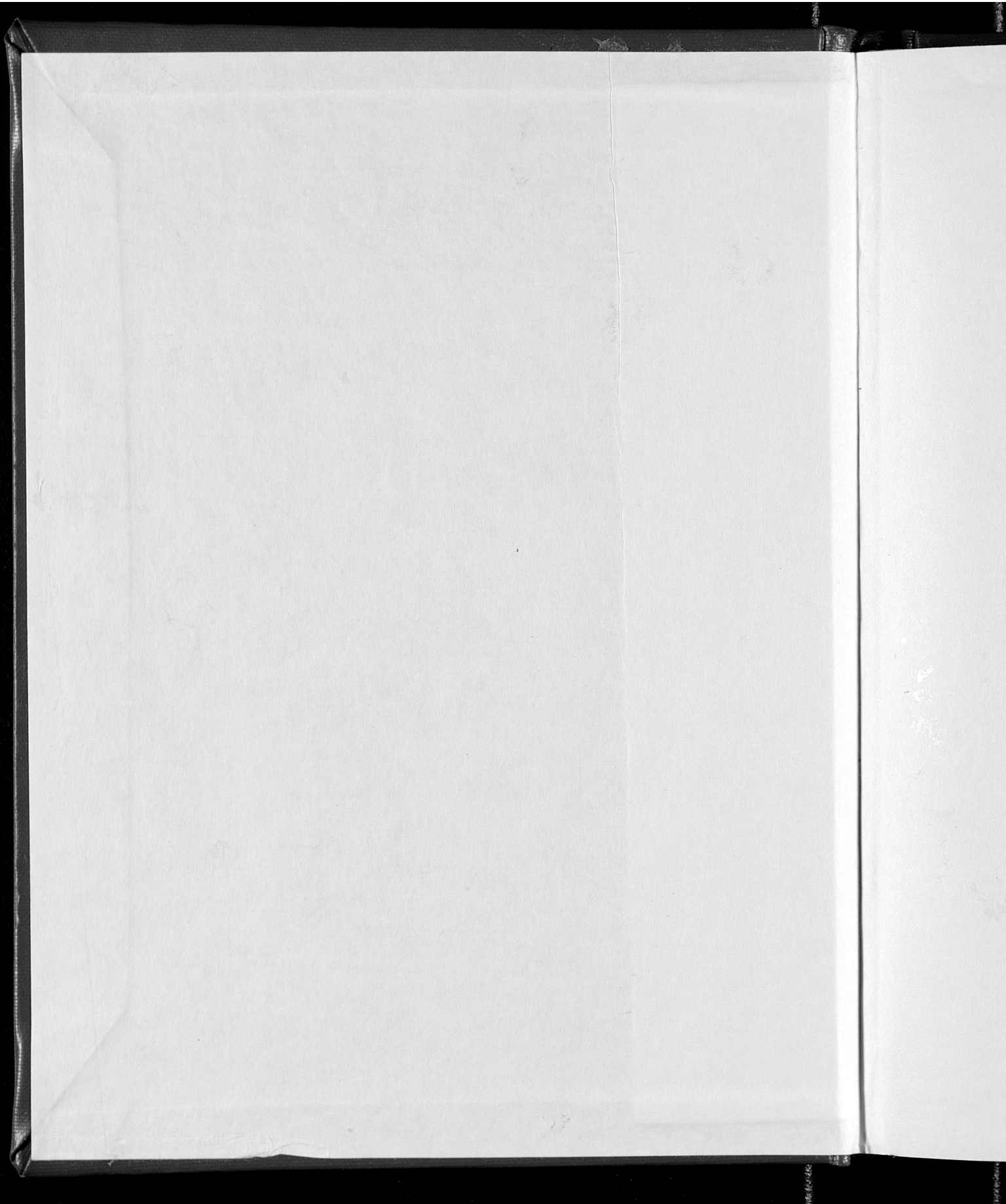


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KENTUCKY

GARDENING BULLETIN

DIVISION OF COMMUNITY SERVICE PROGRAMS

STATEWIDE SCHOOL LUNCH PROJECT

Vandilla Price
State Supervisor

Prepared by
J. Yost Bailey, Project Technician
Statewide School Lunch Project

Approved by
John S. Gardner, Extension Horticulturist
University of Kentucky

MARCH 1941

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RESEARCH REPORT

DIVISION OF COMMUNITY SERVICE PROGRAMS

STATEWIDE SCHOOL LUNCH PROJECT

Annalis Price
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THE SCHOOL LUNCH GARDEN

INTRODUCTION

Purpose

The purpose of this bulletin is to offer a concise working guide for use in producing vegetables to be used in W. P. A. School Lunch Units in Kentucky.

