER

LOOSE SOIL
AIR AND WATER

FERTILIZER . . . . . THE PLANT'S FOOD

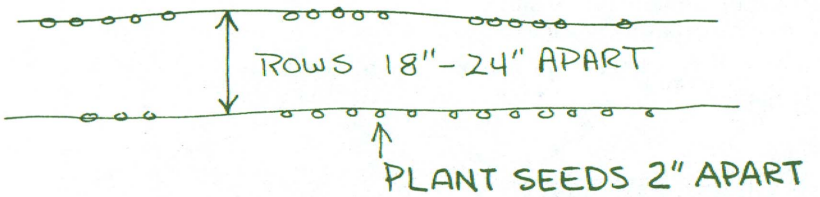
Well rotted manure (if available), rotted leaves, compost, garden refuse, or other similar materials are good for your garden. Spread them evenly and plow or spade into the soil.

. . . . Mix one pound (2 cups) of 5-20-20 fertilizer into the soil when spading or rototilling for each 100 sq. ft. (length × width in feet give number of square feet). Add another 2 cups evenly on the soil surface and work in with a garden rake before seeding.



SEEDING BUSH BEANS

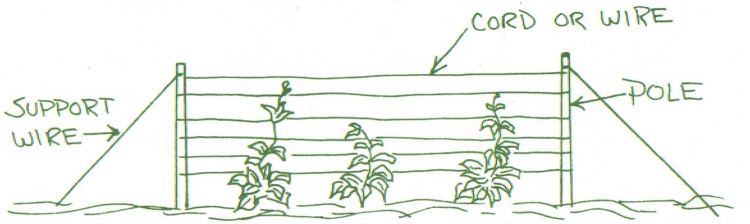
Plant in rows 18 to 24 inches apart. Place seeds 2 in. apart in the rows. Plant seeds 1 to 1½ in. deep in early plantings and 1½ to 2 in. deep in later plantings. Growing different colors and types of beans will give more of a variety to choose from because of their different looks and tastes.



SEEDING POLE BEANS

For pole beans, place 3 to 4 seeds at the base of poles placed 3 feet apart. Poles can be of any material about 5 ft. long and set about one ft. into the ground.

Pole beans are desirable for small gardens because they require less space by using a pole or trellis. To make a trellis, set a sturdy pole at each end of a 10 ft. row. Use cord or wire between the poles.



Early plantings of beans (before May 10 in southern Michigan and May 20 for northern Michigan) are risky because of possible frost damage or seed rot. However, if you want very early beans, plant only a few the first planting. Replant if lost.

WATER . . . IF AVAILABLE

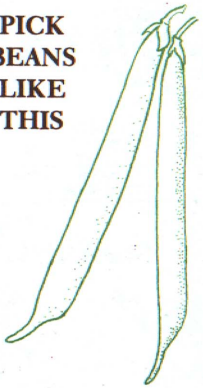
If beans show signs of wilting in mid-summer, watering will be profitable, but only if you have a supply of low cost water (your own well).

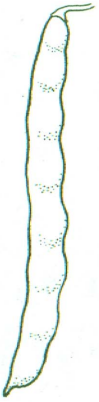
HARVEST. . . FOR TENDERNESS

Pick snap beans when pods are fully formed, but before seeds start to bulge the pod. Can, freeze or eat soon after harvest as quality is quickly lost. Do so within 24 hours if possible.

Pick horticultural (shell) beans when they are almost full grown and just as pods begin to dry up or change color.

PICK BEANS LIKE THIS





NOT LIKE THIS

DISEASE & INSECTS

Disease and insects seldom harm beans. Should a problem arise, take an infected plant to your county office of the Cooperative Extension Service.

- **Grow more than one variety**
- **Plant more than once**
- **Harvest at the right time**
- **Use or preserve soon after harvest**

Other bulletins in this series provide additional information on vegetable gardening.

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EXTENSION BULLETIN E-824(7)

Root Crops

Robbi Austin, Ingham County Extension Horticulture Aide and J. Lee Taylor, Department of Horticulture

Root crops are vegetables such as beets, carrots, radishes and turnips which are grown for their roots. They are high in vitamins, but low in calories. We eat the roots either raw or cooked. Root crops are very easy to grow and few insects or diseases bother them.

BEST VARIETIES MEAN SUCCESS

These varieties grow best in Michigan. Choose them when buying your seeds.

VEGETABLES	VARIETY	SPROUTING TIME (days)	GROWING TIME (days to harvest)
Beets	Ruby Queen	7 to 14	60
	Detroit Dark Red	7 to 14	63
Carrots	Pioneer	14 to 21	67
	Nantes	14 to 21	68
	Spartan Bonus	14 to 21	77
Parsnips	All America	7 to 25	105
	Model	7 to 25	120
Radishes	Champion	4 to 7	28
	Cherry Belle	4 to 7	24
Rutabagas	American Purple Top	4 to 14	90
	Laurentian	4 to 14	90
Turnips	Just Right	3 to 7	40
	Tokyo Cross	3 to 7	35

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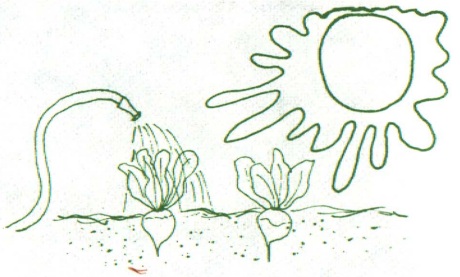
ROOT CROPS NEED:

—light rich soil. In hard crusty soil roots will grow twisted and be short and tough.

—room to grow.

—sunshine most of the day, but they can grow in a spot that gets some shade.

—plenty of water.



GET READY TO PLANT

Root crops are cool season crops and do best when grown during cool weather. Except for turnips and rutabagas, they should be planted early in the spring (late March to early April). Rutabagas and turnips are usually planted in June or July respectively for a fall crop (another cool time of the year). Follow directions on the seed packet.

Select a spot in your garden that gets at least 8 hours of sunlight a day.

Spread one pound of fertilizer such as 5-20-20 for every 100 square feet before the soil is turned over and another pound per 100 square feet after spading or plowing.

Dig down into the soil with your shovel for 10 to 12 inches and turn over the soil. Remove all stones and other trash. Crumble the soil with your hoe until it runs easily through your fingers. If available, work some peat moss, compost or rotted manure into the soil with a hoe.

PLANT STEPS

1. Mark off straight rows 18 to 24 inches apart (6 to 12 inches for radishes).
2. With your hoe make a shallow furrow ½ inch deep along each row.
3. Sprinkle the seeds into the furrow putting 15 to 20 seeds in each foot of row.
4. Rows of slow germinating kinds (beets, carrots, parsnips) are often marked with a few radish seeds—just sprinkle a few radish seeds in the furrow along with the other seeds before covering. Radish seeds germinate quickly and will let you know where the row is.
5. Cover the seeds lightly with fine, crumbled soil mixed with peat moss or vermiculite if you have it.
6. Sprinkle water over each row and keep the rows damp until the seeds sprout.

THINNING YOUR PLANTS

When your plants have grown several inches, you should thin out some of the plants to make room for the best ones to grow large. Leave the biggest plants and pull out the little ones in between. Sometimes the thinnings are large enough to eat.

THINNING RECOMMENDATIONS

VEGETABLE	WHEN TO THIN (height-inches)	HOW FAR APART (inches)
BEETS	4" HIGH	2-3" APART
CARROTS	3" HIGH	1-2" APART
PARSNIPS	4" HIGH	3-4" APART
RADISHES	2" HIGH	1-2" APART
RUTABAGAS	3" HIGH	4-6" APART
TURNIPS	2" HIGH	4-6" APART

CARE THROUGH THE SUMMER

Keep weeds out of the rows. Weeds will crowd out the vegetables and rob them of food, light and water. Removing weeds during the first few weeks is very important since seedlings of most root crops are very small and grow slowly at first. Radishes and turnips germinate quickly.

Give plants a good soaking once a week when it doesn't rain. Water each row until the top few inches of soil are moist.

Mulch plants with straw, leaves, or other materials to keep weeds from growing and to hold moisture in the soil. Use 4 inches of mulch along each row.

Add a high nitrogen fertilizer such as ammonium nitrate or urea when the plants are well established. Use about ½ cup of fertilizer per 100 square feet and place it 4 inches from the row and carefully work it into the soil.

Make additional plantings of radishes about every 10 days if you want to harvest them over a long period of time. Radishes become hot, woody, or go to seed as they become old.

KEEP THE INSECTS OUT

Root crops are not bothered by many insects, but there are a few that might give you some trouble.

Maggots and white grubs—live in the soil and eat the roots. Spray the furrow with diazinon at planting before covering the seed. Follow directions on the label.

Aphids—small gray-green insects that suck juices from under the leaves of turnips, beets and radishes. Spray with malathion or diazinon. Be sure to spray under the leaves. Follow directions on the label.

Flea beetles—small black insects that eat holes in the leaves. Spray leaves with diazinon or sevin. Follow directions on the label.

HARVESTING YOUR VEGETABLES

Root crops are ready to harvest when the roots are large enough to use. Parsnips however, usually taste better after freezing weather.

VEGETABLE	BEST SIZE (diameter-inches)
Beets	1½ - 3
Carrots	1 - 1½
Rutabagas	3½ - 5
Turnips	1¾ - 2¾

STORING ROOT CROPS

Roots can also be buried in moist sand or slightly moistened vermiculite to prevent drying out and shriveling.

Trash cans make good containers for storing roots either in the ground or above ground in a cool location. If buried in the ground, be sure to cover the top with straw, hay or other material to keep the roots from freezing.

The easiest way to store root crops, except radishes, is to leave them in the ground and mulch them heavily with straw or leaves. They then can be dug throughout winter and spring. This practice will, in fact, increase the sugar content of parsnips.

Roots other than radishes can also be stored in plastic bags or other containers for months. Store as close to 32°F as possible (without freezing) and in high relative humidity. Perforated plastic bags or garbage can liners are useful for keeping the humidity high.

COOPERATIVE EXTENSION SERVICE
MICHIGAN STATE UNIVERSITY

family Vegetable Garden series

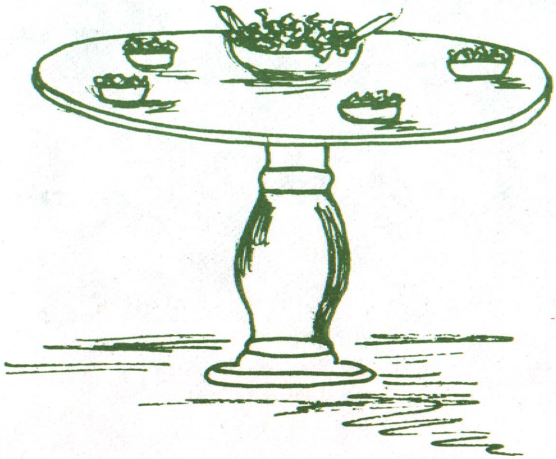
EXTENSION BULLETIN E-824 (8)

GREENS

by Roberta Lawrence, Ext. Hort. Agt., Washtenaw Co., and J. Lee Taylor, Dept. of Horticulture

GREENS are special vegetables because you can use them in so many ways. Eat them raw in salads or sandwiches. Cook greens and serve as hot vegetable side dishes. Season your favorite soup with greens, or use them in an omelet or souffle'.

As a special plus, greens are loaded with vitamins A and C, and minerals, such as calcium and iron.



Recommended Varieties

SWISS CHARD
- *Rhubarb*
- *Fordhook Giant*

BEETS
- *Ruby Queen*
- *Detroit Dark Red*

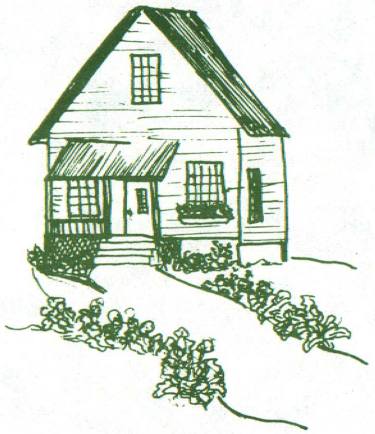
MUSTARD
- *Green Wave*
- *Tendergreen*

COLLARDS
- *Vates*

KALE
- *Dwarf Blue Curled*
- *Vates*

TURNIPS
- *Tokyo Cross*
- *Seven Top*

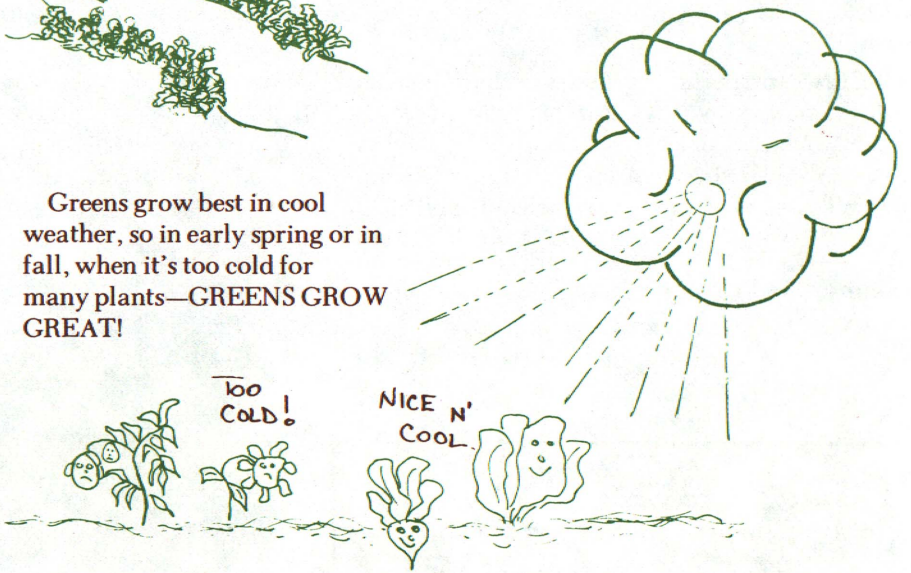
SPINACH
- *America*
- *Viking*



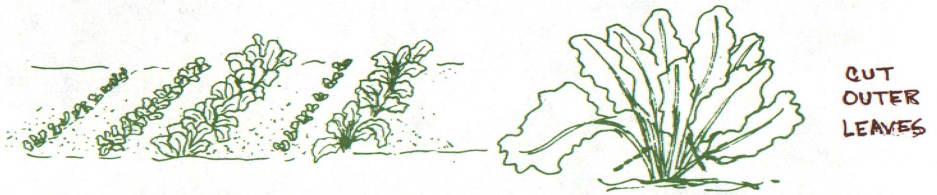
Greens are like salad crops in many ways. In fact, many greens are grown just for salads. (See No. 10 in this series: Salad Stuff.)

Greens don't have to grow in straight rows in a big garden plot. They grow just as well and look nice in flower beds, as borders along walkways and even in flower pots or window boxes.

Greens grow best in cool weather, so in early spring or in fall, when it's too cold for many plants—GREENS GROW GREAT!



Long rows of beets, turnips, mustard and spinach should *not* be planted all at once, or you will have more greens than you can eat at one time. Begin in early spring and plant about a four-foot row of each. Then every two weeks until May, plant another short row. This is called SUCCESSIVE PLANTING, a practice that will assure you a continuous supply of tender, fresh greens.

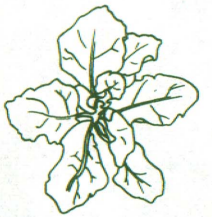


Collards, kale and chard can be planted all at once in the early spring, or in late July for a fall crop. As they grow, cut off and use the outer leaves and new leaves will keep growing in the centers of the plants. You'll be able to harvest for a long time from a few plants.

Turnip Tops and Beet Tops

For tops only, grow these close together in rows or scattered in a corner of a flower bed or garden. If you want to grow big roots too, plant the rows about 18 inches apart. When plants are small, thin them so the beets are three inches apart and the turnips four to six inches apart. (See No. 7 in this series: Root Crops.) In addition to the usual ways of using greens stir-fry turnip tops in sesame oil for a crisp vegetable in oriental dishes. Use them by themselves or in a combination meat dish.

Kale and Collards—*The Cabbage Kids!*



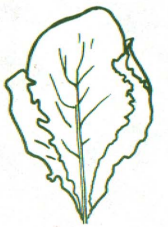
Kale likes it KOLD! It does best as a fall crop, and its flavor is improved by light frosts. In contrast, collards like hot weather and are one of the few greens that do well all summer long.

For both kale and collards, set out transplants in the early spring. For a fall crop, plant seeds in mid July. Scatter the seeds close together; then thin plants to 8 inches apart in rows 18 inches apart. The little plants you thin out are really good to eat.

Chard (Swiss)

Chard is really a foliage beet, with foliage that varies from pale green to ruby red in color. It will grow all summer if you keep cutting the outer leaves. (See page 2.) The stalks and thick ribs of the leaves are a lot like celery. Cook the stalks separately, just as you would celery. Try rolling the leaves with a ground meat filling and bake with your favorite mushroom or tomato sauce.

Mustard Greens



Mustard grows fast—just 30 to 40 days from planting until picking. For the best flavor, harvest the leaves before they are fully grown. Mustard goes to seed when the days get warm and long, so plant it very early in the spring, or in August for a fall crop. The curly mustard varieties withstand frosts well and can be harvested late in the fall. Try mustard greens in a tasty Italian omelet or lightly sauteed in butter or bacon drippings.

Spinach

Spinach is a little hard to grow. It goes to seed even faster than mustard when the weather gets warm. In hot weather, substitute chard in recipes that call for spinach. How about a spinach pie, creamed spinach, spinach soup or a cheesy spinach souffle? Spinach is certainly one of the most versatile greens.

Greens should be washed in cool running water to remove sand or soil. Shake them to remove excess water. Greens can be stored in a tightly covered container for one or two days in the refrigerator. But the sooner you use them, the better they are.

The trick to serving good, nutritious greens is to cook them quickly in as little water as possible, or use a steamer. Often the moisture that clings to the leaves after washing is all you need for cooking. Add ½ teaspoon of salt to the water for each pound of greens. Cook leafy greens about 1 to 3 minutes—just until they wilt.

Season with: Allspice, Crisp, crumbled bacon and bacon drippings, Salt pork, Butter, Lemon, Onion, Nutmeg, Vinegar, Cheese sauce, Sesame oil.

KEYS TO SUCCESS

- Plant at the right time
- Make successive plantings of beets, turnips, mustard and spinach
- Use greens when fresh

Other bulletins in this series provide additional information on vegetable gardening.

Issued in furtherance of cooperative extension work in agriculture and home economics, acts of May 8, and June 30, 1914, in cooperation with the U.S. Department of Agriculture. Gordon E. Guyer, Director, Cooperative Extension Service, Michigan State University, East Lansing, Michigan 48824.

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COOPERATIVE EXTENSION SERVICE
MICHIGAN STATE UNIVERSITY

family Vegetable Garden series

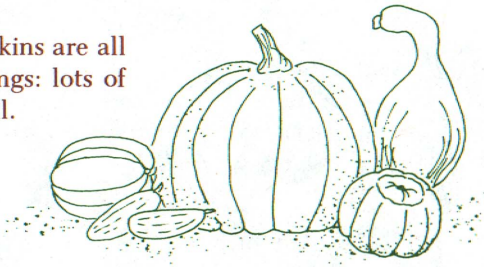
EXTENSION BULLETIN E-824 (9)

Melons, Cucumbers, Squash & Pumpkins.

by Alan G. Taylor and J. Lee Taylor
Department of Horticulture

WE'RE ALIKE

Melons, cucumbers, squash and pumpkins are all closely related, and like the same things: lots of sun, warm weather, water and good soil.



We all like the same things.

WHICH KIND DO I PLANT?

There are certain types that grow best in your garden. If you have a small garden, bush type summer and winter squash and cucumbers are best. Here are some you can grow.

CUCUMBERS

Slicing	Pickling
Gemini	Spartan Salad
Marketmore 70	Wisconsin SMR 18
Triumph	

SQUASH (bush type)

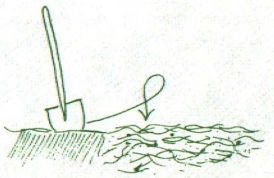
Summer	Winter
Zucchini Elite	Gold Nugget
Early Prolific Straightneck	Table King
St. Pat Scallop	

If you have a large garden you can plant these kinds and the ones listed below. Remember, plants need room to grow to make vegetables.

We only need a little room.

MUSKMELON	WATERMELON	SQUASH	PUMPKINS
Burpee Hybrid	Market Midget	Waltham Butternut	Cinderella (bush)
Supermarket	Petite Sweet	Buttercup	Small Sugar
Gold Star		Table Queen	

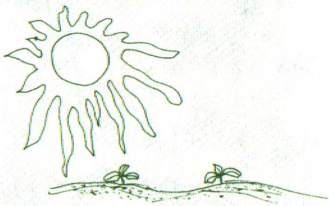
THINGS TO DO FOR BEST RESUULTS



1. Prepare the soil.

Spread animal manure and/or half of the recommended amount of a commercial fertilizer such as 5-20-20 (a total of 2 pounds of 5-20-20 should be used for every 100 square feet) on top of the soil.