To serve this purpose, such a guide must be prepared with the following factors in mind:

- A. Plantings must be limited to vegetables that:
 1. Are suited to the locality
 2. Can be produced at low cost
 3. Are suitable for serving to children
- B. Plantings for harvest while Lunch Units are not operating must include only crops that may be canned or stored. Plantings of crops that cannot be canned or stored advisably must be timed to mature while units are operating.
- C. Any single planting of the shorter-season canning crops must be no larger than the labor and equipment can handle while the vegetables are in prime canning condition.
- D. Succession plantings of the shorter-season canning crops should begin as early as the season permits, in order to avoid conflict with the canning of such long-season crops as tomatoes.
- E. Tomatoes, for canning, should be set as early as the soil is definitely warm, in order that the canning may be handled before the School Lunch Unit opens.
- F. In keeping with seasonable planting and "friendly" arrangements, crops to occupy the ground for a like period of time should be grouped together:
 1. For convenience in the prompt preparation of the whole space for suitable later plantings.
 2. For deriving fullest benefit from the land, fertilizer, and initial preparation, due to the succession cropping of the space.

- G. Crops that can be stored should not be planted for canning except essential crops whose planting cannot be timed to mature for seasonable storage without too much hazard of failure. For example, carrots get "woody" if sown early enough to be sure of a good stand. Plantings of such vegetables for canning should be kept down to a minimum.
- H. The "cool" crops yield best only under cool, moist, growing conditions, and should either be planted early enough to take advantage of the cool spring season, or late enough to take advantage of the cool fall season, therefore:
1. The long-season "cool" crops, and short-season "cool" crops to be used fresh from the early garden, should be planted as early as it is practically possible.
 2. Short-season "cool" crops for canning should be planted in the spring and timed to reach maturity with the closing of the School Lunch Unit, thus providing:
 - a. Uninterrupted employment for the workers
 - b. Better distribution of the work of canning
 - c. Canning of such vegetables while Lunch Rooms are not in operation
- I. Succession plantings of both "cool" crops and "warm" crops should be timed and proportioned for an even supply of vegetables throughout the production season.

Basis of Preparation

The Garden Plan and recommended procedure have been developed with the above factors always in mind, and have been guided by experience gained in dealing with practical aspects of W.P.A. School Lunch Gardening in Kentucky.

Technical directions are based upon proven practices and are approved by Mr. John S. Gardner, Extension Horticulturist, College of Agriculture, University of Kentucky.

I. THE GARDEN PLAN

The Garden Plan is presented in condensed form through use of a "Uniform Garden Layout" supported by a "Garden Planting Chart".

A. The Garden Layout

The Garden Layout (page 5) does not refer to the size or shape of the garden; it applies to any W.P.A. School Lunch Garden in Kentucky. Shown on the Layout are:

1. The number given each of the essential crops, and groups of optional crops, which make up the initial plantings, (first to occupy their respective allotments of garden space), together covering the entire garden. The plantings are grouped by planting seasons (months) and are numbered in sequence of planting.
2. The names of such essential crops, and crops of optional groups, which follow each planting number.
3. The proportional allotment (in %) of garden space for each planting number.
4. The number of the planting next to occupy the space is shown in parenthesis ().

The planting numbers, crop names, percent (%) of space allotted and the number of the crop to follow correspond to like designations as they appear on the Planting Chart.

The purpose of grouping is to segregate crops that occupy the ground for a like period of time for convenience in succession cropping, or to admit of local choice between vegetables of a class, or both.

The shortening of the rows of some crops, or groups, is to establish blocks of space wide enough to take the crop that is to follow, or to take enough corn rows to assure pollination, or both.

It will be noted that the entire garden is likely to be occupied, some for the second time, by the end of June.

B. THE PLANTING CHART

The Planting Chart (page 6) includes all vegetables likely to deserve space, including succession crops and repetitions of succession plantings of the same crops. Each appearance of an essential crop, or group of optional crops, is given a planting number, in sequence of planting (numbers of initial plantings

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correspond to those on the Layout.) Plantings are broken down by seasons of planting (months). The chart includes the following information:

1. For each vegetable
 - a. Recommended varieties (column 3)
 - b. Planting time (column 4)
 - c. Spacing between rows (column 7)
 - d. Spacing between plants (column 8)
 - e. Planting depth (column 9)
 - f. Seed for each 100 feet of row (column 11)
 - g. Expected yield per 100 feet of row (column 12)

2. For each planting number
 - a. The crop, or group of crops identified with it (column 2)
 - b. The percent (%) of land area allotted to it, that is the proportional part of the whole garden it is to occupy (column 5)
 - c. The number of the succession crop, or group, next logically to occupy the space (column 6)
 - d. The number of feet of row, spaced as shown, required to cover the allotted percent of space, for a one-acre garden. A two (2) acre garden would require twice as many feet of row (column 10)

Because garden land for March planting should be plowed in the fall or early winter, succession crops for this portion of the garden have been selected that will make possible the early seeding of soil improvement crops for maximum fall growth.

Succession crops for land to be planted in April and in early May likewise have been selected to enable the early seeding of the building-cover crops for maximum fall growth, for these must be plowed down too early for much spring growth.

C. Making Use Of The Plan

As a specific example of the use of the Garden Plan, select planting #4 and follow it through the Layout, the Chart and the Special Seasonal Information under the general heading "THE CROPS".

1. The Layout - Turning to the Garden Layout (page 5) it will be noted that:
 - a. Planting #4 is an optional group including lettuce, radishes, and tendergreen to be planted preferably in March.
 - b. The space allotted to planting #4 is two percent of the garden, to be proportioned as seems best.

For example:

- (1) If the School Lunch Unit operates until June 1st, the proportion likely may be $\frac{2}{5}$ lettuce, $\frac{2}{5}$ tendergreen, and $\frac{1}{5}$ radishes - all to be used fresh from the garden.
 - (2) If the School Lunch Unit closes too early for these vegetables to mature in time to be used fresh from the garden, the plot would all be sown to tendergreen for canning soon after the School Lunch Unit closes.
 - c. The space allotted suggests several short rows rather than a few long ones.
 - d. Planting #4 is located in the same block with, and adjacent to #5, the planting next to mature and composed of plants of similar size. On no side will adjacent crops compete with these, or with the crops to follow.
 - e. The last figure in the #4 garden space shows that planting #13 is scheduled to occupy the space next.
2. The Chart - The Garden Planting Chart shows:
- a. Planting #4 is identified by its number (column 1) and crop names (column 2)
 - b. Trace one of the crops through the Chart. Take lettuce for example:
 - (1) The variety suggested is "Grand Rapids" (column 3)
 - (2) Spacing between rows is 18 inches (column 7)
 - (3) Space between plants is 6 inches, after thinning (column 8)
 - (4) Depth of planting is $\frac{1}{4}$ inch (column 9)
 - (5) Amount of seed required for each 100 feet of row is $\frac{1}{4}$ ounce (column 11)
 - (6) The likely yield per 100 feet is $3 \frac{1}{2}$ bushels (column 12)
 - c. Trace planting #4 (the group) through the Planting Chart:
 - (1) It is allotted two percent of the space in the garden (column 5), as shown on the Layout.
 - (2) For rows spaced 18 inches apart, 580 lineal feet of row would cover two percent (2%) of one acre (column 10). If it is a two-acre garden, 1160 feet of row (2×580).
 - d. Trace the garden space first occupied by planting #4, through the entire season:
 - (1) Planting #13 next occupies this space (column 6)
 - (2) Referring to planting #13 (column 1) the crop to follow is Beans.
 - (a) To be planted by May 15th (column 4) if #4 was sown in early March
 - (b) To occupy the same two percent (2%)

of space, in parenthesis () to show that another crop occupied the space first (column 5).

- (3) Planting # 13, the second to occupy the space, is to be followed by planting #31 (column 6)
 - (4) Referring to planting #31, the third crop to occupy the space is Sweet Corn.
 - (a) To be planted the latter half of July (column 4)
 - (b) To occupy the same two percent (2%) of space in parenthesis () (Column 5)
3. Special Seasonal Information - Turn now to the general heading "THE CROP" (page 13). Under the caption "MARCH" (crop #4 is to be planted in March) such special information as may apply appears there under "d(#4) page 17". If no special discussion is necessary, a reference will be made to the Planting Chart.

Special seasonal information, as necessary, is given from month to month, under "Care of the Crops", "Pest Control", etc., throughout the season.

D. Flexibility Of The Plan

Because the Garden Plan is inclusive and flexible, the options provided in the plan usually are adequate to adapt it locally. In the event that it is necessary to make basic revisions of the planting plan, a definite understanding between the District Personnel of the W.P.A. School Lunch Project and the Co-Sponsor must be reached before planting begins,

It is important that some definite plan is agreed upon at the outset, either this plan or a definite revision thereof, so that uniform instructions will be given the garden foreman, thus relieving him of the responsibility of making important decisions. School Lunch garden planning is vastly different from Home Garden planning.

A UNIFORM GARDEN LAYOUT

This does not refer to size or shape.
It refers only to arrangement of initial plantings with reference
to each other and with reference to succession plantings
that are to follow by planting seasons.