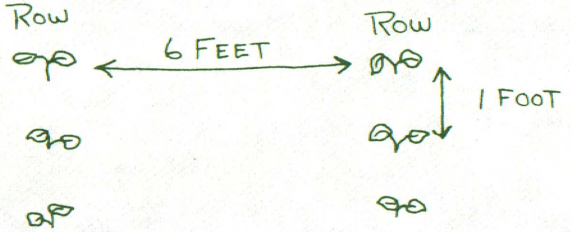
Turn over the soil with a shovel, plow, or rototiller to a depth of 8 inches and add another pound of fertilizer per 100 square feet.



2. Plant after all chances of frost are past (May 20-June 1). Remember cucumbers, melons, squash and pumpkins grow best during warm weather. Don't plant them before May 20.

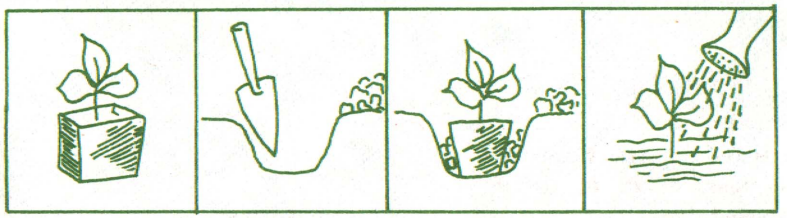
3. How to plant melons.

Seeds can be planted in the ground or you can buy plants from a garden center.



Plant 5 seeds per hill with hills 3 - 4 feet apart in rows 4 - 5 feet apart. Then thin to 2 strongest plants. Plant seeds 1 - 2 inches deep.

If you buy transplants from a store, space them 1 foot apart in the row and leave 4-5 feet between rows. Follow steps below for transplanting.

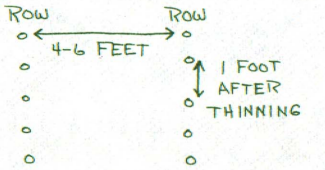


BUY PLANT | **DIG HOLE IN GROUND** | **PUT PLANT IN HOLE** | **WATER WELL**

4. How to plant cucumbers.

Cucumbers grow fast and can be planted from May 20-June 20. Cucumbers are usually grown from seeds, but plants can also be purchased.

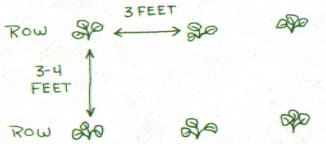
Plant cucumber seeds 3-4 inches apart in rows and leave 4-6 feet between rows. Plant seeds 1-2 inches deep. Thin the plants after they are 3 inches tall to 1 plant every foot. Those plants that would be thinned could be dug up and used as transplants.



5. How to plant pumpkins and squash.

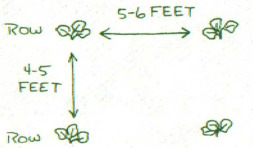
Plant summer and winter bush type squash closer than winter vine type and pumpkins.

Summer and winter bush type squash



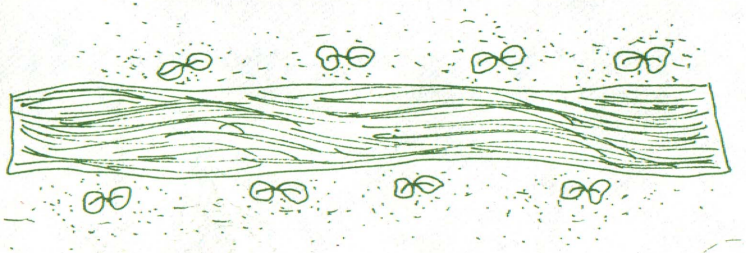
Plant seeds 1½ inches deep. Plant 6-8 seeds per hill and thin to 2 strongest plants after they are 3 inches tall.

Winter vine type squash and pumpkins



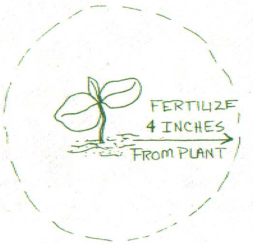
6. Cucumbers, squash and pumpkins can be tied to a fence with soft twine to save space.

7. Black plastic put down along the rows will make plants grow faster and keep weeds from growing.



8. Fertilize around plants when they flower using a high nitrogen fertilizer such as urea or ammonium nitrate. (See bulletin E-824(2))

A small handful of commercial fertilizer placed 4 inches from the plants or hills and worked into the soil will be satisfactory.



9. Water plants and pull weeds when needed. This is very important to get good yields.

THINGS NOT TO DO!

1. Don't plant large fruited varieties of watermelon because they will not mature in your garden.

2. Choose cucumber type carefully. Slicing cucumbers can be used for slicing and pickles when they are small. Pickling cucumbers cannot be used for slicing. They will get soft when they get old.

3. Don't kill honeybees that are visiting the flowers. They are necessary to pollinate the flowers to produce the vegetables.

4. Don't plant vine type varieties if you do not have the space. They will overrun other vegetables.

5. Don't plant too much (8-12 hills of melons or cucumbers and 2-3 hills of squash are plenty for a family of 4).

HOW TO STORE VEGETABLES

1. Muskmelons should be kept in the shade or inside after picking for a week to improve flavor. They can be stored in the refrigerator after this time.

2. Cucumbers, summer squash and watermelons can be refrigerated for a week or so. They will start to shrivel and lose flavor if kept too long.

3. Winter squash should be kept in a cool area but not refrigerated. They can be stored this way for a month or longer.

4. Pumpkins can be stored in a cool area after picking until Halloween. They're great for decorating and carving.

Other bulletins in this series provide additional information on vegetable gardening.

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EXTENSION BULLETIN E-824 (10)

Salad Stuff

by Roberta Lawrence, Washtenaw Co. Ext. Hort. Agent
and J. Lee Taylor, Dept. of Horticulture

GREAT FOR THAT WAISTLINE!

Salads are made from all kinds of stuff, but most start with lettuce or other crisp, leafy vegetables. Leafy vegetables are usually low in calories, refreshing, and so good for you!

RECOMMENDED VARIETIES

CRISPHEAD LETTUCE
Ithaca
Great Lakes

BUTTERHEAD LETTUCE
Summer Bibb
Buttercrunch

LEAF LETTUCE
Ruby (red)
Salad Bowl

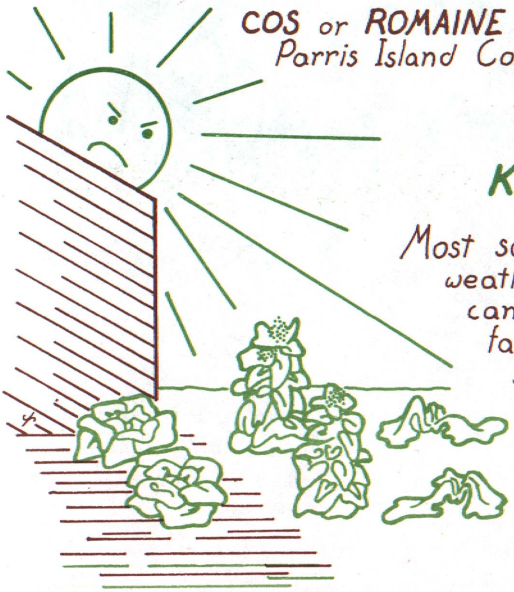
ENDIVE (curly leaves)
Salad King
Green Curled

ESCAROLE
Full Heart Batavian
Florida Deep Heart

CELERY CABBAGE (chinese cabbage)
Michihli
Early Hybrid G.

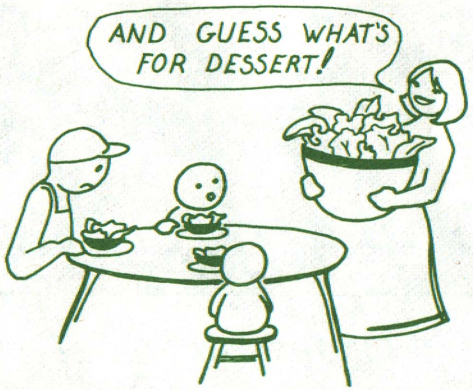
COS or **ROMAINE LETTUCE**
Parris Island Cos

SPINACH
America
Viking



KEEP COOL!

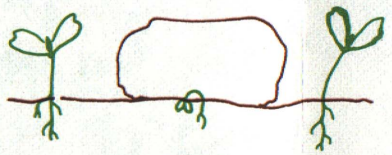
Most salad stuff grows best in cool weather. Plant it as soon as you can dig the soil in spring. For fall salads, plant some in partial shade in late July. In hot, summer sun, lettuce wilts, gets bitter, and worse – it produces tall seed stalks instead of crisp leaves.



HOW MUCH LETTUCE CAN YOU EAT AT ONCE?

Once you pick it, salad stuff wilts. If you don't pick it, it gets bitter. So, in the spring, plant as much as your family can use in 10 days. Then every 10 days until the end of May, plant that much again. Plant more in late July for fall use.

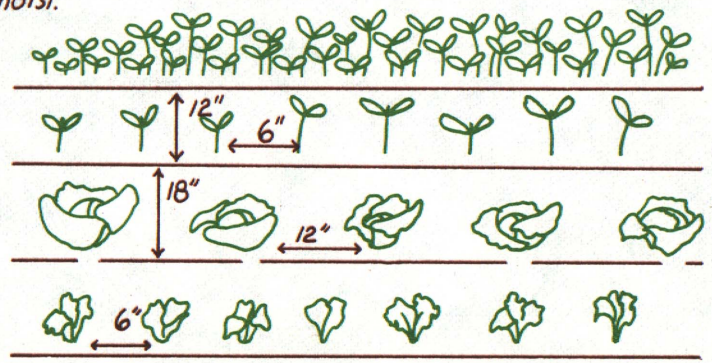
PREPARE THE SOIL



Lettuce, spinach, and other leafy vegetables have tiny seeds — too tiny to grow under big lumps of soil. Rake the soil smooth! (See *2 in this series: Start with Soil)

READY TO PLANT

- Make rows 12-18 inches apart. Barely cover seeds with soil.
- After seeds come up, plants need room to grow. Pull out weak plants so the ones you leave are 6 inches apart. Head lettuce needs more room — about 12 inches. Eat what you thin.
- Lettuce roots are shallow. You can hurt them with a hoe. Organic mulches like grass clippings, straw or leaves will help control weeds. (See *4 in this series: Keep 'em Growing.)
- Salad crops need plenty of water. Mulches keep the soil moist.



ALL KINDS OF SALAD STUFF

CRISPHEAD LETTUCE

The kind you usually find at the store. It is sweet and mild with round, firm heads, but a little hard to grow, as it dislikes intense heat.

BUTTERHEAD LETTUCE

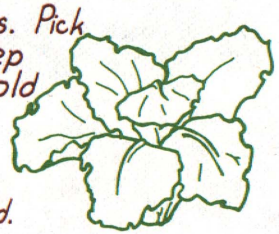
Makes loose, bunchy heads. Outer leaves are dark green, but the best eating leaves are the butter-colored ones inside.

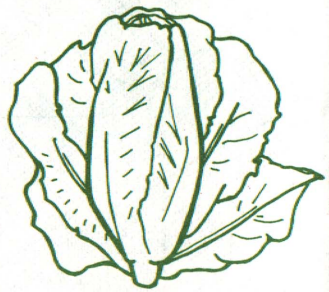
SPINACH

Often served cooked. Young, fresh-picked leaves make a super salad. Remove the coarse stems. Fresh spinach has a slightly sharp flavor.

LEAF LETTUCE

Doesn't make heads. Pick leaves often to keep them from getting old and bitter. Some kinds are green; others are red or brownish and ruffled. Pretty in salads!





COS or ROMAINE LETTUCE

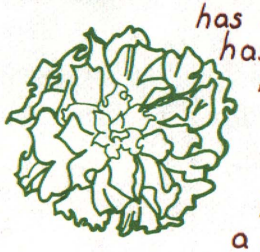
A tall, coarse kind of lettuce. It's sweet, but has a stronger flavor than most.

CELERY CABBAGE or CHINESE CABBAGE

Tall, oval plant with pale leaves. Leaves are crisp and spicy. Use it like lettuce, or shred it for cole slaw, or steam for a cooked vegetable.

ENDIVE and ESCAROLE

Sharp-flavored, slightly bitter greens, that look a lot like lettuce. Endive has lacy leaves; escarole has broader, curly leaves. Both need to be blanched — that is, shielded from light for 2 weeks before harvest. This prevents a bitter flavor. To blanch, tie outer leaves together at top of plant.



OTHER GREENS YOU CAN USE ...

DANDELION — Eat the tender, young leaves.

PURSLANE — A terrible weed if you let it go to seed.

GARDEN CRESS — An appetizing and mildly pungent herb.

LAMB'S QUARTERS — Another wild, edible plant.

NASTURTIUMS — How about bright, tasty flowers in your salad?

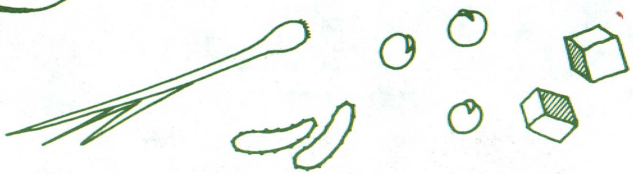
SWISS CHARD — Similar to spinach.

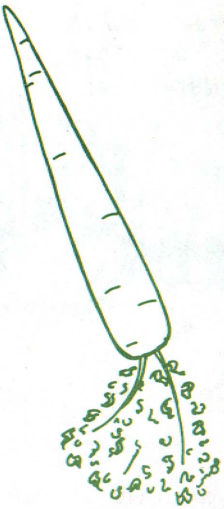
BEET and TURNIP TOPS — Now there's no reason not to thin these root crops!

SALAD TRIMMINGS

Hard-cooked eggs
Cauliflower flowerets
Raw mushroom slices
Crisp bacon bits
Cheese cubes
Tomatoes
Pickles
Fresh herbs
Avocado slices

Carrots
Celery
Scallions
Onions
Apple wedges
Fresh peas
Nuts
Croutons





KEYS TO SUCCESS

- Grow in cool weather.
- Make repeated plantings.
- Plant different varieties.

Other bulletins in this series provide additional information on vegetable gardening.

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EXTENSION BULLETIN E-824 (11)

Drying and Storing Vegetables

by margaret pudlo and robert c. herner
DEPT. OF HORTICULTURE

GOOD FOOD AT A SAVINGS

DURING THE COLD, SNOWY DAYS OF WINTER YOUR FAMILY MAY LONG FOR A TASTE OF HOME-GROWN VEGETABLES. SATISFY THOSE LONGINGS BY DRYING OR STORING YOUR EXTRA GARDEN CROPS. DRYING ALLOWS YOU TO STORE A LOT IN A SMALL SPACE AND IN A LIGHT-WEIGHT FORM. STORING FRESH VEGETABLES, ACCORDING TO THEIR INDIVIDUAL REQUIREMENTS, MEANS YOU CAN EAT THEM LATER AS IF YOU HAD JUST PICKED THEM OUT OF THE GARDEN. PRESERVING FOOD BY DRYING AND STORING IS MUCH LESS EXPENSIVE THAN FREEZING AND CANNING.

CHOOSE ONLY YOUR BEST VEGETABLES

KEEP IN MIND THAT THE QUALITY OF YOUR PRODUCTS MAY BE MAINTAINED BUT IS RARELY IMPROVED BY DRYING AND STORING. THEREFORE, YOU MUST START WITH THE BEST. THE VEGETABLES YOU DRY OR STORE SHOULD BE:

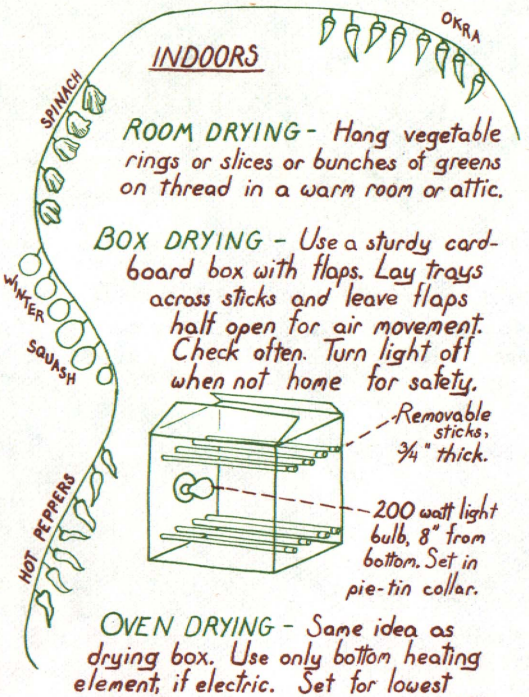
- MATURE (NOT TOO RIPE, NOT TOO GREEN)
- FIRM (NOT MUSHY OR WILTED)
- FREE FROM BRUISES AND CRACKS
- FREE FROM INSECT AND DISEASE DAMAGE

HANDLE YOUR VEGETABLES CAREFULLY TO AVOID BRUISING THEM!

DRY IT ~ YOU'LL LIKE IT!

GENERAL PROCEDURES FOR DRYING INDOORS AND OUTDOORS

- Follow preparation and steam recommendations in chart.
- Steam vegetables in a boiler to condition them for easier and more even drying.
- Place vegetable pieces less than ½" deep on cookie sheet or tray.
- If drying outdoors, turn pieces over once in the morning and once in the afternoon; indoors, turn about every half hour.
- Allow a piece to cool before testing its dryness (see chart).
- After the vegetable passes its dryness test, remove it from trays. Pile pieces loosely on a clean surface in a dry place. Protect from dust and insects. Let dry 10-15 days. Stir pieces every day.
- After drying is finished, the food must be pasteurized. Spread pieces on a cookie sheet or shallow pan in thin layers. Place in oven for 5 minutes at 180°-200°F. This helps prevent spoilage during storage.
- When thoroughly cool, place in covered glass or plastic containers or plastic bags.
- To use the finished product: Before cooking, soak all vegetables, except greens, in enough water to cover them until nearly restored to original texture. Always cook them in the water they have soaked in. Cover greens with boiling water and simmer until tender.



INDOORS

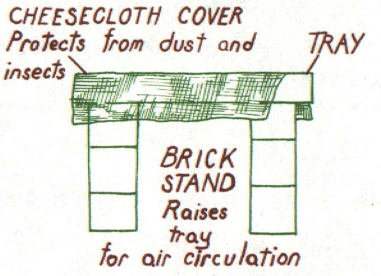
ROOM DRYING - Hang vegetable rings or slices or bunches of greens on thread in a warm room or attic.

BOX DRYING - Use a sturdy cardboard box with flaps. Lay trays across sticks and leave flaps half open for air movement. Check often. Turn light off when not home for safety.

OVEN DRYING - Same idea as drying box. Use only bottom heating element, if electric. Set for lowest temperature. Leave door open 6". Use cookie sheets for trays, with bottom sheet 8" from heat source.

OUTDOORS

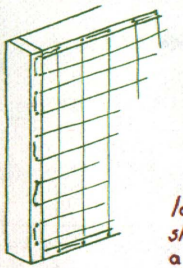
YOU NEED:
WARM DAYS
LOW HUMIDITY
SUNSHINE



TAKE trays of food indoors every evening
BEGIN testing for dryness after second day.
If you live near a busy street or high pollution area, it would be better to dry INDOORS

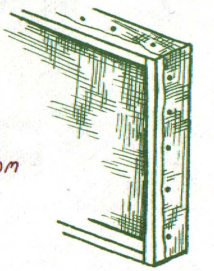
VEGETABLE	PREDRYING TREATMENT	STEAM TIME IN MINUTES	TESTS FOR DRYNESS	STORES WELL FRESH
BEANS, SNAP	With larger varieties split pods lengthwise to dry faster. Keep whole for hanging.	15-20	Brittle	
BEETS	Steam first with ½" tops. Trim. Peel. Slice ⅛" thick or shred coarsely. Steam.	25-35	Slices leathery Shreds brittle	X
CABBAGE	Remove outer leaves. Quarter. Cut out core. Shred coarsely. Steam.	8-10	Thin edges of shreds crumble	X
CARROTS	Steam. Trim. Peel. Cut into ⅛" rings or shred.	20-30	Slices leathery Shreds brittle	X
CUCUMBERS & SUMMER SQUASH	Wash. Cut into ⅛" thick slices. Steam squash only.	5	Brittle	
EGGPLANT	Peel. Slice ¼" thick. Steam.	15-20	Leathery	
OKRA	Use young, tender pods. Dries best hung in dry room. No need to steam.	—	Brittle	
ONIONS	Peel. Slice ⅛" thick. Steam.	5	Brittle	X
PEPPERS, HOT	Use mature, dark red peppers. Thread through stems and hang. No need to steam.	—	Pods shrunken, dark, bend without Snapping.	
PEPPERS, SWEET (GREEN OR BELL)	Split. Core, remove seeds. Cut into quarters. Steam.	10-12	Brittle	
SPINACH & OTHER GREENS	Use young, tender leaves. Cut out tough midribs. Steam.	4-6	Crumbles easily	
SQUASH, WINTER & PUMPKIN	Split. Peel. Remove seeds. Shred coarsely or cut into ⅛" slices. Steam.	6-10	Slices leathery Shreds brittle	X
TOMATOES	Cut into wedges. Steam.	2-5	Leathery	

TO MAKE YOUR OWN TRAYS



MAKE A FRAME of thin wooden strips 1-2" wide. Trays made 3" shorter than a drying box can be used in the box as well as outdoors. Then either:

Tack a piece of bedsheet about 2" up the side of the frame to make a strong bottom
or
loop jute or strong cord around short nails ½" apart and weave a bottom across the frame.