MARCH	1. Early Potatoes - 10%; (36)		
	2. Onions - 3%; (36)		3. Cabbage - 1%; (36)
	4. Lettuce Radishes - 2%; (13) Tendergreen	5. Mustard Rape - 1%; (16) Turnip Greens	6. Peas Carrots - 4%; (21)
	7. Beets- 1%; (28)	8. Mustard Rape-4%; (29) Spinach Turnip Greens	9. Tender- green- 1%; (20)
APRIL	10. Beans-2%; (30)		
	11. Beans-2%; (32)		
MAY	12. New Zealand Spinach, Swiss Chard - 2%; (37)		
	14. Tomatoes - 15%; (37 and, as needed, 35)		
	15. Sweetpotatoes - 8%; (38) Winter Squash		
	17. Okra, Peppers - 2%; (37) Blackeyed Peas		
	18. Kidney Beans - 8%; (37) Horticultural Beans Lima Beans		
JUNE	19. Carrots - 3%; (37)		
	22. Tomatoes - 5%; (35)		
	23. Sweet Corn - 11%; (37)		
JUNE	24. Beans - 1%; (37)	25. Beets - 2%; (33)	26. Cabbage - 2%; (37)
	27. Potatoes - 10%; (38)		

A SCHOOL LUNCH GARDEN PLANTING CHART

(Based upon one acre for each 50 children for a 9 months' term)

Column 1	Column 2	Column 3	Column 4	Column 5	Column 6	Column 7	Column 8	Column 9	Column 10	Column 11	Column 12
	Kind of Vegetable	Variety	Planting Time	% of land area used	Fol- low- ed by	Space between rows - inches	Space between plants inches	Depth of plant- ing	Feet of row per garden acre	Seed per 100 feet	Yield per 100 feet
			MARCH:								
1	Potatoes	Cobbler	1st chance	10	36*	30	18	4"	1750	5 lb.	60 lbs.
2	Onions	Ebenezer	" "	3	36	18	3		870	1 qt.	2 bu.
3	Cabbage	All Seasons	" "	1	36*	30	18		175	70 pl.	200 lbs.
4	Lettuce	Grand Rapids	" "			18	6	$\frac{1}{4}$ oz.		$\frac{1}{4}$ "	$3\frac{1}{2}$ bu.
	Radishes	Rapid Red, Cin'ti	" "	2	13	18	1	$\frac{1}{4}$ "	580	1 oz.	100 bun.
	Tendergreen	Van Antwerp	" "			18	6	$\frac{1}{2}$ "		$\frac{1}{2}$ "	4 bu.
5	Mustard	Southern Curled	" "			18	6	$\frac{1}{2}$ "		$\frac{1}{2}$ "	3 bu.
	SPRING KALE	Dwarf Essex Rape	" "	1	16	18	6	$\frac{1}{2}$ "	290	1 oz.	$3\frac{1}{2}$ bu.
	Turnip Green	Japanese Foliage	" "			18	4	$\frac{1}{2}$ "		$\frac{1}{2}$ "	3 bu.
6	Peas	Alaska, Radio	" "	4	21	36	1	$\frac{1}{4}$ "	1160 (Single rows)	1 lb.	1 bu.
	Carrots	Chantenay	2nd half			18	2	$\frac{1}{4}$ "		1 oz.	2 bu.
7	Beets	Crosby's Egyptian	1st. half	1	28	18	2	$\frac{3}{4}$ "	290	2 oz.	2 bu.
	Mustard	Southern Curled	2nd. half			18	6	$\frac{1}{2}$ "		$\frac{1}{2}$ "	3 bu.
8	Spring Kale	Dwarf Essex Rape	" "			18	6	$\frac{1}{2}$ "		$\frac{1}{2}$ "	$3\frac{1}{2}$ bu.
	Turnip Green	Japanese Foliage	" "	4	29	18	4	$\frac{1}{2}$ "	1160	1 oz.	3 bu.
	Spinach	King of Denmark	" "			18	4	$\frac{1}{2}$ "		1 oz.	2 bu.
9	Tendergreen	Van Antwerp	" "	1	20	18	6	$\frac{1}{2}$ "	290	$\frac{1}{2}$ oz.	4 bu.
10	Beans (Snap)	Valentine, Tenn.	" "	2	30	30	3	1"	350	1 lb.	4 bu.
11	Beans (Snap)	Str'less Greenpod	Last Week	2	32	30	3	1"	350	1 lb.	4 bu.
12	Summer Spinach	New Zealand	MAY: Early May	2	37*	42	24	$1\frac{1}{4}$ "	125!	1 oz.	6 bu.
	Swiss Chard	Lucullus	" "			30	10	1"	175!	1 oz.	8 bu.
13	Beans (Snap)	Str'less Greenpod	1st half	(2)	31	30	3	1"	350	1 lb.	5 bu.
14	Tomatoes	Pritchard, Marglobe	" "	15	37*	54	42		1450	30 pl.	18 bu.

15	Squash, Winter	Cushaw, Hubbard	2nd half			120	120	$1\frac{1}{2}$ "	40!	1 oz.	80 fruits
	Sweetpotatoes	Nancy, Puerto Rico	" "	8	38	42	14		125!	90 pl.	$1\frac{1}{2}$ bu.
16	Beans (Snap)	Str'less Greenpod	" "	(1)	36	30	3	$1\frac{1}{2}$ "	175!	1 lb.	5 bu.
	Okra	White Velvet	" "			36	24	1"		2 oz.	25 qts.

15	Squash, Winter Sweetpotatoes	Cushaw, Hubbard Nancy, Puerto Rico	2nd half	" "	8	38	42	120	120	1/2"	40!	1 oz.	80 fruits
16	Beans (Snap)	Str'less Greenpod	" "	" "	(1)	36	30	3	3	1 1/2"	175!	90 pl.	1 1/2 bu.
17	Okra	White Velvet	" "	" "			36	24	1"			1 lb.	5 bu.
17	Peppers	Summybrook	" "	" "	2	37*	36	24			290	2 oz.	25 qts.
	Blackeyed Peas	Crowder	" "	" "			36	5	1 1/2"		145!	50 pl.	1 1/2 bu.
18	Beans (Shell)	Red Kidney	" "	" "	8	37*	30	4	1 1/2"		175!	1/2 lb.	5 qts.
18	Beans (Shell)	Dwarf Horticult'l	" "	" "			30	4	1 1/2"		175!	3/4 lb.	4 qts.
18	Lima Beans	Yopp's White Bush	" "	" "			30	5	1 1/2"		175!	3/4 lb.	4 qts.
19	Carrots	Chantenay	" "	" "	3	37*	18	2	1/2"		870	1 lb.	3 qts.
													2 1/2 bu.
20	Beans (Snap)	Str'gless Greenpod	JUNE: 1st half	" "	(1)	34	30	3	2"		175	1 oz.	5 bu.
21	Corn (Sweet)	Stowell's Ev'grn	" "	" "	(4)	36*	42	12	2"		500	1 lb.	10 doz.
22	Tomatoes	Marglobe	" "	" "	5	35*	54	42			485	3 oz.	10 bu.
23	Corn (sweet)	Stowell's Ev'grn	2nd half	" "	11	37*	42	12	2 1/2"		1375	30 pl.	10 doz.
24	Beans (snap)	Str'less Greenpod	" "	" "	1	37*	30	3	2"		175	3 oz.	10 doz.
25	Beets	Detroit Dark Red	" "	" "	2	33*	18	3	1 1/2"		580	1 lb.	5 bu.
26	Cabbage	Drumhead, Hollander	" "	" "	2	37*	30	18			350	2 oz.	3 bu.
27	Potatoes	If Green Mountain	" "	" "			30	24	5"			70 pl.	200 lbs.
	"	If Snowflake	JULY: 1st half	" "	110	38	30	24	5"		1750	4 lb.	50 lbs.
	"	If Cobbler	2nd half	" "			30	18	5"			5 lb.	40 lbs.
28	Beans (snap)	Str'less Greenpod	1st half	" "	(1)	37*	30	3	2"		175	4 lb.	50 lbs.
29	Corn (sweet)	Stowell's Ev'grn	" "	" "	(4)	37*	42	12	2 1/2"		500	1 lb.	4 bu.
30	Beans (snap)	Str'less Greenpod	2nd half	" "	(2)	37*	30	3	2"		350	1 lb.	4 bu.
31	Corn (Sweet)	Stowell's Ev'grn	" "	" "	(2)	oats	42	12	2 1/2"		250	3 oz.	6 doz.
32	Celery Cabbage	Chilili	AUGUST: 1st week	" "	(2)	37*	30	15	1/2"		350	1 oz.	75 bunches
33	Turnips	Purple Top Globe	" half	" "	(2)	37*	Broadcast	with clover	in beets	1/4 oz.	each	1%	
34	Lettuce	Grand Rapids					18	6	1/2"			1/4 cz.	3 bu.
34	Radishes	Cin. Mkt. Chinese	2nd half	" "	(1)	37*	18	1.3	3/4"		290	1 oz.	75 bunches
35	Turnip Greens	Seven Top (hardy)										(1/4 oz. each 1%)	
35	Tendergreen	Van Antwerp (fall)											
35	Kale	Siberian (hardy)											
36	Soil Building	Cowpeas (fall-plow)	By Aug 1	(19)?								Broadcast (for each 1%, 1 lb.)	
37	" " Cover	Crimson Clover	August	(61)?								(Only after rain; for each 1%, 3 oz.)	
38	" " "	Hairy Vetch	Sept.	(18)?								(Also were Cr. Cl. fail, for each 1%, 4 oz.)	

*Sown at last cultivation of standing crop, awaiting a good rain, if practicable.