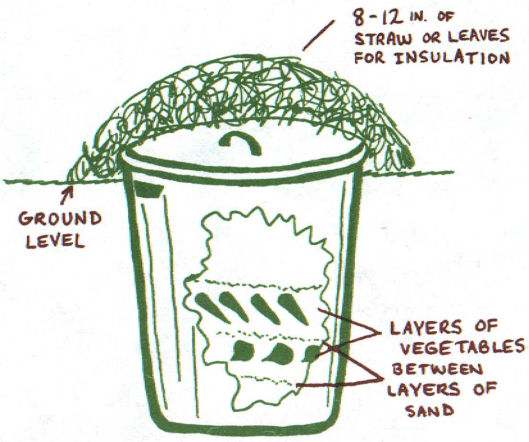
NEVER USE METAL — IT CORRODES TOO QUICKLY

STORING FRESH VEGETABLES

STORING VEGETABLES IS PERHAPS THE LEAST EXPENSIVE OF ALL METHODS OF FOOD PRESERVATION. TEMPERATURE AND HUMIDITY ARE THE MOST IMPORTANT FACTORS FOR GOOD STORAGE, AND VARY FOR EACH TYPE OF VEGETABLE. THE TABLE BELOW LISTS THE BEST CONDITIONS FOR STORING SPECIFIC CROPS.

COOL AND MOIST 32° TO 40°F HUMIDITY 90 - 95%	COOL AND MODERATELY MOIST 32° TO 40°F HUMIDITY 80 - 90%	DRY AND COOL OPTIMUM 32°F LOW HUMIDITY	DRY AND WARM 50° TO 58°F LOW HUMIDITY
CARROTS BEETS PARSNIPS TURNIPS	CABBAGE CAULIFLOWER POTATOES	ONIONS	PUMPKINS WINTER SQUASH GREEN TOMATOES
USUALLY STORED BETWEEN LAYERS OF MOIST SAND, LEAVES, OR SAWDUST IN A BOX IN BASEMENT OR GARAGE OR IN A CAN OR BARREL BURIED OUTDOORS.	POTATOES MUST BE KEPT IN DARK. PUT IN SLATTED CRATES - NO SAND. FOR CABBAGE AND CAULIFLOWER, PULL UP ROOTS AND REPLANT IN SAND OUTDOORS. ENCLOSE IN WOODEN FRAME AND COVER WITH A HEAVY LAYER OF STRAW OR LEAVES.	AN ATTIC OR COLD, DRY ROOM IN BASEMENT IS BEST. DO NOT PUT IN CLOSED CONTAINERS. USE SLATTED CRATES OR MESH BAGS.	STORE IN A DRY ROOM ON SHELVES. DO NOT ALLOW TO TOUCH EACH OTHER.

FOR COOL AND MOIST STORAGE



CLEAN GARBAGE CAN OR BARREL

GENERAL STORAGE HINTS

- VEGETABLES FOR STORAGE SHOULD BE PLANTED SO AS TO MATURE LATE IN THE SEASON.
- HARVEST VEGETABLES DURING COOLEST PART OF THE DAY (USUALLY EARLY MORNING) SO THEY CONTAIN LESS FIELD HEAT WHICH MUST BE REMOVED BEFORE STORAGE.
- NEVER STORE VEGETABLES WITH APPLES OR PEARS BECAUSE THEY GIVE OFF THE CHEMICAL ETHYLENE WHICH MAY REDUCE STORAGE LIFE AND QUALITY.
- CHECK PERIODICALLY FOR SPOILAGE.
- ONCE REMOVED FROM STORAGE THE VEGETABLES DO NOT KEEP LONG, SO USE PROMPTLY.

Other bulletins in this series provide additional information on vegetable gardening.

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family
Vegetable
Garden
Series

EXTENSION BULLETIN E-824 (12)

Space Saving Ideas

by Dennis Bowen, St. Joseph Co. 4-H and Agric. Prog. Asst. and J. Lee Taylor, Dept. of Horticulture

NO EXCUSES, PLEASE!

Just because you don't have lots of space is no reason not to have a garden. Many great gardens are grown in small spaces.

Use containers on a balcony, or combine vegetables with flowers. Vegetables look good, so enjoy them wherever you can find room.

FOR LIMITED SPACE

WHAT TO GROW —

These vegetables produce a lot in a small space:


TOMATOES

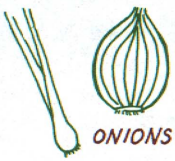

LETTUCE

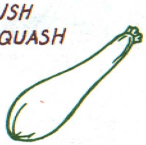

TURNIPS


GREENS


RADISHES


BEANS (POLE or SNAP)


ONIONS


BUSH SQUASH

AND WHAT NOT TO GROW —

Some vegetables need a very large space to produce much, such as peas, melons, potatoes, corn, vine squash. (Vine crops like melons and squash <u>can</u> be grown in a small place if they are trained on a trellis or pole.)

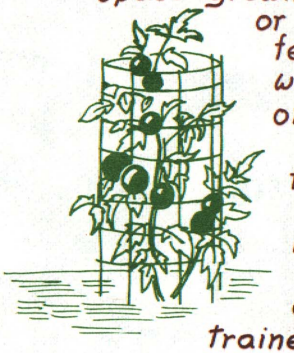
TRY FOR TWICE

SUCCESSIVE CROPPING means growing two or more crops in the same space ONE AFTER ANOTHER. For example, after an early crop of lettuce is harvested, a late maturing crop like beets can be planted in its place.

COMPANION CROPPING means growing two kinds of plants in the same space AT THE SAME TIME. Use a short-season and a long-season crop, like radishes and carrots. Radishes grow quickly, and are harvested before they compete with the carrots. Dig radishes carefully to avoid hurting the carrots. Or plant lettuce between late-maturing crops like cabbage or broccoli.

LET THEM CLIMB

Viny plants take less space grown in a cage or on a pole or fence than when grown on the ground. Pole beans, tomatoes and vine crops like cucumbers and squash can be trained like this.



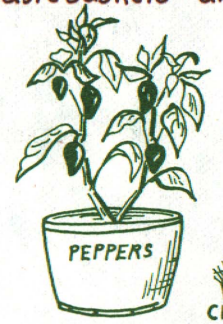
OR

TRY CONTAINER GARDENING

An easy way to garden in little space — just plant your favorite vegetables in containers!

ANYTHING WILL DO

The best containers may be lying around the home or garage. Dented pails, tubs, barrels and plastic wastebaskets are fine for container gardening.

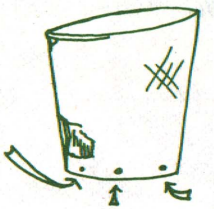


SIZE IS IMPORTANT

The right container size depends on the size of the vegetable. Six-inch pots are fine for small plants like chives. A tomato plant needs at least a five gallon container or the soil will dry out too fast.

DON'T FORGET DRAINAGE

All containers should have a few ¼ inch drainage holes drilled along the side near the bottom.



INSIDE AND OUT

With container gardening, plants can be started earlier for an early harvest. Most containers can be moved outside in the spring on warm days and brought indoors at night or when the weather is bad. This can be done in fall, too, so plants aren't killed by early frost.

START WITH SOIL

It should be light and sterile. Buy a soil mix containing fertilizer at a nursery or garden center.

OR

save money and mix your own.

For two bushels of soil, combine:

- 1 bu. peat moss
- 1 bu. vermiculite
- 1¼ cups ground limestone
- ½ cup 20% superphosphate
- 1 cup 5-10-5 or 5-10-10 fertilizer
- ½ tsp chelated iron.
- a pinch of borax

(all available at nursery or garden center.)

VEGETABLES FOR CONTAINERS:

EGGPLANT

eggplant
lettuce
onions
most herbs
peppers
Swiss chard
tomatoes

TAKE THEM ANYWHERE

Put plants where they can be seen and enjoyed. They need lots of sun. Containers can be moved easily on a wagon.

TO KEEP THEM GROWING — FOOD —

Plants in containers need to be fertilized often. Use a concentrated fertilizer that you mix with water, following directions on label OR apply 1 level tsp. of 5-10-5 dry fertilizer per square foot of soil every three weeks, starting three weeks after transplanting. Mix the dry fertilizer into the top ½ inch of soil and water well.

-AND WATER

Water plants when the top ½ inch of soil dries out. Apply enough so that some drains out the bottom.

- Do not overwater, especially if metal or plastic containers are used.
- Don't wet the leaves — this may cause disease.
- On very hot days, you may have to water mature plants more than once.

KEYS TO SUCCESS

- Choose vegetables carefully
- Have a plan
- Don't overlook possible space

Other bulletins in this series provide additional information on vegetable gardening.

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EXTENSION BULLETIN E-824 (13)

Controlling BUGS WEEDS Pests DISEASES

by
Richard D. Miller, Livingston Co. Ext. Res. Dev. Agt.
James E. Motes, Dept. of Horticulture

PESTICIDES – WHAT ARE THEY?

Pesticides is a general term for chemicals used to control pests – insects (bugs), diseases, weeds, rodents, etc.

Pesticides include:

INSECTICIDES
chemicals used to kill damaging or annoying insects.

FUNGICIDES
chemicals that prevent or control disease organisms (fungi).

HERBICIDES
chemicals used to kill unwanted plants (weeds).

COMMON PESTICIDES used in home gardens:

Insecticides: diazinon, sevin and malathion.

Fungicides: maneb, bravo, captan, and tribasic copper sulfate.

For specific information, see Extension Bulletin E-760 (6), "Home Vegetable Garden Disease and Insect Control".

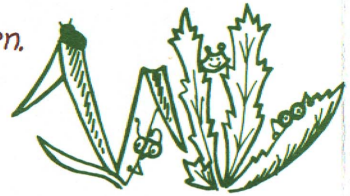
Herbicides are generally not recommended for the small home garden. There is no one herbicide that can be used on all the different vegetables. (See the section on mulching in No. 4 in this series: Keep 'em Growing.)

Before buying pesticides — follow these TIPS TO REDUCE INSECT AND DISEASE DAMAGE

Plant garden in fertile, well-drained soil. Healthy plants resist insect and disease attack better.

Plant crops suited to your soil and climate.

Control weeds and grass in the garden. Insects and disease hide in them.



Buy seed from reliable suppliers to avoid disease.

Buy treated seed to protect against rot and insects. Or treat your own seed with chemicals available at garden supply centers.

Buy healthy plants, free from injury, disease and insects.

Grow disease-resistant varieties. Extension Bulletin E-760(a) lists these varieties.

Stay out of garden when plants are wet to avoid spreading disease.

After harvest, destroy diseased or insect-infested plants.

READ THE LABEL

When buying or using a pesticide, read the label to find out —

- What the product does
- What pests it controls
- What crops it can be used on
- How and when to apply it
- the ingredients
- the dosage or rate
- precautions
- other information

SAMPLE LABEL

The most important few minutes in pest control is the time you take to READ THE LABEL!

IF YOU NEED TO USE A PESTICIDE – CAUTION!

Always read the label before buying or using pesticides.

Do not apply more than the specified amount.

Keep them away from food or dishes.

Wash hands with soap and water after use. Wearing gloves is a good idea.

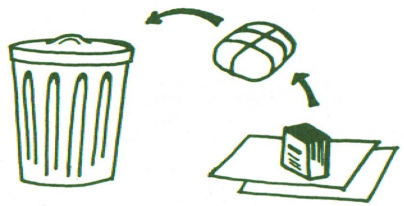
Keep children and pets away from pesticides and treated areas.

Do not smoke or eat while using pesticides. Don't breathe fumes or dust.

If you spill a pesticide on your skin or clothing, wash with soap and water and change clothes right away.

Store pesticides in the original container.

Dispose of empty containers safely! Wrap in newspaper, tie well, and put in covered trash can. Never burn pesticide containers.



In case of poisoning call your local poison treatment center (open 24 hours). It is usually listed with the emergency numbers in your phone book.

INSECTICIDE

For aphid control on: beans, corn, tomatoes.

Apply with compressed-air sprayer at one tsp. per gallon of water.

Spray when insects are first seen—re-apply in 10 days if problem still exists.

CAUTION: Do not use within 7 days before harvesting. Keep out of reach of children.

Ingredients: Malathion

THE KEY TO CONTROL – IDENTIFICATION

1. Identify the pest causing the damage. (See County Extension Agent or Extension Bulletin E-760(6)

2. Get pesticide that lists on the label the specific pest and specific crop it will be used on.
3. Apply correct amount right where pests are feeding.
4. Always read and follow all label directions.

EQUIPMENT TO USE

← Compressed air sprayer – knapsack type for garden.

Slide and bucket pump sprayer – for fruit and ornamentals.

Household intermittent sprayer – fly-sprayer, etc.

← Plunger duster – for garden and flowers.

Garden hose sprayer – for lawn and ornamentals.

Aerosols – for home and outdoors.

TERMS and ABBREVIATIONS

WP = Wettable Powder
EC = Emulsifiable Concentrate (liquid)
Tsp. = Teaspoon
Tbs. = Tablespoon
Sq. Ft. = Square Feet (length times width)
1 Acre = 43,560 sq. ft.

LIQUID MEASURES

3 teaspoons = 1 tablespoon
2 tbs. = 1 fluid ounce
8 fluid ounces = 1 cup
2 cups = 1 pint
2 pints = 1 quart
4 quarts = 1 gallon

KEYS TO SUCCESS

- Always read label on pesticide.
- Buy pesticide for your crop and pest.
- BE CAREFUL!

Other bulletins in this series provide additional information on vegetable gardening.

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family Vegetable Garden series

EXTENSION BULLETIN E-824 (14)

Asparagus and Rhubarb

~ Garden Perennials ~

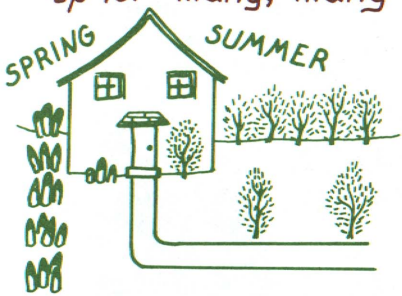
by Randall C. Heatley, Jackson Co. Ext. Hort. Agt.
and J. Lee Taylor, Dept. of Horticulture

YEAR AFTER YEAR —

Try planting asparagus and rhubarb this spring. They are perennials, which means they will come back every year.

SAVE $$

Asparagus is expensive to buy, and not always fresh. Why not grow your own! Once you plant it, asparagus will come up for many, many years.

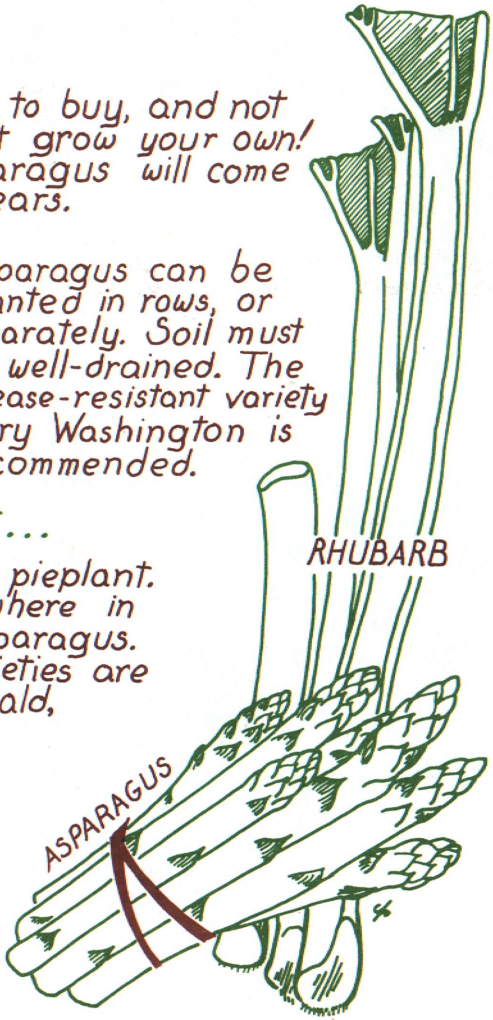


Asparagus can be planted in rows, or separately. Soil must be well-drained. The disease-resistant variety Mary Washington is recommended.

FOR DESSERT...

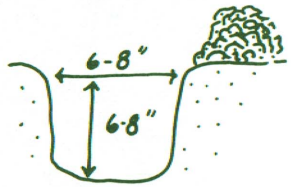
Rhubarb is also called pieplant. It will grow almost anywhere in your yard, just like asparagus. Some recommended varieties are Canada Red, MacDonald, Valentine and Victoria.

Buy asparagus and rhubarb crowns (plants 1 year old or older) at garden centers, or through seed or nursery catalogs.

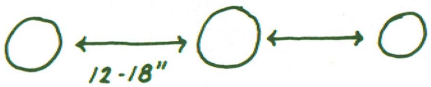


GROWING ASPARAGUS

Plant crowns in the spring. Dig a trench or holes 6 to 8 in. deep.

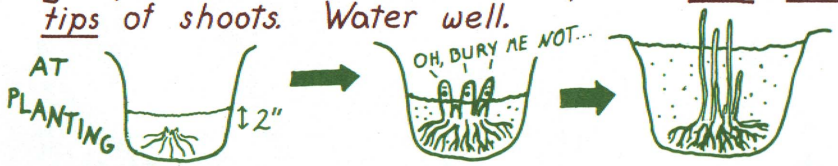


Mix in 2 cups of 5-20-20 fertilizer per 10 ft. of row, or use ¼ cup per plant.



Space crowns 12 to 18 in. apart, and spread out roots. Make rows 3 to 5 ft. apart.

Cover crowns with 2 in. of soil. As new shoots grow, fill in soil around them, but <u>don't</u> <u>cover tips</u> of shoots. Water well.



After the first year, fertilize plants when growth starts in spring, and again in July, at least until plants are well-established. Use ½ cup of 5-20-20 fertilizer per 10 ft. of row or per 10 plants.

Leave tops on plants to protect them through winter, but cut off before growth starts in spring.

HARVEST

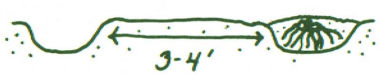
Do not harvest asparagus the first year after planting. You may be able to harvest for a few weeks the second year if plants produce big enough spears. You may have to wait til the 3rd or 4th year for a large harvest. Do not harvest spears thinner than a pencil. Do not harvest after July 1.

Harvest spears before buds open by snapping them off or by cutting at the soil surface. Cutting below this may injure new spears coming up.

Figure 8 plants per person.

GROWING RHUBARB

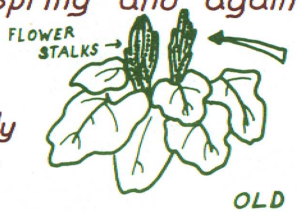
Plant rhubarb crowns early in the spring. Work ¼ cup of 5-20-20 fertilizer per crown into the soil.



Plant so that top of crown is near soil surface. Leave 3 to 4 ft. between plants, and 4 ft. between rows.

Firm soil around roots. Leave 1 in. of loose soil over buds.

After the first year, fertilize each plant with ½ cup of 5-20-20 every spring and again in July.

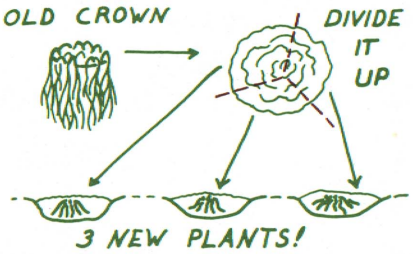


Water rhubarb in dry spells, especially the first few years.

Break off flower stalks by pulling and twisting, so more leaf stalks form.

DIVIDE THE CROWNS

If stalks get spindly in 5-10 years, fertilize more. If this doesn't help, dig up crowns. Divide into 2 to 4 equal parts. Plant these like your first plants, in early spring.



Eat only the stalks!
The leaves are poisonous!