() Indicates land units (%) on which an earlier crop has grown.

! Indicates feet of row for each land unit (1% of 1 acre), the crop is to occupy a factor for use in proportioning the space optionally between the crops of the group.

II. SELECTING THE GARDEN SITE

A. Fertility Of The Soil

Fertile soil is the first essential to successful gardening. The fertility of the soil is largely determined by the following factors, in the order of their importance.

1. Drainage

Poorly drained soil is never productive. No matter how rich a soil may be in humus, plant food, and other fertility factors, if it is only "half-drained" it will produce only "half a crop".

2. Humus

A soil is "rich" in proportion to the humus (decayed vegetable matter) it contains. Humus is valuable for the following reasons:

- a. It enables soils to retain the kind of moisture the crops can use. Soils resist drouth in almost direct proportion to their humus content.
- b. It is the best soil "conditioner". Soils containing an abundance of humus are more easily worked, and more of the mineral plant foods are in forms the plants can use.
- c. It contains considerable nitrogen, the most expensive plant food element.

3. Slope

Soils steep enough to "wash" during periods of heavy rainfall will soon be depleted of their fertility. Because less of the rainfall is absorbed, steep soils also withstand less drouth.

4. Soil Type

This is of less importance than the other factors. Sandy soils may be worked earlier in the spring than clay soils, but clay soils can absorb more moisture and retain it longer. Soils with just enough sand to be easily worked into planting conditions are best.

B. Location Of The Garden Site

The location of the site is also an important item. The following are determining factors:

1. The Garden site should be situated where it can receive direct sunlight throughout the day. Fertile soil is not productive if sunlight is limited.
2. The Garden site should not be close enough to trees for their roots to draw moisture from the garden soil. A fertile, sunny site is unproductive to the extent that moisture is limited.
3. The Garden site should be located where the garden will be protected from poultry, livestock, theft and other hazards of this nature.
4. The Garden site should be located near the Canning Unit and the School Lunch Kitchen.

C. Size Of School Lunch Garden Site

If productive soil is available, one (1) acre should be procured for each fifty (50) daily lunches to be served through a nine (9) months' school term. Otherwise, more land, seeds, fertilizer, spraying materials, horsepower, and more timely rainfall will be required to produce the same quantity of poorer quality vegetables.

III. PREPARATION OF THE SOIL

A. Preparation of Land for Early Planting

At least the portion of the garden to be used for March planting should be fall-plowed. The early potato land should be deeply "laid off" during the fall or winter. The early plantings of the "cool" crops can then be made seasonably (by hand, if necessary) even if there is only a day or two of soil-working weather. The soil for these early plantings should be prepared in the following manner:

1. Manuring

Fresh manure should be spread before plowing. Rotted manure should be spread after plowing.

2. Plowing

Before plowing down manure, it should be very thoroughly disked, or otherwise mixed into the soil, for if planting must be done by hand, there will be no deep tillage at the time of planting to do this important job.

Plow ten (10) inches deep, if the topsoil is ten (10) inches thick.

If a green manure catch crop was sown, as recommended, plowing should be done about the end of the growing season; for green vegetation rots readily and, if a coulter is used, can be turned under cleanly, even after it has been disked into the soil with the manure.

Because preparation for planting is likely to be done by hand, resulting in shallow stirring, it is important that:

- a. Any manure spread after plowing should be mixed thoroughly into the soil by disking or otherwise stirring deeply.
- b. The soil should not be "boarded" smooth, because a rough surface absorbs rainfall and holds snow better.
- c. Where early potatoes are to be planted, rows should be deeply "laid off" in the fall. If rows are "laid off" as deeply as the soil is plowed, the ground can be worked earlier in the spring. Furthermore, when the furrow is partly filled with soil in preparation for planting, the soil under the row will be made loose.

If land for early planting must be plowed in the spring it is extremely important that the manure be thoroughly mixed into the soil before plowing and during final preparation for planting.

Fresh manure should not be applied to early potato ground in the spring, as it promotes the development of potato scab.

Spring-plowed sod land should not be used for early plantings, however, if it must be used, the land should be disked throughly before plowing.

3. Fertilizing

Commercial fertilizers are needed in addition to green and barnyard manures because manures are not balanced fertilizers.

If a 2-inch coat of manure has been applied, 400 pounds of 20 percent superphosphate per acre is generally sufficient to balance the manure. A heavy leguminous green manure crop may substitute for half the manure.

If only a part of the recommended amount of manure is applied balance the manure with superphosphate and use less of the 5-10-5 fertilizer, or similar analysis. For example, if only 1 inch of manure is applied, only 200 pounds of superphosphate will be required to balance it and only 400 pounds of 5-10-5 will be required to supplement it.

If no manure has been applied, about 800 pounds of 5-10-5 complete fertilizer per acre usually is sufficient.

Generally, commercial fertilizers should be broadcast and mixed into the soil during final preparation for all plantings, except potatoes. Because potatoes have a restricted root system, fertilizer should always be applied in the row, which makes thorough mixing with the soil even more important.

4. Final Preparation of the Seed Bed

Apply the fertilizer and prepare the seed bed as follows:

a. For early plantings (except potatoes)

Generally it is best to apply the fertilizer broadcast because succession crops can make better use of the portion not used by earlier crops and the roots will grow into a new supply as the plants become larger. Mix the fertilizer into the soil until no streaks can be seen, at the same time making the soil fine with a disk or tooth harrow, if a team is available, or with the "claw" attachment of a wheel hoe if done by hand. "Board" the soil level (by hand, if necessary, rather than wait for a team) and it is ready for planting.

b. For early potatoes

Partly fill the furrow with soil until it is only about 5 inches deep. Continue as follows:

- (1) Scatter the 5-10-5 fertilizer over the flat bottom of the furrow at the rate of 1 pound to 15 or 20 feet of row.
- (2) Mix the fertilizer into the soil with a potato fork or other suitable tool, until no fertilizer streaks can be seen when the soil is examined.
- (3) Level off the furrow bottom leaving it about 4 inches deep (below general ground level) and it is ready for planting.

B. Preparation of Land for Later Planting

Land for later planting should have been sown to a cover crop during late summer or early fall. A cover crop, consisting of a legume and a grass, is the least expensive way to recover dissolved plant food that would leach away during the winter and spring, to check washing and to add humus and nitrogen.

The more top growth a cover crop makes before being plowed down, the more it improves the soil. However, cover crops should be plowed down at least six weeks before planting time, on land for April or May planting; at least a month before planting time, on land for later planting. Land to be planted before May should be plowed in late fall or early winter, for late winter weather may not permit plowing in time for the cover crop to rot.

1. Manuring

If fresh manure is to be used, it should be applied before the ground is plowed. It may be spread at any suitable time before plowing. If a cover crop is growing on the land, the spreading of manure should be delayed until just before plowing unless care is taken not to smother the cover crop, but earlier top-dressing with fine manure, evenly spread, stimulates growth of the cover crop and adds to the value of the manure itself.

2. Plowing

Before plowing, the manure and cover crop should be thoroughly disked into the soil. The more thoroughly the manure, cover crop, or sod is mixed with the soil, the more valuable it is; the heavier the cover crop, sod, or application of manure, the more important it is to disk it thoroughly into the soil before being plowed down.

Plow 10 inches deep, if it can be done without turning up too much subsoil. If a jointer and rolling coulter are used, the cover crop can be turned under cleanly. Deep plowing has the following advantages:

- a. It causes the furrow slice to turn on edge rather than bottom up. This is desirable because:
 - (1) Turning on edge distributes the plowed-down vegetable matter vertically (the resulting humus later to be mixed laterally by tillage of preparation).
 - (2) Turning on edge also prevents the "droughtiness" caused by the blanket of vegetable matter that separates the top soil from the subsoil when turned bottom up.
- b. More rainfall can be absorbed.
- c. Roots can feed deeply for plant food and moisture, if the soil is loose enough to admit air deeply.

3. Fertilizing

Directions given for Early Planting also apply to later plantings, with the following exceptions:

- a. After about June 1st, a fertilizer of somewhat lower analysis, such as 4-10-4 or 4-12-4, would serve for general use, for more soil plant food becomes available in warm weather.
- b. For late potatoes, 3-8-6 would be suitable.

4. Preparation of the Seed Bed

Directions given for early plantings apply to all later plantings, except potatoes. Late potatoes, while covered only 2 inches, should be planted at least 5 inches deep. For this reason the furrow should be left 5 inches deep after the fertilizer has been mixed into the soil.

IV. THE CROPS

It is impossible to include all necessary information about the crops in the Garden Layout and Planting Chart. Special Seasonal Information necessary to supplement the Garden Layout and Planting Chart is given here. It includes special timely information, month by month, dealing with the planting, care, pest control, harvesting, and storage of specific crops, as each may seasonably apply.

Each planting is discussed, in sequence of planting, and numbered as per Planting Chart.

A. Special Seasonal Information - MARCH

1. March Plantings

a. (#1) Potatoes

- (1) High yields are often obtained from late potatoes, but the spring crop is less likely to fail because moisture and temperature are more favorable for a good stand and satisfactory early growth. The proportion of the planting of early potatoes depends upon two factors:

- (a) The usual practice is to spray with poison only against potato "bugs". When only this is done the vines begin to die about the end of June, the potatoes must be dug in hot weather and special, temporary hot-weather storage must be risked. If properly sprayed with Bordeaux mixture, however, the vines can be kept green into August, making it feasible to leave the tubers in the ground until seasonable for permanent storage in earth mounds or in a cellar.
- (b) Potatoes from the spring crop are not suitable for use in late winter and spring because excessive sprouting occurs in storage by midwinter.