HARVEST

Do not harvest rhubarb the first year after planting. You may be able to harvest a few stalks the 2nd year, if plants are growing very well. If they are not, wait til the 3rd or 4th year. Never remove more than ⅓ of a plant's stalks at a time. Do not harvest after July 1.

Harvest stalks when long enough. To harvest, twist the stalk while pulling it sideways. Do not cut the stalks.

One plant per person is enough.

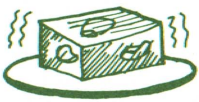
IN THE KITCHEN

LOW IN CALORIES

ASPARAGUS tastes delicious, is low in calories, and rich in vitamins A, B and C.

Cooked asparagus spears are very good with butter, hollandaise or cheese sauce. Use them in dishes made with cheese or cream sauce. Or add them to chicken casserole. Cream of asparagus soup is great, too.

For a change, try raw asparagus with your favorite dip.



SWEET STUFF

In strawberry jello, cooked chunks of RHUBARB taste a lot like strawberries — and they're a lot cheaper!

Rhubarb makes delicious pie and sauce. It's great in jello, jams and jellies. Try substituting rhubarb for apples in apple crisp or in apple-cinnamon cakes.

Remember—Don't eat the leaves!

KEYS TO SUCCESS

- Plant early in the spring.
- Get plants well established before harvesting.
- Harvest correctly.

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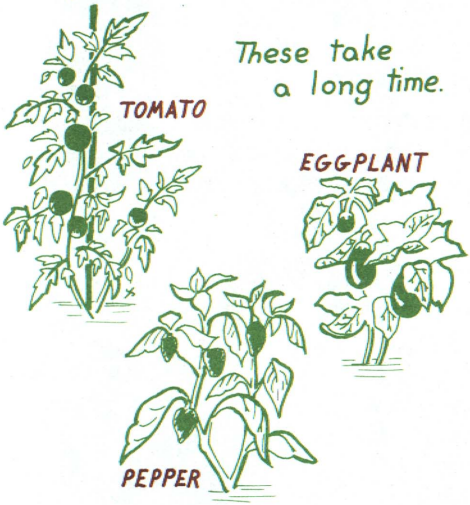
EXTENSION BULLETIN E-824 (15)

Starting Plants at Home

by Elizabeth C. Naegele and J. Lee Taylor,
Department of Horticulture

WHY START PLANTS EARLY?

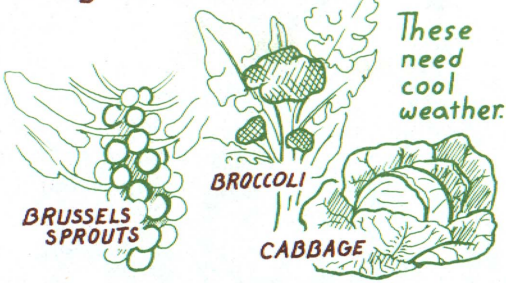
Some vegetables, like tomatoes, take a long time to grow. If you seed them outdoors, you may not get fruit before the first frost. Other vegetables, like broccoli, are "cool-season" crops and must mature before the weather gets warm.



These take a long time.

So start these vegetables early indoors or buy transplants. Plant them outside on the dates shown on page 2.

(For a fall crop of cool-season vegetables, plant seeds outside May 20 to June 10.)



BEFORE YOU START—

You can usually buy better transplants than you can grow yourself. However, by starting your own you can grow varieties not sold at local garden stores.

When buying transplants:

Check for signs of insects or disease.
Avoid wilted or spindly plants.
Pick a variety that grows well in Michigan (see Extension Bulletin E-760(a)).

WHEN TO START — (based on conditions in southern lower Michigan)

Don't start plants too early. They get tall and spindly and may die outside.

Vegetable	Time to Plant Seeds Indoors	Date to Transplant into Garden
Broccoli	Feb. 20 - Mar. 20	Mar. 20 - Apr. 20
Brussels sprouts	Mar. 1 - 20	Apr. 1 - 20
Cabbage	Mar. 1 - 20	Apr. 1 - 20
Cauliflower	Mar. 1 - 20	Apr. 1 - 20
Eggplant	Mar. 20 - Apr. 1	May 20 - June 1 (after last frost)
Onions	Feb. 20 - Mar. 20	Mar. 20 - Apr. 20
Peppers	Mar. 20 - Apr. 1	May 20 - June 1 (after last frost)
Tomatoes	Apr. 20 - May 1	May 20 - June 1 (after last frost)

Start melons and winter squash indoors 2 weeks before planting outdoors to insure harvest before frost.

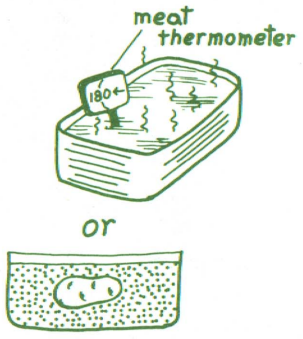
BEGIN WITH BASICS

Seed: Buy varieties recommended for Michigan. Use new seeds or last year's if stored properly (old seeds may not grow as well). Do not use seeds saved from last year's plants (bean, pea and tomato seeds might be saved if the plants weren't hybrids).

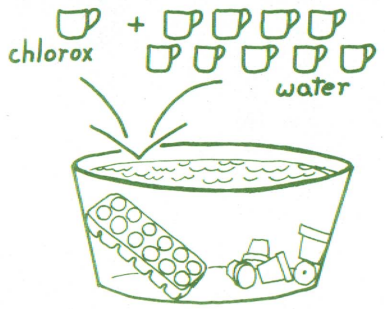
Soil: Use a sterile, light-weight soil mix. Buy a prepared one or mix your own. Combine equal parts of:

garden soil
peat moss
sand, vermiculite or perlite

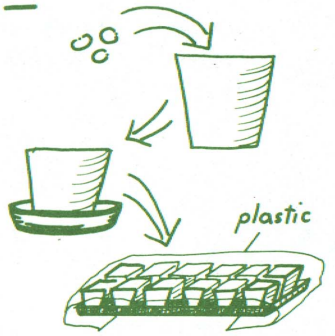
If you mix your own, sterilize it. Put soil in pan, moisten and cover with aluminum foil. Place in a 300°F oven. When meat thermometer in soil reaches 180°F, bake for 30 minutes more. Soil is also ready when a potato in the middle of soil is fully cooked.



Containers: Use containers with small compartments so plant roots don't grow together — peat pots or pellets, plastic egg cartons, paper cups, clay pots, etc. Punch holes in the bottom of each pot or compartment, so water can drain out. Sterilize clay or plastic ones: mix 1 part chlorox to 9 parts water; leave clay or plastic containers in solution overnight.



TO GROW YOUR OWN TRANSPLANTS —

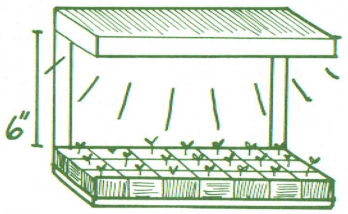


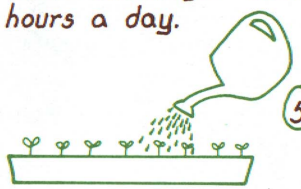
1. Moisten soil in containers. Plant 3 seeds in each compartment at depth recommended on seed packet. Gently sprinkle water over seeds or stand container in water until saturated. Put clear plastic wrap over containers. Do not water until after seeds sprout, since plastic holds in moisture.

2. Place containers in warm area (65-75°F) — not in sun, or seedlings may burn. After most sprout, place in cooler area.

3. If more than one seed in a container sprouts, pinch off all but the strongest one. Remove plastic as soon as most seeds sprout.

4. Place seedlings in BRIGHT LIGHT, or they will get tall and spindly. Use a south window, a cool white fluorescent light or grow-light (4-bulb fixture). You can buy these at garden or hardware stores. Place light 6 inches above seedlings. Leave on 16 to 18 hours a day.



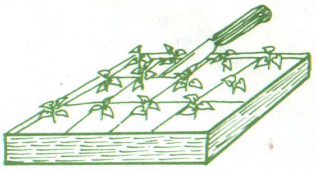


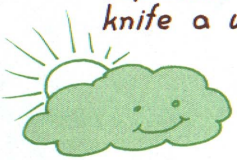
5. Water plants as soon as soil starts to dry out, before seedlings wilt.

6. Fertilize seedlings when they begin to grow with 1 tbs. houseplant fertilizer in 1 gallon of water. Fertilize again when seedlings are 3 and 5 weeks old.

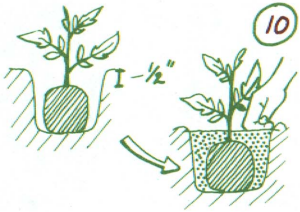
7. Harden off plants before placing in the garden. This means slowly getting plants used to the weather outside. To harden, water plants less and put them in a cooler area 2 or 3 weeks before transplanting. Move plants outdoors on warm days and bring in when it gets cold.

(8) If your plants are growing in one container without divisions, separate them with a sharp knife a week before planting.

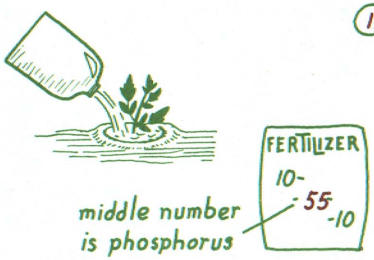




(9) Set plants in garden at recommended time. Pick a cloudy day or plant in the evening so plants won't wilt.



(10) Plant ½ to 1 inch deeper than in container. Press soil down around plant. Set tall tomato plants deep in soil at an angle. Roots will form along stem.



(11) Water well, preferably with a starter fertilizer solution high in phosphorus such as 10-55-10 (can be bought from garden center, seed catalogs, etc.). Follow directions on container. This helps root growth when the soil is cool (see No. 3 in this series: Planting).

PROBLEMS ?

If seeds sprout, then suddenly wilt and die, it may be due to a disease called "damping off." THROW AWAY seedlings, soil and containers and START AGAIN. Make sure you sterilize soil and containers!

KEYS TO SUCCESS

- Use quality seed.
- Plant recommended varieties.
- Start at right time - not too early!
- Place in lots of light.
- Harden off plants.

Other bulletins in this series provide additional information on vegetable gardening.

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COOPERATIVE EXTENSION SERVICE
MICHIGAN STATE UNIVERSITY

family Vegetable Garden series

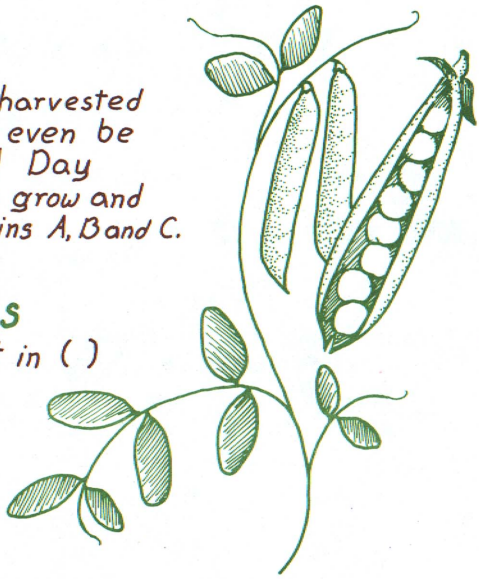
EXTENSION BULLETIN E-824 (16)

Peas

by Elizabeth C. Naegele and J. Lee Taylor
Department of Horticulture

EARLY BIRD

Few spring vegetables can be harvested earlier than peas. They may even be ready to pick by Memorial Day weekend! Peas are easy to grow and are a good source of vitamins A, B and C.



RECOMMENDED VARIETIES

Days from planting to harvest in ( )

PEAS

- Perfected Freezer (60)
- Freezonian (62)
- Little Marvel (62)
- Greater Progress (62)
- Frosty (64)
- Green Arrow (68)
- Wando (68) heat resistant

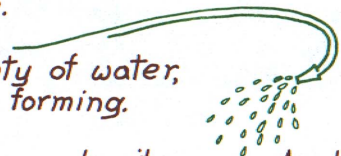
EDIBLE PODDED PEAS

- Dwarf Gray Sugar (65)

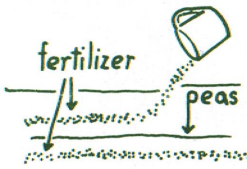
SOME BASICS

1. Soil — Plant in a well-drained soil. Organic material such as grass clippings or leaves added to a clay soil improves drainage.

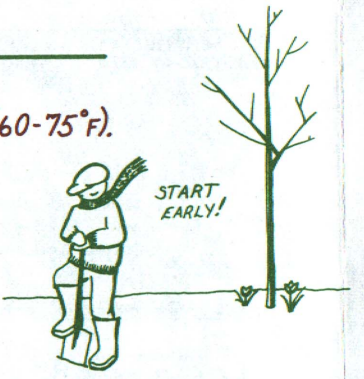
2. Water — Make sure peas get plenty of water, especially when pods are forming.



3. Fertilizer — Peas should not get too much nitrogen. Apply 2 pounds (4 cups) of 5-20-20 fertilizer for every 100 square feet of soil. Mix in 1 pound before planting and sprinkle the rest along rows (not on seeds) after planting.



WHEN TO PLANT

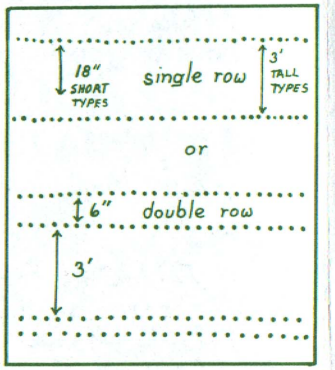


Peas grow best in cool weather (60-75°F). Light frosts don't kill them.

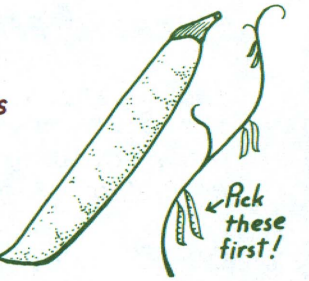
- Plant as early as the ground can be worked – Mar. 20 to May 15.
- The variety Wando can be planted later since it can stand more warm weather than other varieties.
- To lengthen the harvest period, plant early, midseason and late varieties all at the same time.
- A fall crop can be planted July 15 for harvest in September, although it's usually not as successful as a spring crop.

HOW TO PLANT

- Plant seeds 1 to 2 inches deep and 1 inch apart.
- Space rows 12 to 18 inches apart. Thin to 2 or 3 inches between plants in rows.
- Or plant peas in double rows 6 inches apart with 3 feet between double rows.
- Leave 3 feet between single or double rows of tall varieties and stake.



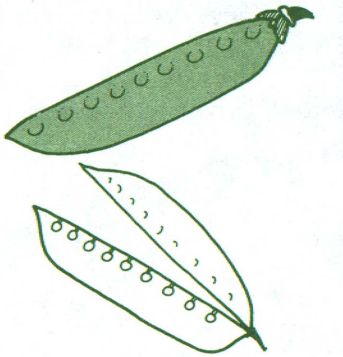
GARDEN PEAS



Harvest pods when firm and well-filled, but before they reach full size – just as pods start to change color. Old peas lose their sweetness and become starchy. The first peas to mature on a vine are at the bottom, so harvest these first. Keep all pods picked so vines produce longer.

Shell peas soon after picking, rinse with cool water and refrigerate. Eat or preserve as soon as possible. Serve raw or as a cooked vegetable. Add to soups, stews; serve with pearl onions or mushrooms.

EDIBLE-PODDED PEAS



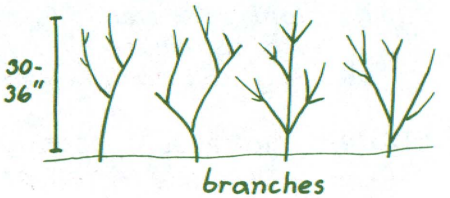
These are also called sugar peas or snow peas. The entire pod is eaten like snap beans. Pick pods when seeds are just starting to form (no larger than BB's). Otherwise pods will be tough and stringy. If you let seeds enlarge, eat like regular peas. Cook like snap beans or eat raw in salads. Use in Chinese dishes.

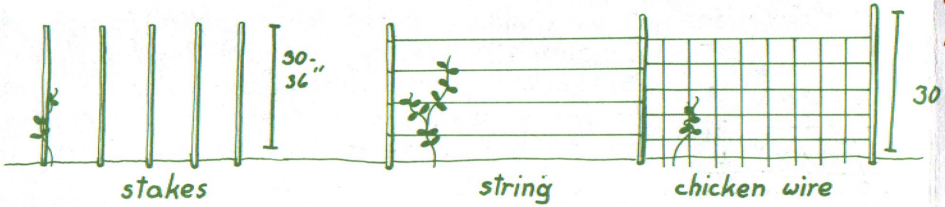
STAKING

There are both bush and vining types of peas.

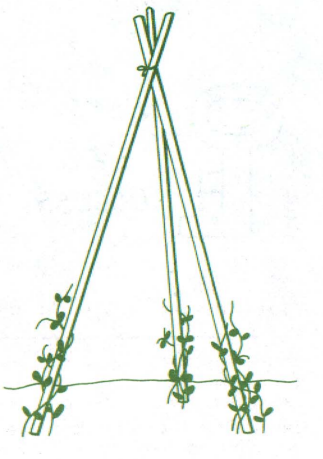
Dwarf (bush) varieties (usually 18 to 24 inches tall) don't need staking and don't take up much space. They are less work.
Tall (vining) varieties need support, but produce for a longer time.

1 Use stakes or branches 30 to 36 inches high. Or use chicken wire in ground alongside row (or between double row). String or wire may also be used.



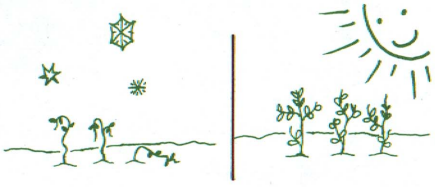


2 Another staking method is to place an 8-foot pole 6 inches in the ground and train 2 or 3 plants to grow up it. Or place 3 poles together tepee-fashion and tie at top with string. Allow 2 or 3 plants to grow up each pole.



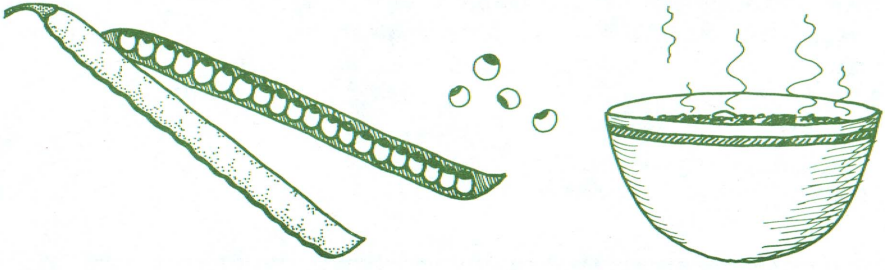
BLACKEYE PEAS (Southern peas)

Blackeye peas are grown mostly in the South because they need a long, warm growing season. However, early-maturing varieties can be grown in Michigan.



Unlike regular peas, blackeye peas like warm weather and are hurt by the lightest frost. Plant after last frost (May 20 to June 1). They are very easy to grow and produce a lot.

Sow seeds just like regular peas. Space rows 2 to 3 feet apart. Pick peas when seeds are fully developed, but not hard. For dried peas, allow to ripen on plant. Seeds are available through some seed catalogs. Serve blackeye peas with rice and bacon or add to stews.



INSECTS AND DISEASE

See Extension Bulletin E-760 (b) or contact your County Extension Agent.

- Plant early (except for blackeye peas) or for fall crop.
- Plant in well-drained soil.
- Pick at the right time.

Other bulletins in this series provide additional information on vegetable gardening.

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COOPERATIVE EXTENSION SERVICE
MICHIGAN STATE UNIVERSITY

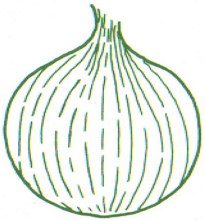
family Vegetable Garden series

EXTENSION BULLETIN E-824 (17)

Onion family

by Elizabeth C. Naegele and J. Lee Taylor
Department of Horticulture

SPICE UP YOUR LIFE!



No kitchen should be without ONIONS or its relatives! They are easy to grow, and many types and varieties are available.

RECOMMENDED VARIETIES

Days from planting to harvest in ( )

ONIONS:

Sets	Seeds	Transplants
Ebenezer (95-100)	Autumn Spice (96)	Sweet Spanish (95-100)
Stuttgarter (95-100)	Abundance (100)	
	Spartan Era (100)	
	Spartan Gem (105)	**Bunching**
	Downing Yellow Globe (110)	Beltsville Bunching (65)
	Ruby Red (115)	White Portugal (100)

LEEKS: American Flag (120)

GARLIC: Creole (120)
Italian (120)

Plant onions and relatives as early as possible in spring (Mar. 20 - Apr. 20). They grow best in cool weather and can stand frost.

THE BASICS

soil: Onions grow best in a well-drained and well-cultivated sandy loam soil. If your soil has much clay, add organic material like grass clippings, leaves or well-rotted manure.

fertilizer: Mix in 2 pounds (4 cups) of 5-20-20 fertilizer per 100 square feet of soil before planting. Apply a high nitrogen fertilizer in June.

water: Water thoroughly during dry spells.

weeding: Weed carefully or use a mulch to prevent weeds (see No. 4 in this series: Keep 'em Growing).

ONION FAMILY – A Spicy Group

DRY ONIONS

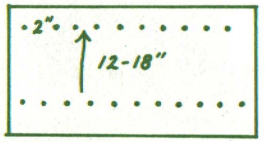
Starting

Onions can be grown from seeds, sets or transplants.

- A set is a small onion grown from seed the previous year.

1. They should be no more than ½ to ¾ inch across. Larger sets go to seed easily causing bulb growth to stop.
2. Place sets 1 to 2 inches deep in rows 12 to 18 inches apart.
3. Place 2 inches apart in row (closer if you use the thinnings for green onions).
4. Cover with 1 inch of soil.

- Transplants (small onion plants) cost about the same as sets. They produce the largest onions.



1. You can buy plants or start your own.
2. Space plants the same as for sets.

- Seed is the cheapest way to start onions, but produces irregular bulbs and is only good for early-maturing varieties.

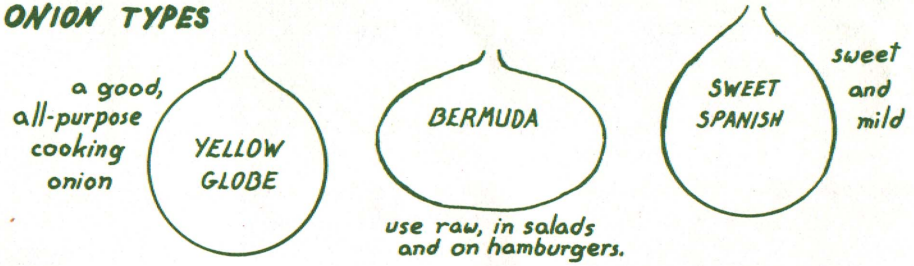
1. Sow seeds ½ inch deep in rows 12 to 18 inches apart.
2. Thin to 2 to 3 inches between plants.

Harvesting

1. Dig onions when tops dry and fall over.
2. Dry well before storing. Spread them on the floor of a garage, porch, shed, etc.
3. Store in a dry place near 32° F.
4. Leave 1 inch of stem on onions for storing.

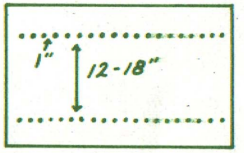
If properly dried and stored, onions will last all winter. White onions do not keep as well as yellow and red varieties.

ONION TYPES



GREEN ONIONS

These are the same as dry onions, but are harvested sooner.



- Plant sets the same as for dry onions, but space 1 inch apart. Every few weeks, plant more sets for a fresh supply all summer.
- Transplants may be bought or started yourself.
- Use seeds from any standard onion variety. Plant the same as for dry onions. Or, use a bunching variety which does not form bulbs.

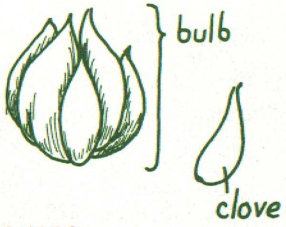
You can also use thinnings from dry onions as green onions. Pull before bulbs start to swell.

ONION RELATIVES

GARLIC

Grow garlic from the cloves which make up the bulb.

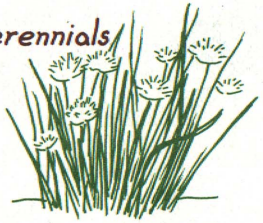
- Plant single cloves 1½ inches deep, 3 inches apart, with 12 inches between rows.
- Harvest garlic like dry onions.



Buy cloves through seed catalogs or the supermarket. Use garlic in salads, bread or sauces.

CHIVES

Plant seeds or transplants. Chives are perennials with pretty purple flowers.



- Sprinkle seeds in rows 12 inches apart, or in a pot.
- Leave 12 inches between transplants in a row.

To harvest, cut tops as needed. Add to cottage cheese or dips. Bring chives inside in the fall and grow on a windowsill.

MORE ONION RELATIVES

LEEKS

Leeks have a mild, delicate flavor.

- Plant <u>seeds</u> like onions, or plant in September for an early crop the next year.
- You may also buy or grow <u>transplants</u>.
  1. Place these in furrows 4 to 6 inches deep.
  2. As plants grow, fill the furrow gradually or hill up soil around plants to increase white area of roots.

Leeks from seed take about 130 days. Use like green onions; add to soups and stews. Trim tops to 5 inches.

SHALLOTS

Milder than onions, shallots are grown from <u>cloves</u> like garlic or from <u>sets</u>.

- Let them mature and eat like dry onions.
- Or, pull early and use like green onions.

Buy sets through seed catalogs or at garden centers. Harvest and store bulbs like dry onions. Sauté shallots and add to cream sauces, seafood dishes or scrambled eggs.

PRESERVING

Onions and relatives can be frozen, canned or dried, as well as stored (see No. 11 in this series: Drying and Storing Vegetables).

INSECTS AND DISEASE

See Extension Bulletin E-760 (b) or your County Extension Agent for more information.

KEYS TO SUCCESS

- Plant early.
- Fertilize and water well; keep weeded.
- Dry bulbs well before storing.

Other bulletins in this series provide additional information on vegetable gardening.

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COOPERATIVE EXTENSION SERVICE
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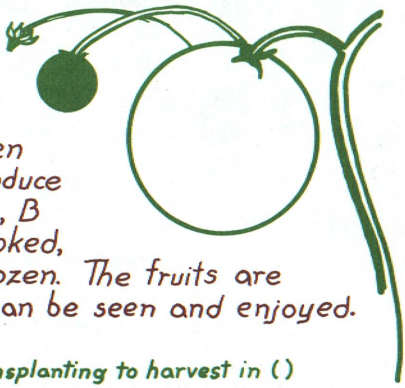
EXTENSION BULLETIN E-824 (18)

Tomatoes

by Elizabeth C. Naegele and J. Lee Taylor
Michigan State University



mm mm GOOD!

Tomatoes are the most popular garden vegetable! They are easy to grow, produce a lot of fruit and are rich in vitamins A, B and C. They can be used fresh or cooked, in salads or sauces, or canned or frozen. The fruits are attractive, so plant them where they can be seen and enjoyed.

RECOMMENDED VARIETIES

Days from transplanting to harvest in ( )

Early:
- ° New Yorker (64)
- • Springset (67)
- • Red Pak (71)

Mid-season:
- • Setmore (71)
- • Jetstar (72)
- • Campbell (73)
- • Heinz 1350 (75)
- • Roma (76) for paste

Late:
- San Marzano (78) for paste
- • Supersonic (79)
- • Burpee (80)
- + Manalucie (86)

Yellow:
- Golden Boy (78)
- + Sunray (83)

Small-fruited: (suitable for container gardening)
- Pixie (52)
- Presto (60)
- • Small Fry (68)
- Yellow Pear (70)

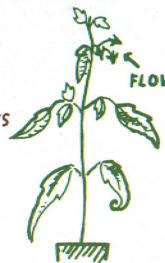
- • resistant to verticillium and fusarium wilt diseases
- ° only resistant to verticillium
- + only resistant to fusarium

START EARLY

Tomatoes take a long time to grow, so buy transplants or start them early indoors (see No. 15 in this series: Starting Plants at Home). You'll probably get better plants if you buy them.

If you buy transplants:
- Choose dark-green, stocky plants 6 to 10 inches tall with stems the thickness of a pencil.
- Don't buy tall, spindly plants or those with spots or yellow or curling leaves.
- Avoid plants with flowers or fruit on them.

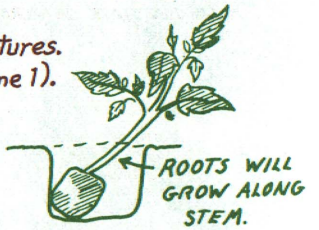
THIS!



NOT THIS!

TRANSPLANTING

Tomatoes cannot withstand cold temperatures. Plant after the last frost (May 20 - June 1).



1. Set plants 1 inch deeper than they were in containers. If tall and leggy, set deeper and on a slant.
2. Water well, preferably with a starter fertilizer solution.
3. If there are frost warnings, the small plants can be covered at night with boxes, milk cartons, etc. Remove covers during the day when it's warmer.

BASICS

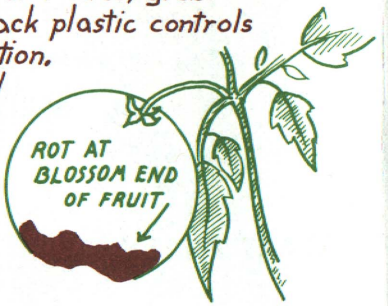
Tomatoes need full sun for high yields!

soil: Plant in well-drained soil.

fertilizer: Before planting, mix in 2 pounds (4 cups) of 5-20-20 fertilizer per 100 square feet of soil. Sprinkle a high nitrogen fertilizer 4 inches from plants after fruits begin to form.

weeding: Mulching with a 3 to 5 inch layer of leaves, grass clippings or straw or a sheet of black plastic controls weeds with less work than cultivation. Mulching also keeps soil moist and fruits clean.

water: Provide plenty of water. You can help prevent blossom end rot by keeping the soil evenly moist.



VARIETIES

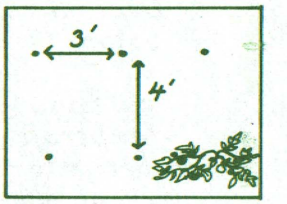
- There are tomatoes for fresh eating and for paste as well as cherry-sized ones, and red and yellow colors.
- Plant an early variety for early harvest. The midseason and late varieties taste better, so save most of your space for them.

TRAINING TOMATOES

If you let tomatoes grow naturally along the ground they are less work and produce more fruit. However, plants grown in cages or on stakes produce cleaner fruit and make harvesting easier. More plants can be grown in a limited space if they are trained.

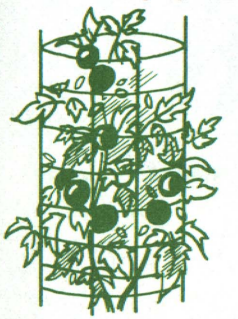
On ground

To keep fruits from rotting on ground, spread a mulch (see p. 2) around plants. Set plants 3 feet apart in rows 4 feet apart.



Caged

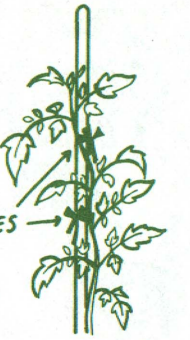
This is less work than staking, and yields are greater.



1. To make a cage, take a 6 × 5 foot section of 6×6 inch or 8×8 inch mesh wire. (Concrete reinforcement wire works well.)
2. Roll into a cylinder and hook ends together.
3. Remove bottom rung to make prongs that you can push into soil around plants.
4. Let plants grow up inside the cage.
5. Set plants 2 to 3 feet apart with 5 feet between rows.

Staking

This is more work than caging, but requires less space to store stakes over winter.



1. Set 6-foot stakes 10 inches deep in the soil, about 3 inches from the plant's base.
2. As the plant grows, tie stem loosely to the stake every 12 inches with pieces of cord or cloth.
3. Remove side shoots so there is one main stem.
4. Set plants 2 to 3 feet apart with 3 feet between rows.

Remove stakes and cages at the end of the season and save for next year.

CONTAINERS

Grow tomatoes in containers if you don't have much space (see No. 12 in this series: Space Saving Ideas).

HARVESTING AND STORAGE

- Pick when fully red or yellow and before the first frost.
- Select perfect fruits for storage in the fall.
  1. Pink ones will ripen at room temperature or can be stored a week at 55° to 65° F.
  2. Full-sized green tomatoes can be pickled or fried. Or, you can wrap them in paper when picked before frost and store them 3 to 6 weeks at 55° to 65° F. Leave stems on and check often. Throw out any that look bad. Move them to room temperature to ripen.
  3. Cherry tomato plants can be pulled up and hung in a cool place to ripen the fruit. Pick as needed.
- Store fully ripe tomatoes in the refrigerator.

INSECTS AND DISEASE

- Protect young plants from cutworms by wrapping the stem with newspaper or by paper collars buried 1 inch in the soil. Or, use an insecticide when planting.

- Plant disease-resistant varieties where possible.
- If insects or disease become a problem, see Extension Bulletin E-760(6) or your County Extension Agent for the recommended pesticide to use.

KEYS TO SUCCESS

- Plant recommended varieties.
- Transplant after danger of frost.
- Plant in sunny location.

Other bulletins in this series provide additional information on vegetable gardening.

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COOPERATIVE EXTENSION SERVICE
MICHIGAN STATE UNIVERSITY

family Vegetable Garden series

EXTENSION BULLETIN E 824 (19)

When to Harvest Vegetables

by Allen P. Krizek, Macomb Co. Ext. Hort Ag.
and James E. Motes, Dept. of Horticulture

ON TIME

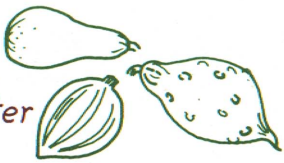
Vegetables should be harvested when they're at their peak for best flavor and nutrition. So it's important to know the right time to harvest each vegetable.

MATURITY – BEFORE AND AFTER

Some vegetables, such as summer squash  and  cucumbers must be picked <u>before</u> they are fully developed, or they become seedy, tough, and have poor flavor.

Pick these vegetables as soon as they are ready, or new ones won't form on the plant!

PICK THESE –
AND MAKE ROOM FOR MORE!

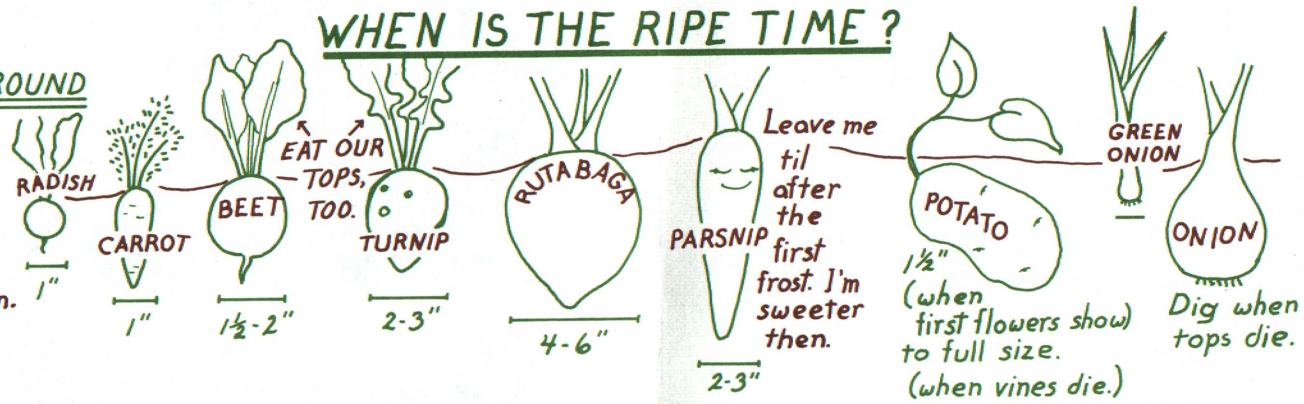
Other vegetables, such as winter  squash and  watermelon are not ready to eat until <u>after</u> they are fully developed.

WHEN IS THE RIPE TIME?

FROM UNDER THE GROUND

Loosen with a spading fork before pulling. Be careful not to injure crop.

Harvest at sizes shown.



To store onions, let the tops die and fall over. Dig, and dry for several days. Cut off tops and roots, and store in a cool, dry place.

PODS

Pick us full-sized, but before the pod turns yellow. Open a few pods to check our size.

SNAP BEANS

Pick often!

PEAS

Pick when peas begin to fill pods. Lower pods mature first.

EDIBLE PODDED PEAS (SUGAR PEAS)

You can eat us, pods and all! Pick before pea seeds get bigger than BB's.

FROM ABOVE THE GROUND

ASPARAGUS: Snap or cut shoots 6-8" high, before tips open. Don't pick spears thinner than a pencil. Don't harvest past July 1.

EGGPLANT is best when skin is shiny, dark purple. Don't wait til skin turns dull, or seeds get bitter.

OKRA: Pick soon after flower petals fall. If pods are longer than 4½", they'll be tough.

PEPPERS: Use sweet peppers when green, or wait til they're red or yellow. Hot peppers are red or yellow when ripe.

RHUBARB leaves are poisonous. Only use the stems! Break them off when 1" across, before July 1.

SWEET CORN is ready when the silks turn brown and dry, and kernels squirt milky juice when punctured.

TOMATOES: Pick when fully red or yellow. Before frost, pick green tomatoes and store in a dark place, where they will ripen slowly.

PLANTS WITH HEADS

CABBAGE

Cut here, when I'm firm and big enough. Don't wait too long — I may split.

HEAD LETTUCE

Cut here, when I'm firm and about 6" across.

CAULIFLOWER

When my head is 2-3" across, tie the outer leaves around it, to keep me from turning yellow.

In 1-3 weeks, I'll be 6-7" across and ready for harvest. Check me often, if weather is warm. Green or purple cauliflower needs no tying.

BROCCOLI

We're buds! Cut us when we're the size of match-heads, before we open and turn yellow.

Pick us, too!

KOHLRABI

Pick me at this size or I'll get tough and woody.

BRUSSELS SPROUTS

Pick us when firm and big enough. Pinch out growing point at top to get larger sprouts.

SALAD CROPS

SPINACH

Pick when leaves are big enough to use.

GREENS

Cut the outer leaves when they're as long as your hand.

VINE CROPS

SUMMER SQUASH:
ZUCCHINI, COCOZELLE, CROOKNECK, STRAIGHTNECK, SCALLOP

Harvest when we're young and tender; 6-8" long, with skin you can puncture with a fingernail. If you wait too long, you'll have to remove our large seeds.

CUCUMBERS

1½-4" PICKLING

Pick now for pickles. Good in salads, too.

6-8" SLICING

Pick now for best eating.

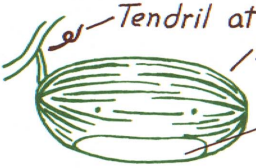
Don't let us turn yellow. We're seedy and not as good to eat then, and the vines will stop producing. PICK OFTEN!

MUSKMELON:

Pick me when my stem breaks off easily or if my skin smells sweet. Store at room temperature for a few days. Chill before eating.

WATERMELON:

I'll give you 3 signs: Tendril at stem turns brown, I sound hollow when thumped, and ground spot turns yellow.



WINTER SQUASH and PUMPKINS:

Let us get mature, hard-skinned and fully colored. Pick before frost and leave our stems on – we'll store better.
BUTTERNUT, BUTTERCUP, ACORN, HUBBARD, PUMPKIN

KEYS TO SUCCESS

- Check garden often.
- Harvest vegetables at their peak.
- Use as soon as possible.

Other bulletins in this series provide additional information on vegetable gardening.

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COOPERATIVE EXTENSION SERVICE
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family Vegetable Garden series

EXTENSION BULLETIN E-824 (20)

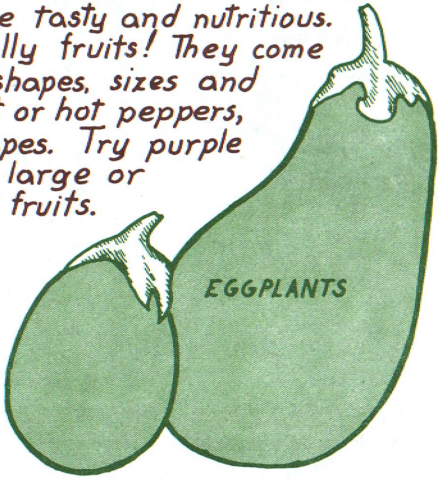
Peppers and Eggplants

by Elizabeth C. Naegele and J. Lee Taylor
Department of Horticulture

VARIETY!

Peppers and eggplants are tasty and nutritious. These "vegetables" are really fruits! They come in a variety of colors, shapes, sizes and tastes. Plant sweet or hot peppers, bell or banana shapes. Try purple eggplant with large or small-sized fruits.

PEPPERS



EGGPLANTS

FAIR WEATHER FRIENDS

Both peppers and eggplants need a long, warm growing season. Set transplants in the garden after all danger of frost (May 20 to June 1). Remember, they won't grow well when temperatures are below 50°F and are injured by the lightest frost.

RECOMMENDED VARIETIES

Days from transplanting to harvest in ( ).

Eggplants:

Burpee Hybrid (70)
Black Magic (73)
Jersey King (75)
Classic (76)
Black Beauty (80)

Peppers: Sweet

* Canape (62)
Vinedale (62)
* Bell Boy (70)
* Midway (72)
* California Wonder (74)
* Yolo Wonder (76)
* Keystone Resistant Giant (85)

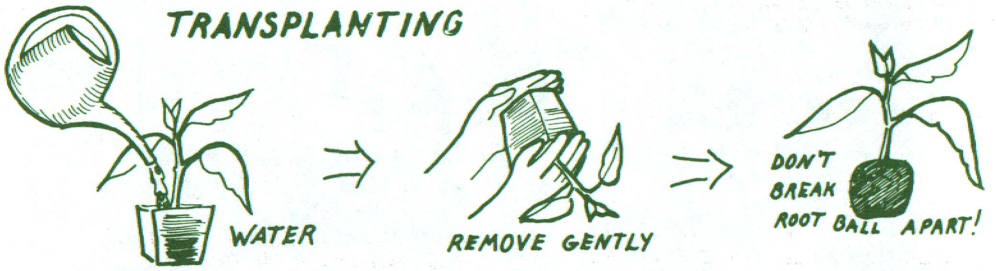
Hot

Hot Portugal (64)
Hungarian Wax (65)
Rumanian Wax (70)
Large Red Cherry (72)

* means resistant to mosaic virus of pepper.

DO NOT BUY PLANTS WITH FLOWERS OR FRUIT ON THEM BECAUSE YIELDS WILL BE REDUCED.

TRANSPLANTING

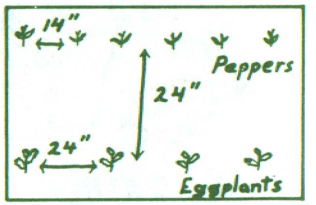


1. Be careful not to injure roots when transplanting into the garden. Transfer entire root ball from container to soil without breaking apart. To do this, water the plant thoroughly before removing from container.

2. Set plants ½ inch deeper in the soil than they were growing in containers. (Peat pots don't need to be removed, but pot must be completely buried.)

3. Water plants, preferably with a starter fertilizer solution.

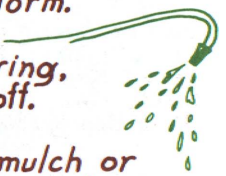
4. Place pepper plants 14 to 18 inches apart in row and eggplants 24 to 30 inches apart. Leave 24 to 30 inches between rows.



SOME BASICS

Soil — Plant peppers and eggplants in full sun and in a well-drained soil.

Fertilizer — Before planting, work in 2 pounds (4 cups) of 5-20-20 fertilizer per 100 square feet of soil. Sprinkle a high nitrogen fertilizer 4 inches from plants after fruits begin to form.



Water — Water plants, especially during flowering, to prevent blossoms from dropping off.

Weeding — Keep plants weeded, or apply a mulch or black plastic to save work and help keep moisture in soil.

CONTAINERS

Peppers and eggplants grow well in containers (5-gallon container or larger). See No. 12 in this series: Space Saving Ideas.

HARVESTING

Pick fruits when ready so new ones will form. Leave a little stem on fruits when cutting. Use shears or a knife. Pulling may injure plants.

Peppers

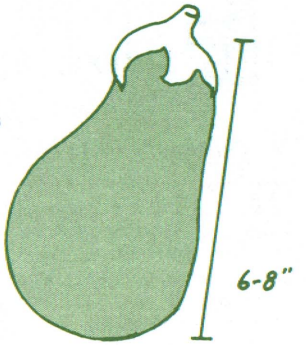
Sweet or Hot — Harvest when crisp and firm and full size.

- Pick when either green or yellow.
- Or wait till they turn red. Most peppers will turn red at maturity. At this stage, they are sweeter and more mellow.

- A few varieties change from green to yellow at maturity. Others are yellow from the start and never change color.
- If HOT peppers have not ripened before frost, pull entire plant and hang by roots in basement. Peppers will ripen on plant.

Eggplants

- Pick when skin is deep purple and shiny, but before it becomes dull. Harvest when fruits are about ⅔ grown (about 6 to 8 inches for standard varieties). If you wait too long, seeds turn dark and bitter.



STORAGE

- Store peppers and eggplants in the refrigerator.
- You can dry sweet and hot peppers for winter use (see No. 11 in this series: Drying and Storing Vegetables).
- To freeze peppers, remove seeds and freeze whole or chopped.
- They can also be pickled.

TO FREEZE PEPPERS—

TAKE OUT SEEDS

CHOP- OR FREEZE WHOLE

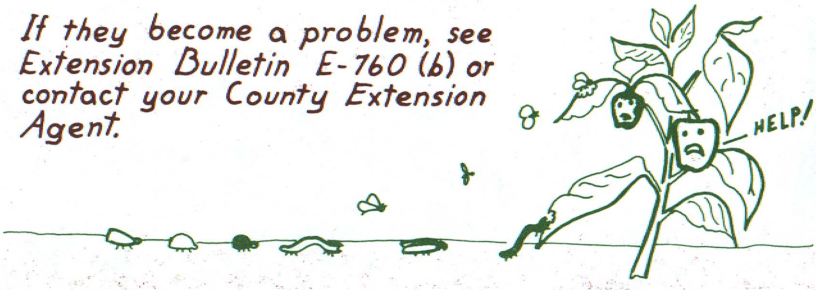
Eggplant can be frozen after it is fully cooked.

FRENCH-FRIED EGGPLANT

PROBLEMS

Disease: Grow resistant varieties to prevent disease. Also avoid planting peppers, eggplants, tomatoes and potatoes in the same place in which any of the others have grown because they are injured by many of the same pests which live in the soil.

Insects: If they become a problem, see Extension Bulletin E-760 (b) or contact your County Extension Agent.



KEYS TO SUCCESS

- Plant after all danger of frost.
- Start from transplants.
- Keep soil moist, especially during flowering.

Other bulletins in this series provide additional information on vegetable gardening.

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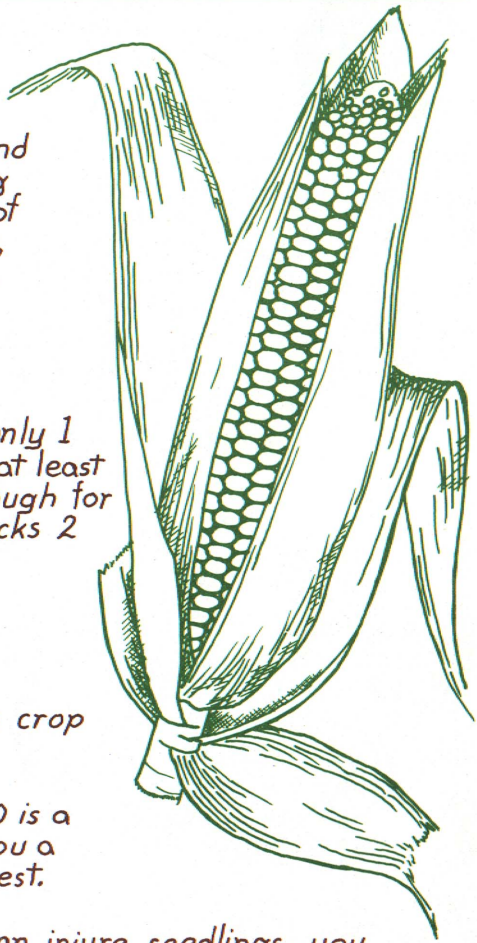
EXTENSION BULLETIN E-824 (21)

Sweet Corn

by Elizabeth C. Naegele and J. Lee Taylor
Department of Horticulture



NOTHING SWEETER!

Sweet corn is easy to grow and good for you. There's nothing better than the sweet taste of freshly picked corn! However, it does require a lot of space.

FOR BIG GARDENS

Since each plant produces only 1 or 2 ears, you need to plant at least 80 feet of row to produce enough for a family of four. (Plant in blocks 2 or more rows wide.)

WARM SEASON

- Sweet corn is a warm season crop and requires full sun.
- Planting corn before May 20 is a little risky, but it does give you a chance for an earlier harvest.
- Early Crop: Although frost can injure seedlings, you may plant a few seeds (of any variety) from late April to May (when there is still danger of frost). Frost will not injure seeds before they sprout.
- Main Season Crop: Wait to plant most of your corn after danger of frost (late May).

PLANTING

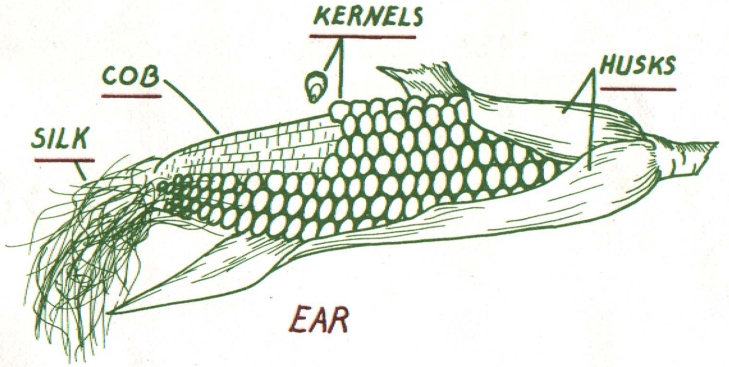
- Plant seeds 2 to 2½ inches deep, 5 or 6 inches apart. Thin to 10 to 12 inches apart. Space rows 2½ to 3 feet apart.
- Corn can also be planted in "hills" (groups of seeds, not mounds). Plant 5 or 6 seeds per hill and thin to 3 seedlings. Space hills 3 feet apart.

SUCCESSION PLANTING

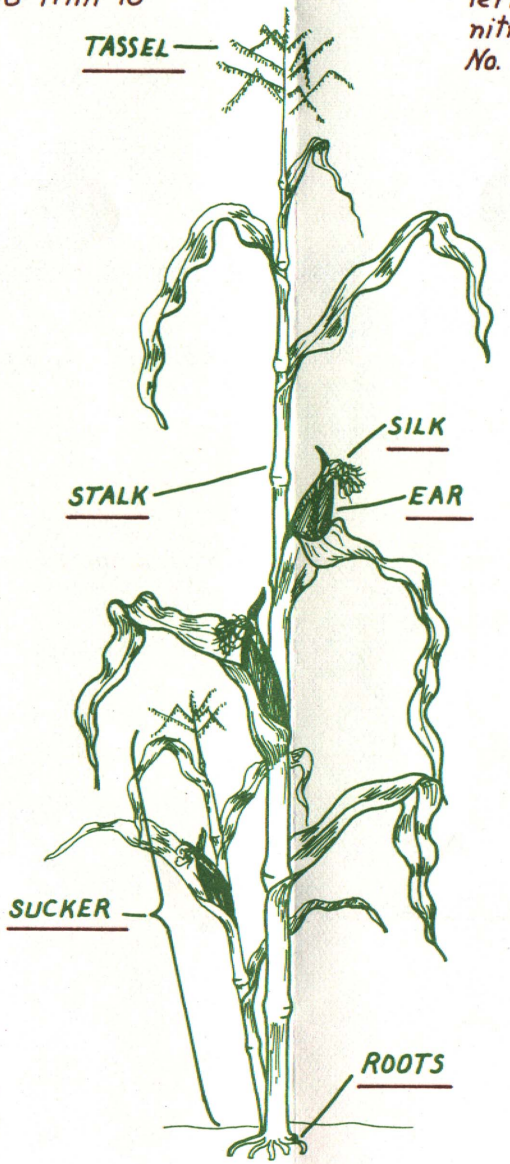
- To lengthen the harvest period, plant early, midseason and late varieties all at the same time.
- Make successive plantings of a midseason or late variety until late June. Wait until each planting is about 2 inches high before you plant the next one.

AT LEAST TWO

Since corn is wind-pollinated, it's better to plant at least 2 short rows of one variety rather than 1 long one. This way, pollen is blown from one row to the next. You may also plant in hills. Poor pollination produces cobs with missing kernels.



EAR



CORN PLANT

THE BASICS

soil: Corn will grow in most soils if they are well-drained. It grows best in a clay loam soil.

fertilizer: Corn is a heavy feeder and should be fertilized before planting with 2 pounds (4 cups) of 5-20-20 fertilizer per 100 square feet of soil. Apply a high nitrogen fertilizer when plants are knee-high (see No. 2 in this series: Start with Soil).

weeding: Keep corn free of weeds. Cultivate with a hoe, but be careful not to injure shallow roots. Or use a mulch which will also keep in moisture (see No. 4 in this series: Keep 'em Growing). Do not remove suckers (side shoots) as this may reduce yields.

watering: Corn needs lots of water, especially from the time tassels appear until harvest. If it doesn't get at least 1 inch of rain per week during warm weather, water it.

HARVESTING

Harvest sweet corn after the silks on the ear turn brown and dry and kernels squirt a milky juice when punctured. A clear juice means the corn is not yet ready; a thick, dough-like substance means it is overripe and tough.

STORAGE

The quality of sweet corn decreases very rapidly after picking. It loses its sweet taste and becomes starchy. So use it as soon as you can after harvesting. If you must wait, store it in the refrigerator. Freeze or can corn.

RECOMMENDED VARIETIES Days from planting to harvest in ( )

Early:
- Buttervee (58)
- Spring Gold (67)
- Bravo (68)
- Sprite (bicolor)(69)
- Sundance (69)

Midseason:
- Northern Belle (74)
- Butter and Sugar (bicolor)(74)
- Goldcup (80)
- Wonderful (82)

Late:
- Silver Queen (92)
- Golden Queen (94)

- There are yellow, white and bicolor varieties of sweet corn as well as early, midseason and late kinds. The later ones are the best quality.
- Popcorn, Indian corn (ornamental corn) and field corn are different types of corn. They are usually harvested when fully mature and dry. Do not plant them next to sweet corn or you may get ears with mixed kernels.

PROBLEMS

- To help prevent seeds from rotting early in the spring, use seeds treated with a fungicide (see No. 13 in this series: Controlling Pests).
- Insects may be troublesome, especially corn earworms. If a problem arises, see Extension Bulletin E-760(a) or your County Extension Agent for the recommended pesticide to use.
- Make sure seeds are covered well with soil so as not to attract birds and animals.

KEYS TO SUCCESS

- Plant a number of short rows rather than a single long row.
- Plant mostly midseason and late varieties (better quality).
- Make successive plantings.

Other bulletins in this series provide additional information on vegetable gardening.

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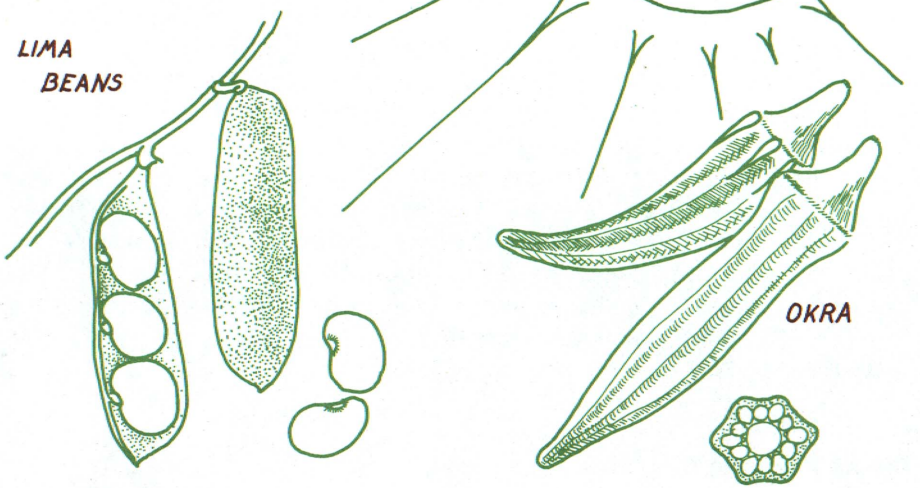
EXTENSION BULLETIN E-824 (22)

Lima Beans and Okra

by Elizabeth C. Naegele and J. Lee Taylor
Department of Horticulture

LONG, HOT SUMMER

Lima beans and okra are warm season vegetables that grow best in hot weather and enjoy full sun. Lima beans need a very long growing season. However by choosing the proper variety, you should be able to harvest them before the first frost in southern lower Michigan.



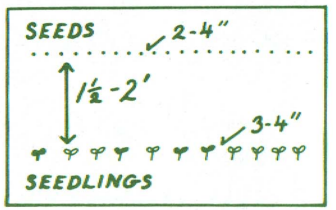
PLANTING DATES

Plant lima beans and okra May 20 to June 1, after <u>all</u> danger of frost is past. Make sure the ground has warmed up before planting. If planted later, they probably won't have time to mature. They are commonly not transplanted.

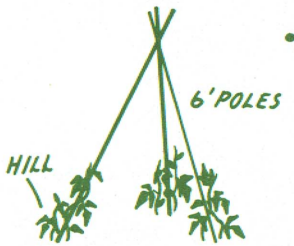
LIMA BEANS

Lima beans, known as "butter beans" in the South, have similar requirements to snap beans, but are more sensitive to cold soils and have a longer growing season (about 4 months).

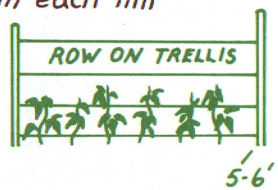
PLANTING



- Sow seeds 2 to 4 inches apart and 1 to 2 inches deep. Leave 1½ to 2 feet between rows. Thin seedlings to 3 or 4 inches apart.



- Pole varieties may be planted in rows like bush varieties, or in "hills" (groups of seeds, not mounds). Plant 6 seeds in each hill and thin to 2 or 3 plants. Pole varieties should be supported (see No. 6 in this series: Garden Beans).



THE BASICS

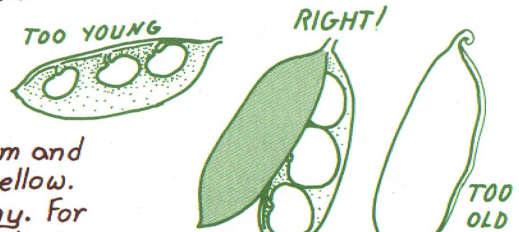
soil: A sandy soil is best, but any well-drained soil will do. If you have a lot of clay, add organic matter such as leaves, grass clippings, well-rotted manure, etc.

fertilizer: Before planting, work in 2 pounds (4 cups) of 5-20-20 fertilizer per 100 square feet of soil. If leaves are light green, apply a high nitrogen fertilizer before blossoms appear. Sprinkle it 4 inches from plants and work into soil.

weeds: Cultivate lightly or use a mulch. Black plastic will keep the soil warm and moist.

water: Water during dry spells.

HARVEST AND USES

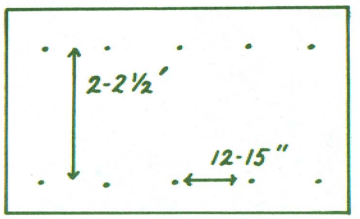


- Pick when seeds in pod feel firm and plump, but before pods turn yellow. Overmature beans are starchy. For dry beans, let them dry on plant.
- Store lima beans in the refrigerator for immediate use. Freeze or can them for later use.
- Lima beans are great cooked by themselves or added to mixed vegetables or stews.

OKRA

Okra, also called "gumbo" in the South, is an easy vegetable to grow.

PLANTING



Plant seeds ½ inch deep. Thin seedlings to 12 to 15 inches apart. Leave 2 to 2½ feet between rows.

THE BASICS

soil: Plant in a well-drained soil.

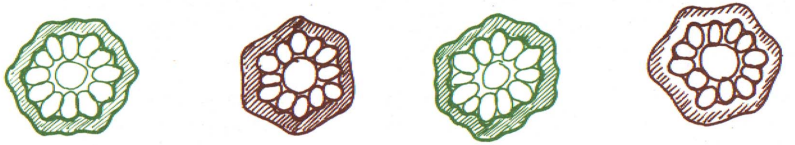
fertilizer: Before planting, mix in 2 pounds (4 cups) of 5-20-20 fertilizer per 100 square feet of soil. Apply a high nitrogen fertilizer when pods first begin to form. Sprinkle 4 inches from plants and work into the soil.

weeds: Cultivate lightly or use a mulch. Black plastic will keep the soil warm and moist.

water: Water during dry spells.

HARVEST AND USES

- Harvest okra when pods are young, soon after petals fall. If you wait too long, pods become tough and stringy. Pick pods often so plants produce more.
- Add okra to stews or mixed vegetables or dip in batter and fry.
- To store okra, freeze or can pods whole or sliced. They may be dried, too (see No. 11 in this series: Drying and Storing Vegetables).



RECOMMENDED VARIETIES

Days from planting to harvest in ( )
(Lima beans usually take most of the summer to mature.)

LIMA BEANS

Large Seeded, Bush
Fordhook 242 (75)
(heat resistant)

Large Seeded, Pole
King of the Garden (88)

Small Seeded, Bush
Henderson Bush (65)
*Thaxter (74)

*resistant to downy mildew disease.

OKRA

Dwarf Green Long Pod (53)
Emerald (56)
Clemson Spineless (58)

- Small-seeded lima beans mature sooner than large-seeded ones.
- Bush varieties need no support and mature faster, but pole varieties produce more beans.

INSECTS AND DISEASE

If insects or disease become a problem, see Extension Bulletin E-760 (b) or your County Extension Agent.

KEYS TO SUCCESS

- Plant after all danger of frost.
- Don't plant lima beans later than June 1.
- Harvest when still tender.

Other bulletins in this series provide additional information on vegetable gardening.

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COOPERATIVE EXTENSION SERVICE
MICHIGAN STATE UNIVERSITY

family Vegetable Garden series

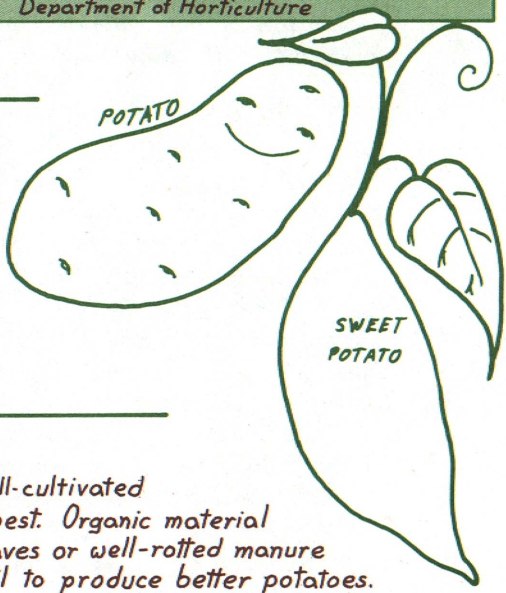
EXTENSION BULLETIN E-824 (23)

Potatoes and Sweet Potatoes

by Elizabeth C. Naegele and J. Lee Taylor
Department of Horticulture

PRODUCE A LOT

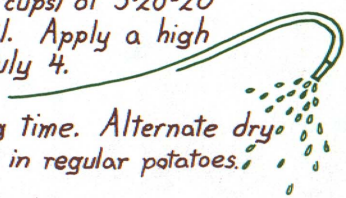
Potatoes and sweet potatoes are fun to grow and produce a lot of vegetables, but require some work and a lot of space. They are good for you and can be used many ways.



THE BASICS

soil: Plant in a well-drained, well-cultivated soil. A sandy loam soil is best. Organic material such as grass clippings, leaves or well-rotted manure can be worked into the soil to produce better potatoes. Do not plant for 1 year after tilling sod because of grub damage.

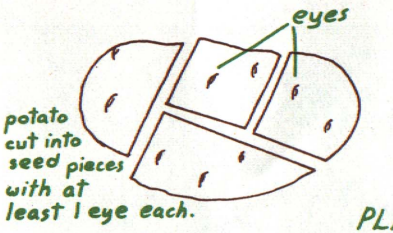
fertilizer: Before planting, work in 2 pounds (4 cups) of 5-20-20 fertilizer per 100 square feet of soil. Apply a high nitrogen fertilizer no later than July 4.



water: Do not allow soil to dry out for a long time. Alternate dry and wet periods cause a hollow center in regular potatoes.

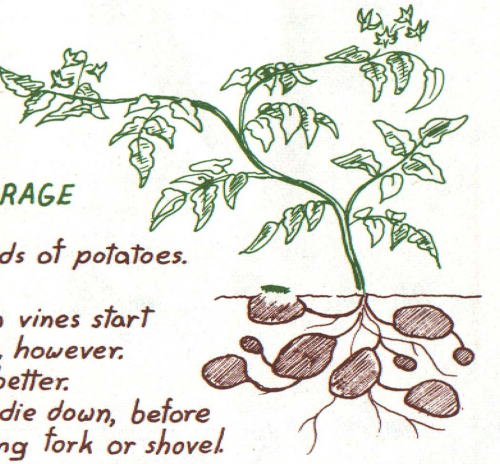
weeding:

- Weed well after planting, but be careful not to injure shallow roots.
- Stop cultivation when blossoms form on regular potatoes and when sweet potato vines cover the ground. Just cut weeds off at ground level.
- A mulch will save work, keep in moisture and prevent exposed potatoes from turning green.



POTATOES

Potatoes are swollen underground stems called "tubers." They have buds or "eyes" on them. They grow well in cool weather, but frost can hurt sprouts.

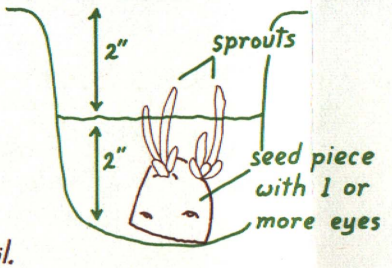


PLANTING

Plant April 20 to May 10 for a summer crop. Plant midseason or late varieties May 10 to June 1 for potatoes to store overwinter.

- Use "seed potatoes" (small potatoes or pieces of large ones with 1 or more eyes each). Buy them from garden stores, farmers' markets or seed catalogs. Buy <u>certified</u> seed potatoes to avoid disease.
- Do not plant potatoes from the store. They are treated with chemicals to stop sprouting and may carry disease.

1. Small potatoes are ready to plant. Cut large ones into pieces with 1 or more eyes each. Store in a cool place 4 to 6 days so cuts heal.
2. Plant 4 inches deep, 1 foot apart in row. Leave 2 to 3 feet between rows.
3. Cover with 2 inches of soil. After they sprout add 2 more inches of soil — 4 inches in all.
4. Don't plant when soil is very wet or hot and dry.
5. If any potatoes show aboveground, cover with soil. If exposed to sun, they turn green and can be poisonous.

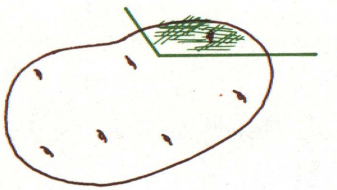


HARVESTING AND STORAGE

Each plant yields up to 5 pounds of potatoes.

1. You can dig "new" potatoes when vines start flowering. This reduces yields, however. Well-matured potatoes store better.
2. Dig mature potatoes after vines die down, before ground freezes. Use a spading fork or shovel. Be careful not to cut or bruise potatoes.
3. Let them dry off before storing.
4. Store only perfect potatoes.
5. Store in the dark at about 40°F. If it's much warmer, they'll sprout. If kept below 35°F, they may turn sweet.

Cut off any green parts of the potato before eating — they may be poisonous.

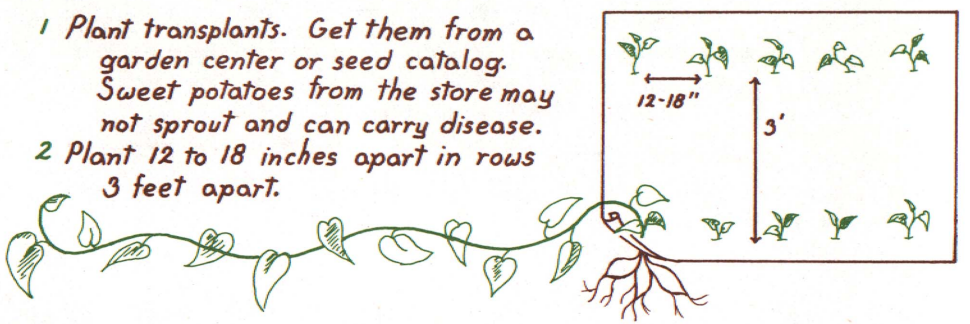


SWEET POTATOES

These need a long, <u>warm</u> growing season. Plant after the last frost (May 20 to June 1). They are enlarged roots called "tuberous roots." They have a few buds at <u>one end</u>, so cannot be cut up for planting like potatoes. They don't always produce well in Michigan because of the cool summers.

PLANTING

1. Plant transplants. Get them from a garden center or seed catalog. Sweet potatoes from the store may not sprout and can carry disease.
2. Plant 12 to 18 inches apart in rows 3 feet apart.



HARVESTING AND STORAGE

1. Dig on a warm, sunny day after the first light frost. Be careful not to injure them.
2. Let them dry off before storing.
3. Leave in a warm (80°F) room with good air circulation 2 to 3 weeks.
4. Then store at 55 to 60°F in a dry place. Check often and remove spoiled or rotten ones.

RECOMMENDED VARIETIES — Days from planting to harvest in ( )

Potatoes

Early (75)
- Onaway
- Irish Cobbler
- Norland (red variety)
- Superior

Midseason (90)
- Norgold Russet
- Norchip

Late (110-120)
- Katahdin (susceptible to scab disease)
- Sebago
- Russet Rural
- Kennebec (susceptible to scab disease)
- Russet Burbank

Sweet Potatoes

- Centennial (150)

INSECTS AND DISEASE

- Plant disease-free seed pieces and resistant varieties when possible.
- Pesticides will probably have to be used to control insects and disease on potatoes.
- See Extension Bulletin E-760(b) or your County Extension Agent for more information.

KEYS TO SUCCESS

- Plant disease-free seed potatoes.
- Plant in well-cultivated soil.
- Keep potatoes covered with soil.
- Control pests.
- Dry before storing.

Other bulletins in this series provide additional information on vegetable gardening.

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COOPERATIVE EXTENSION SERVICE
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EXTENSION BULLETIN E-824 (24)

Cabbage-family Vegetables

by Robbi Austin, Ingham Co. Ext. Hort. Aide and
J. Lee Taylor, Department of Horticulture

LIKE IT COOL

Members of the cabbage family are known as "cole crops" and include cabbage, cauliflower, Brussels sprouts, broccoli, collards, kale and kohlrabi. These vegetables grow best in cool weather. They can withstand frost, and some even taste better afterwards. Grow them as a spring or fall crop.

RECCOMMENDED VARIETIES

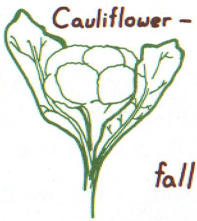
Days from transplanting to harvest in ( )

Broccoli - Green Comet (55)
Spartan Early (55)
Premium Crop (58)
Waltham 29 (74)

Brussels Sprouts – Jade Cross (90)
Long Island Improved (90)

Cabbage –
early - C-C Cross (50)
* Yellows rest: Golden Acre (63)
* Stonehead (66)
midseason – Ruby Ball (red) (68)
* Badger Market (70)
* Market Topper (73)
* Marion Market (75)
* Market Prize (76)
* Greenback (77)
late – * Badger Ballhead (98)
Chieftain Savoy (85)
Savoy King (heat resistant) (90)

* means disease resistant



Cauliflower – spring – Snow Crown (53)
Snow King (55)
Super Snowball (57)
Snowball A (59)
Snowball M (59)
fall – Snowball Imperial (58)
Self-Blanche (70)
Greenball (green head) (95)
Royal Purple (purple head) (95)

Days from seeding to harvest in ( )

Kohlrabi – Early White Vienna (55)
Early Purple Vienna (60)

Collards – Vates (75)

Kale – Dwarf Blue Curled (55)
Dwarf Blue Scotch (55)
Vates (55)

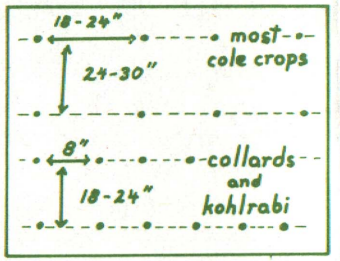
FOR SPRING HARVEST

1. Start cole crops (except kale) from transplants you buy or start yourself (see No. 15 in this series: Starting Plants at Home).

2. Transplant cabbage, cauliflower, broccoli, Brussels sprouts and kohlrabi April 1-20; transplant collards in late May.

3. Place plants ½ inch deeper than they were in containers.

4. Leave 18 to 24 inches between plants in rows 24 to 30 inches apart. Set collards and kohlrabi 8 inches apart with 18 to 24 inches between rows.



5. Water well, preferably with a starter fertilizer solution.

6. Do not buy transplants with stems wider than a pencil. Large transplants go to seed more easily.

FOR FALL HARVEST

Start fall garden plants from seed sown directly in the garden May 20 to June 10. Plant kale seeds June 20 to July 30.

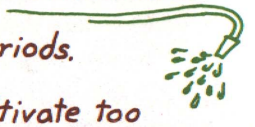
- Thin cole crops which produce heads to 18 to 24 inches between plants.
- Thin kohlrabi, collards and kale to 8 inches between plants.

Vegetables should be ready to harvest in October.

THE BASICS

soil - Plant in a well-drained soil.

fertilizer - Before planting, work in 2 lbs. (4 cups) of 5-20-20 fertilizer per 100 sq. ft. of soil. Sprinkle a high nitrogen fertilizer around plants 4 to 6 weeks after transplanting (see No. 2 in this series: Start with Soil).



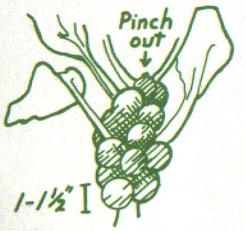
water - Water plants, especially during dry periods.

weeds - Keep plants weeded. Do not hoe or cultivate too deeply, or you'll injure the shallow roots.

THESE COLE CROPS PRODUCE HEADS

BROCCOLI

Cut the center head first so side shoots produce more heads. Pick broccoli when tiny buds in head are dark green and about the size of match heads - before they turn yellow and open. Leave 6 to 8 inches of stem on heads when harvesting.



BRUSSELS SPROUTS

These are best grown as a fall crop and taste better after a few light frosts. For larger sprouts, pinch out the growing point about mid-September. Pick sprouts when firm and large enough.

CABBAGE

Plant early, midseason and late varieties all at the same time for a continuous harvest all spring. Harvest heads when firm. If you wait too long, heads may split.

CAULIFLOWER

This grows best as a fall crop. To produce a white head (blanch it), pull leaves over head when it's the size of a tennis ball and tie with string or a rubber band. Harvest in 1 to 3 weeks (when 6 to 7 inches across). Heads turn yellow without blanching, but are usable. Green and purple varieties don't need blanching.

THIS COLE CROP IS A STEM

KOHLRABI

It has a short growing season and is better grown for a fall crop. Plant seeds every 2 weeks from late June to the end of July for a long harvest period. Harvest swollen stem while young and tender (no larger than a baseball). Large stems are tough and woody.

THESE COLE CROPS ARE GREENS

COLLARDS These are like cabbage, but have larger leaves and don't form a head. Unlike other cole crops, they don't mind the heat and can be planted throughout the summer. (They can also be started from transplants in spring.) Harvest the outer leaves when they are big enough to use.

KALE Grow this as a fall crop only. Harvest outer leaves just like collards. Old kale is tough and stringy.

STORAGE

Keep in refrigerator until ready to use. Cole crops can be frozen. Cabbage and kale should be fully cooked first.

INSECTS AND DISEASE

Grow disease-resistant varieties if available (see page 1). Avoid planting cole crops in the same area of the garden in which they grew last year.

If insects become a problem, see Extension Bulletin E-760(b) or contact your County Extension Agent.

- Grow in cool weather–spring or fall.
  - Grow collards in cool or warm weather.
  - Plant kale in fall only.
- Start from transplants for a spring garden.
- Start from seed for a fall garden.
- Fertilize and keep watered.

Other bulletins in this series provide additional information on vegetable gardening.

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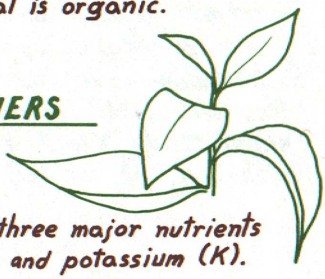
EXTENSION BULLETIN E-824 (25¢)

Organic Gardening

by Elizabeth C. Naegele, J. Lee Taylor and Jane Cloutier —— Department of Horticulture

Organic gardening is growing vegetables without using chemical (man-made) fertilizers or pesticides. Organic means "from living things". Anything that was part of or produced by a plant or animal is organic.



FERTILIZERS AND SOIL CONDITIONERS

FERTILIZERS

Fertilizer is plant food, usually a combination of the three major nutrients needed by plants — nitrogen (N), phosphorus (P), and potassium (K).

- Inorganic (chemical) fertilizers supply these nutrients in a form plants can use right away.
- Organic materials must be broken down into chemicals before plants can use them. Fresh manure, leaves, straw, etc. will not supply many nutrients to plants until they are well rotted. They will help improve the soil by making clay soils drain better and sandy soils hold moisture better.

You'll need a lot more organic fertilizer than chemical fertilizer to get the same amount of nutrients. For example, 2 pounds of commercial fertilizer (5-20-20) equals about 25 pounds of manure plus 5 pounds of rock phosphate.

SOME ORGANIC FERTILIZERS

	Analysis (N-P-K)	Pounds needed per 100 sq. ft. of soil
Nitrogen		
dried bloodmeal	13-15-0	3
hoof & bonemeal	14-0-0	2
Phosphorus		
rock phosphate	0-5-0	2.5-7.5
steamed bonemeal	.8-30-0	3-6
Potassium		
green sand (glauconite)	0-1-6	25-75
unleached wood ashes	0-2-6	5-15 (If soil pH is less than 6.5, use half as much.)

(You will need to combine N sources with suppliers of P and K.)

	Analysis	Pounds needed
cattle and horse manure	.5-.3-.5	20-30
sheep and chicken manure (never use fresh)	.9-.5-.8	10-20
compost	——	20-80

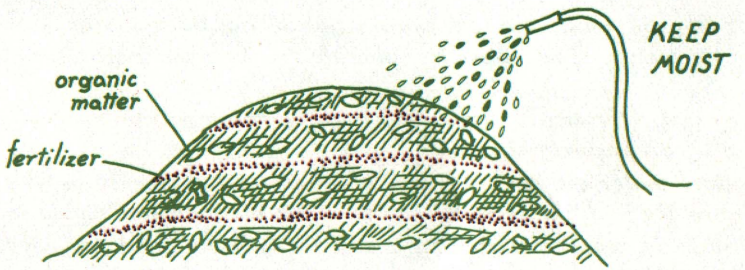
COMPOST

Compost is a mixture of decayed materials such as leaves, sawdust, animal droppings and so on. It improves soil drainage and air space. It is weak fertilizer, though. It would take 20 to 80 pounds of compost to give enough N, P and K to grow good vegetables in a 100 square foot garden.

What to use for compost: leaves, grass clippings, sawdust, wood chips, healthy plants, straw, hay, pea pods, manure, kitchen garbage (except meat scraps)

What not to use: diseased plants, weeds with seeds, fruit pits or seeds or meat scraps (They attract rats and mice.), bones or fat, man-made things like plastic, bottles or cans.

Mix with fertilizer and leave it to rot. Keep the pile moist. When ready, mix it into soil. (See No. 2 in this series: Start with Soil, or Extension Bulletin E-727.)



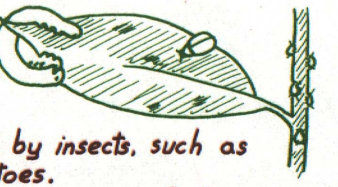
GREEN MANURE AND COVER CROPS

You can add organic matter to your garden by growing a crop on the garden site when not using it for vegetables.

Green manure: soybeans, rye, ryegrass, sweet clover. Grow on garden site for 1 or 2 years and then plow under. This is good if you don't plant your garden in the same spot every year.

Cover crop: rye or wheat. Plant in fall after destroying old plants. Plow cover crop under in spring before planting.

Green manure and cover crops give the same results as compost when worked into soil, with a lot less time and effort.



START RIGHT

1 Don't grow vegetables commonly attacked by insects, such as cabbage, cauliflower, broccoli and potatoes.
2 Use disease-resistant varieties. (See Extension Bulletin E-760 (a).)
3 Do not use plants with diseases or insects for compost.
4 Plant only pest-free seeds and plants.
5 Rotate crops. Crops hurt by the same pests should be planted in a different part of the garden each year. This keeps pests from building up in soil. Groups of vegetables injured by the same pests are:

Mustard family (cole crops)
broccoli, Brussels sprouts, cabbage, cauliflower, collards, kale, mustard, radishes

Nightshade family
eggplant, peppers, potatoes, tomatoes

Parsley family
carrots, celery, parsley

Cucumber family
cucumbers, melons, pumpkins, squash

Pea family — beans, peas

6 If any plants look diseased, remove and destroy them right away.
7 Keep weeds down - harmful insects hide in them.

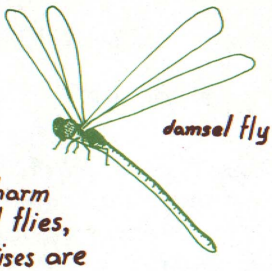
ORGANIC OR NATURAL PESTICIDES

Most organic pesticides can be used up to day of harvest. However, some are <u>more</u> toxic (poisonous) than man-made ones.

- Petroleum oils (1 to 3% spray concentration) — Controls scale insects, aphids and spider mites.
- Pyrethrum (from plants) — A lot is needed to kill insects. It paralyzes insects quickly. Low toxicity.
- Rotenone (from plants) — Slower acting than pyrethrum, but more poisonous. Kills sucking and chewing insects. Highly toxic - more poisonous than common inorganic pesticides used in home gardens, such as malathion and sevin.
- Bacillus thuringiensis (trade names: Dipel, Thuricide and others) — A bacteria which kills many leaf-chewing caterpillars.

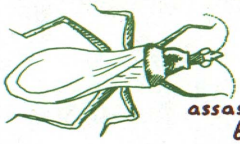
CONTROLLING PESTS

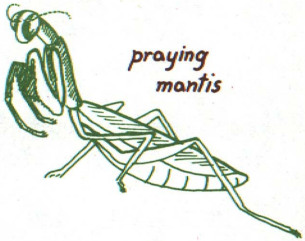
INSECT POLICE


damsel fly


ladybug

Some insects eat the insects that harm plants. Ladybird beetles, damsel flies, assassin bugs and praying mantises are some of these.


assassin bug


praying mantis

THINGS TO TRY

1 Put collars of paper or cardboard around plants when transplanting to stop cutworms.
2 Handpick insects as they appear.
3 Use ashes around plants where slugs are a problem.

4 Put a few drops of mineral oil at base of corn silks (at tip of ear) when their tips start to turn brown, to prevent damage from corn earworms.
5 Drown slugs by placing a shallow pan of beer (sunk to ground level) in garden.
6 Place boards in garden. Squash bugs, etc. will gather underneath. Check early each morning and destroy.

Although some organic fertilizers and pesticides are available at garden stores or through seed catalogs, many are not. To find them, contact your County Extension Agent for information.

KEYS TO SUCCESS

- Apply enough organic material to supply enough nutrients for your garden.
- Use recommended and disease-resistant varieties.
- Keep weeded and remove diseased plants.

Other bulletins in this series provide additional information on vegetable gardening.

Issued in furtherance of cooperative extension work in agriculture and home economics, acts of May 8, and June 30, 1914, in cooperation with the U.S. Department of Agriculture. Gordon E. Guyer, Director, Cooperative Extension Service, Michigan State University, East Lansing, Michigan 48824. 1P-9:77-30M-UP, Price 5 Cents, Single Copy Free

COOPERATIVE EXTENSION SERVICE
MICHIGAN STATE UNIVERSITY

family Vegetable Garden series

Extension Bulletin E-824 (26)

Dictionary of Terms

by Elizabeth C. Naegele and
J. Lee Taylor, Department of Horticulture

This dictionary applies to all the bulletins of this series. It defines terms that may be unclear to new gardeners.

A

ammonium nitrate — A high nitrogen fertilizer (33-0-0).

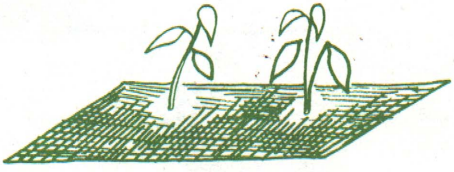
analysis (of a fertilizer) — Tells the amount of nitrogen, phosphorus and potassium in a fertilizer. A fertilizer such as 5-20-20 has 5% nitrogen, 20% phosphorus (in the form of phosphoric acid) and 20% potassium (in the form of potash).

annual — A plant that lasts only one year or growing season, such as tomatoes. Annuals sprout from seed, produce flowers and fruit and then die all in one growing season.

B

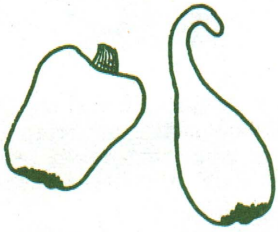
biennial — A plant that takes two years to complete its life cycle, such as beets, brussels sprouts, cabbage and carrots. Biennials sprout from seed and produce leaves the first year. The roots live over winter and the next year send up shoots, flower and seed stalks and then die at the end of the second year.

black plastic — A dark plastic material, used for mulching, which does not allow light to penetrate. It usually comes in rolls 2 to 4 feet wide, 1½ mils (.0015 inch) thick.



blanch — To take the color out or make white by excluding the light. For example, tying leaves over cauliflower heads blanches them (prevents them from turning green).

blossom-end rot — A condition in which the blossom end of fruits or vegetables, such as tomatoes, peppers and squash, turns black and rots. It is caused by not enough calcium being taken up by plant roots (due to a lack of moisture in the soil). It occurs most often on the first fruits produced by a plant.



booster fertilizer — A high nitrogen fertilizer recommended for most vegetables. It is applied about midseason, usually by sidedressing. Examples are urea (46-0-0) and ammonium nitrate (33-0-0).

burn (a plant) — The result of applying too much fertilizer to plants or getting it on their leaves. It injures roots, causes browning and wilting of leaves and may kill the plant.

bush (variety) — Short, compact plant varieties, like bush beans or bush squash, which have bush-like growth rather than vining growth.

C

cages — Used for supporting vining plants, such as tomatoes or cucumbers. They are usually made of concrete reinforcement wire or similar fencing.

catalogs (seed) — Booklets put out by seed companies in which seeds, plants and garden accessories are sold through the mail. Catalogs have more plant varieties and information than are normally available at seed racks. They are free and available upon request from seed companies beginning in December. Addresses of companies can be found in farm and garden magazines as well as in Extension Bulletin E-760 (a).

clay — A type of soil made up of very fine particles. It is very hard, has little air space and drains poorly. Clay soils are "heavy" soils.

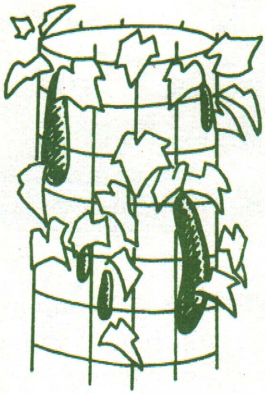
cloves — The bulb-like sections which make up a bulb, as in garlic.

compost — A mixture of many different materials, such as rotten leaves, manure, lime, etc., mixed together and decomposed. It is mixed with garden soil, especially heavy soil, to loosen it up.

cool season crop — This refers to plants which grow best in cool weather (either in spring or fall), such as cabbage and peas. Most cool season plants can withstand frost. For a spring crop, they are planted when there is still danger of frost. For a fall crop, they are planted in July or late June.

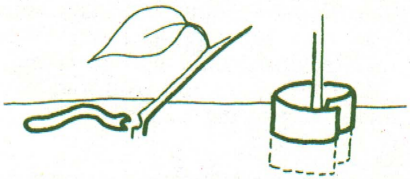
crowns — The roots and dormant buds of one-year-old and older perennial plants, such as rhubarb and asparagus.

cultivate — To loosen or break up the soil around growing plants in order to kill weeds and let air and water enter the soil more easily.



cultivator — A small powered or push-type tiller used to loosen the soil.

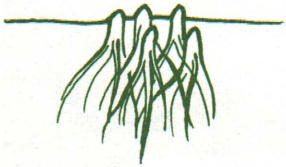
cutworm — A caterpillar which cuts off the stem of transplants, such as cabbage and tomatoes, at ground level during the night. Placing paper collars around the base of plant stems will prevent cutworm damage. Insecticides may also be used.



D

damping off — A disease of seedlings started indoors, caused by certain fungi which enter a plant near ground level, producing rot. It is always present in the soil. To prevent it, sterilize soil and containers before planting seeds in them.

disease-resistant — This refers to plant varieties which have been bred to withstand attack from certain diseases. Initials of diseases varieties are resistant to are sometimes printed next to the



variety name. For example, the tomato variety Supersonic has (V,F) printed next to it which means it is resistant to verticillium and fusarium wilts.

drainage or well-drained — Well-drained soils such as sand or sandy loams allow water to flow through easily. This is good drainage.

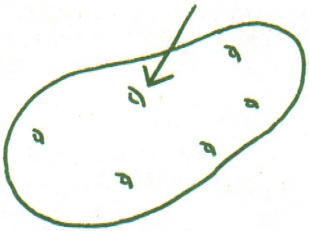
dwarf — This refers to plant varieties which are shorter than standard varieties.

E

ear — The fruiting spike of sweet corn which includes the kernels, cob and husks.

elements — The basic particles which compose matter. Of the more than 100 chemical elements, 16 are known to be essential for plant growth. These include the 13 mineral elements as well as carbon, oxygen and hydrogen.

eye — The bud of a potato tuber.



F

fall crop — This refers to vegetables planted from seed during the summer to be harvested in the fall; they usually grow best in cool weather, such as spinach, cauliflower, broccoli, cabbage, brussels sprouts, etc.

fertilizer — A substance which provides nutrients for plant growth. Fertilizers can be organic (rotted animal wastes, plant materials, etc.) or inorganic (processed substances, such as 5-20-20 fertilizer).

flower stalks (seed stalks) — Long stems on which flowers and seeds form. Certain vegetables, such as lettuce and spinach, will form seed stalks if grown in very hot weather. Biennials, such as carrots and parsley, form seed stalks the second year of their growth if they survive over winter.

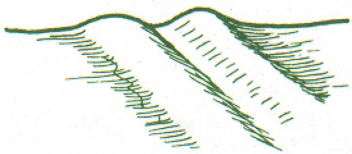
foliage — The mass of plant leaves.

food (plant food) — The nutrients needed for plant growth provided by fertilizer. Primary ones are nitrogen, phosphorus and potassium.

fruit — The seed-bearing product of a plant. Many vegetables are actually fruits (for example: tomatoes, peppers, cucumbers and squash).

fungicide — A chemical such as Captan or Maneb used to prevent or control fungus diseases on plants, such as powdery mildew, tomato blight and fusarium wilt.

furrow — A trench in the earth made by a plow or hoe.



G

germinate — To begin to grow or sprout.

growing point — The area(s) on a plant where new growth is starting. The growing point can be the top bud or buds on the stems of some plants; it can also be at ground level, as with grasses.

growth light — A light used to supplement or substitute for sunlight when growing houseplants or transplants indoors. They are generally fluorescent bulbs or special fluorescent-like bulbs. All fit in regular fluorescent fixtures.

grubs — Thick, worm-like insects in the immature stage which later become adult beetles, flies, etc. They eat the roots of many garden plants and are especially numerous in soil which has been in grass.

H

harden off — To get plants grown indoors gradually accustomed to the more severe conditions outside (sun, wind and cooler temperature). This is done by watering less and placing them outdoors on warm spring days and bringing them in at night. Transplants grown indoors should be hardened off before planting in the garden.

harvest — To pick or gather a crop.

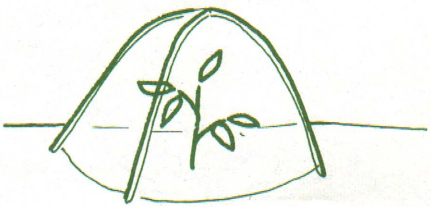
head — The top part of a plant, especially when the leaves are tightly folded together in a clump, as in a head of lettuce or cabbage.

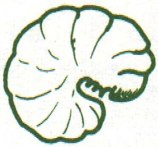
herbicide — A chemical which kills or controls weeds.

hill — A group of seeds sown together (not a mound of soil). Some vegetables such as squash are usually planted in hills.

hot caps or hot tents — Small covers placed over plants which let in light but protect the plants from frost and wind after transplanting.

husk — The outer, leaf-like cover enclosing an ear of corn.





hybrid — A crossbred plant or animal. A hybrid is the offspring of a male of one species, variety, etc. and a female from another. Hybrid plants are usually more vigorous than either of the parents. Seeds of hybrid plants, however, should not be saved because they will not produce the same hybrid plant (will not be true to type).

I

insecticide — A chemical such as Malathion that kills or controls insects.

irrigation — Watering with overhead sprinklers, plastic hoses, flooding, etc. to supply growing crops with moisture.

K

K — Symbol for potassium.

kernels — Seeds (really one-seeded fruits) of sweet corn which form on the cob.

L

loam — A good garden soil consisting of a loose mixture of clay, sand and organic matter.

M

mature — The stage at which a vegetable is full grown. Note: maturity and ripeness do not mean the same thing. Some vegetables are ready to eat (ripe) before they are fully mature, such as summer squash, sweet corn and cucumbers.

minerals — Any chemical element or combination of elements occurring naturally in soil, rocks, etc., such as lime. Of the 16 elements needed by plants, 13 are derived from minerals and called mineral elements. The other three (carbon, oxygen and hydrogen) are obtained from water and carbon dioxide.

mulch — Any substance such as straw, leaves, etc. spread on the ground to protect the roots of plants from heat, cold or drought, to keep fruit clean, to prevent weeds from growing and to conserve moisture.

N

N — Symbol for nitrogen.

nitrogen — One of the major nutrients needed by plants for growth. Nitrogen promotes leafy growth and dark green color. In a 50-20-20 fertilizer, the first number stands for the percentage of nitrogen. Thus in a 100-lb. bag of 5-20-20 fertilizer, there would be 5 lbs. of nitrogen. Signs of nitrogen deficiency are pale yellow leaves, especially in the lower portions, and slow, stunted growth.

nutrients — The mineral elements necessary for plant growth: nitrogen, phosphorus, potassium, calcium, magnesium, iron, copper, zinc, molybdenum, sulfur, manganese, cobalt and boron. Plants take these nutrients from the soil. Fertilizers replace them.

O

organic gardening — Gardening without man-made materials such as chemical fertilizers, pesticides, etc. and using only natural materials for fertilizers or pesticides.

organic matter or material — Derived from living organisms. Examples are leaves, grass clippings, rotted plants, animal wastes, etc. Adding organic matter to soil loosens it and improves drainage as well as adds nutrients.

P

P — Symbol for phosphorus.

peat moss — Decomposed plant material (especially some bog mosses) added to a soil mix to loosen it up and/or to help it retain moisture.

perennial — A plant which continues to live from year to year, such as asparagus and rhubarb. A perennial's roots live over winter and send up shoots, flowers and fruit during each growing season.

perlite — A mineral added to soil mixes to improve drainage by loosening up the soil.

pesticide — A substance used to kill or control bacteria, fungi, insects, rodents, weeds, etc. Pesticides include fungicides, insecticides and herbicides.

phosphorus — One of the three major nutrients required by plants for growth. It promotes development of flowers and fruit, as well as root growth. It is the middle number on fertilizer labels; for example 5-20-20. Signs of phosphorus deficiency are reddish purple color on stems and veins of leaves, especially on underside, very thin stems and delayed maturity of fruits.

pinch — To remove the growing point of plants. Pinching out the growing point will make most plants send out side shoots and become bushier.

plow — To loosen and turn the soil for planting. A plow cuts, lifts and turns over the soil.

pole — A tall, thin stick used to support tall climbing plants. Or, a vegetable variety which is tall and climbing, as in pole beans.

pollinate — To transfer pollen from the male to the female parts of a flower. Pollen can be carried by wind, insects or birds to another plant (cross-pollination), or a plant can pollinate itself (self-pollination).

potash — Potassium carbonate, especially from wood ashes. This form of potassium is often applied as fertilizer to plants.

potassium — One of the three major nutrients required by plants. It is the third number on fertilizer labels; for example 5-20-20. Potassium promotes root growth. Signs of potassium deficiency are curling, browning and drying of leaf edges, brown spots throughout the leaf, especially on lower parts of the plant, slow growth and uneven ripening of fruit.

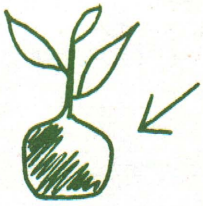
prune — To cut off or trim unwanted branches on plants.

R

recommended varieties — Plant varieties (especially vegetables) considered to be best adapted for growth in a particular climate. These are commonly determined by the agricultural college or university in each state.

ripe — Ready for picking or eating.

root ball — A plant's roots and the soil around them.



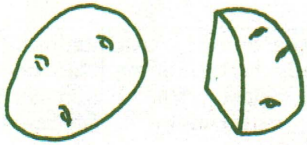
rotate — The practice of changing the location of vegetable crops in a garden each year. Plants attacked by the same pests should be rotated to avoid diseases or insects which live in the soil. Also, certain vegetables are heavy feeders of certain soil nutrients and would deplete the soil's nutrient supply if they were planted in the same place every year. A garden plan is helpful in remembering where vegetables were planted from one year to another.

rototiller — A hand-held, motor-driven tiller which churns and loosens the soil to prepare it for planting. It is often used in small gardens instead of a plow.

S

go to seed — This refers to plants, especially vegetables, forming seed stalks. Lettuce does this in hot weather. This reduces yield since lettuce will not form leaves after going to seed. Biennials such as carrots and onions which survive a winter go to seed the second year.

seed potatoes or seed pieces — Small potatoes ready to plant or large ones which may be cut up into smaller portions to plant. Seed potatoes are used for growing new potatoes. Therefore, each piece must contain one or more eyes. Certified seed potatoes are free of disease and will sprout easily.



seed stalks — Stalks on which flowers and then seeds form. When vegetables send up a seed stalk it is the same thing as going to seed.

seedling — A small plant after it has sprouted from seed.

sets — Small onions grown from seed the previous year. When planted, they will mature faster than onions grown from seeds.

shoot — New growth of a plant in the form of a stem and its leaves.

sidedress — The application of a fertilizer along rows or around plants (especially nitrogen around July 4, called a booster fertilizer). It is placed no closer than 4 inches from plants and should be worked into the soil.

silks — Those portions of the female flowers on an ear of sweet corn that run from the end of the ear to the kernels; the hairy or silky strands difficult to remove from between the kernels.

sod — Top layer of soil filled with the roots of grass, weeds, etc. Sod also contains many insects such as grubs, cutworms, earthworms and others. It should be plowed a full year before planting a garden to reduce the number of grubs and cutworms.

sow — To plant seeds.

spear — A young shoot of asparagus.

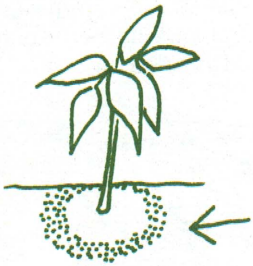
spindly — Tall and slender, or weak. It is usually caused by growing plants in weak light and/or at warm temperatures. Spindly plants are poor transplants.

stake — To place stakes (usually wooden) near vining plants, particularly tomatoes, and tie the stems to the stakes at various places for support.

starter solution — A fertilizer solution high in phosphorus applied to the soil around transplants when they are placed in the garden. It encourages root growth. A typical starter solution might be 10-55-10.

sterilize — To sterilize soil or containers before planting seeds or plants in them means to kill most disease organisms. This is done by baking soil, treating it with a chemical or soaking containers in a cleaning solution such as chlorox.

successive planting — Planting seeds at intervals of a few weeks so that the harvest period is extended over many weeks instead of the whole crop becoming ready at once.



sucker — A shoot from the roots or lower part of the stem of a plant such as corn. These are usually not removed.

T

tassels, tasseling — Tassels are the male flowers of a corn plant and produce pollen grains. Tasseling refers to the time tassels appear on the plant.

thin — To reduce the number of plants in a row by removing the extras. Thinnings may be transplanted or eaten if large enough.

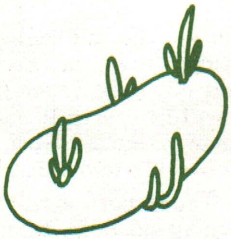
till — To plow or work the soil; to cultivate.

transplants — Young plants started from seed and grown indoors. They are then planted in the garden. Tomatoes and peppers are usually started from transplants.

treated — This refers to seed which has been coated with a fungicide to prevent disease from killing it when planted. Seeds planted early in cool, wet soils especially need treating with a fungicide. Sometimes seeds may also be treated with an insecticide.

tuber — A short, fleshy, usually underground stem or shoot with buds (or eyes) such as a potato. Pieces of potatoes having one or more eyes can be planted to grow new potato plants.

tuberous root — A thick, fleshy root like a tuber, but having buds present only at the crown (the stem end) such as a sweet potato. The whole sweet potato must be planted to grow a new plant.



U

urea — A high nitrogen fertilizer (46-0-0).

V

variety — A plant which has slightly different characteristics from other members of its species. Tomato varieties have different color, taste, shape, texture, days to maturity, disease resistance, etc.

vegetable — Plants or plant parts used for food. Tomatoes, cucumbers, peppers, etc. are called vegetables though they are really fruits.

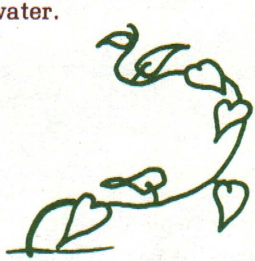
vermiculite — Used in soil mixes to loosen soil. It is also used as a medium in which seedlings are started.

vining — This refers to vegetable varieties that are climbing plants, such as pole beans or peas. They are usually supported by a trellis, stake or cage.

W

warm season crop — This refers to vegetables which grow best in warm weather and which are injured by frost, such as bush beans, melons, tomatoes and others. Most warm season vegetables cannot be planted until May 20 to June 1 in southern lower Michigan.

water soluble — This refers to fertilizers or other materials that easily dissolve in water.



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