Therefore, if early potatoes are kept visably covered with Bordeaux mixture it will be practical to plant them for School Lunch purposes, but no more should be produced than can be used by midwinter.

- (2) Good seed stock is the first essential in growing potatoes. To be good, it must be disease-free. Two precautions are necessary:
 - (a) Certified seed is the only safeguard against the "running-out" diseases, which are carried within the seed. The average yield from certified seed

is at least double the average yield from other seed.

- (b) All seed (including certified), however, should be treated with corrosive sublimate to rid it of potato scab and black scurf, which are soil-bourne and carried on the surface of the seed.
- (3) Irish Cobbler is the best early variety for most of Kentucky. Early Ohio is popular in the Covington area.
- (4) Treating the Seed

The seed should be treated with corrosive sublimate before cutting. Bags or baskets should also be treated in order that the seed may not become re-infected when returned to these containers after treatment. Corrosive sublimate is DEADLY POISON taken internally, but is harmless to the skin.

Treat the seed in the following manner:

- (a) Prepare the solution by dissolving corrosive sublimate in water in the porportion of one (1) ounce to seven and one-half ($7\frac{1}{2}$) gallons of water (hot water dissolves corrosive sublimate faster).
If the container is more than half-filled with the treating solution, it will run over when potatoes are added.
- (b) Pour the potatoes into the solution, being sure that the potatoes are covered. Four lots of seed may be treated in the same solution. Soak the first lot one (1) hour; the second lot one and one-fourth ($1\frac{1}{4}$) hours; the third lot one and one-half ($1\frac{1}{2}$) hours; and the fourth lot two (2) hours.
- (c) Pour or draw the solution off each time into another container, spreading the potatoes to dry.

If additional seed is to be treated, reinforce the solution by adding one-half the original amount of corrosive sublimate and enough water to replace the loss. It is now good for treating three more lots of seed. (The same solution should not be reinforced more than twice.)

Another method of treating is to dip potatoes and the bag (or basket) containing the potatoes, into the solution, merely lifting them out each time. Only three lots should be treated in the same solution because it weakens faster when the containers are dipped.

The potatoes are ready for cutting at any suitable time after they have dried.

(5) Cutting the seed

The number of eyes on a seed piece is unimportant. One eye, not too close to the edge, is enough, many eyes are no disadvantage. The shape and size of the piece are very important.

(a) Shape

The seed pieces should be cut "blocky" rather than angular or thin. There is less cut surface to heal and pieces are less likely to rot.

(b) Size

The seed piece is the only source of food for the young plants until green leaves and roots form.

To supply enough food during this period, seed pieces should weigh not less than one and one-fourth ($1\frac{1}{4}$) ounces. As a check on size, cut one (1) pound of seed. If you obtain twelve (12) or thirteen (13) pieces from it the size is about right.

As the seed is cut, dust each bushel with ten (10) ounces (no more) of flour of sulphur. This stops "bleeding", hastens healing (corking over) of cut surfaces and may check some soil-bourne rot organism.

If planting is to be delayed, allow the cut seed to dry and store them in a cool place.

(6) Planting

See "Preparation of the Seed Bed" (Page 11). Be sure that the fertilizer is well mixed with the soil. If not well mixed it will injure the stand and will be less effective. The furrow should now be four (4) inches deep, or reopened to this depth.

Plant as follows:

- (a) Drop seed pieces about eighteen (18) inches apart. (This assumes that seed cost is a more important factor than land, and that yield per "hill" is more important than yield per acre.)
- (b) Cover only about two (2) inches, leaving the finished row about two (2) inches below ground level. (The row should be brought to ground level - no higher - at the first cultivation.) Deeper covering or ridging is advised only when planting is done before freezing weather is over (about March 15th) or on land too poorly drained to be classed as garden land. If ridging is done to protect seed from freezing, the ground should be leveled later (before the sprouts are an inch long) and kept level.

b. (#2) Onions

Onions require very fertile soil. They demand perfect drainage and plenty of moisture. In order to meet both these demands the soil must contain an abundance of humus. A very fine seed bed is necessary also.

For storage onions, sets of the Ebenezer variety yield well and produce onions that are relatively mild and that store well. Insist upon small sets, or sort out those that will not pass through a three-fourths ($3/4$) inch screen for they usually shoot a seed stalk and will not keep in storage.

Onion plants of the mild Prizetaker variety produce large, **shapely** onions that keep much better than other sweet onions. Some of these may advisably be included for use during fall and early winter, especially for School Lunch Units opening during late summer and closing in midwinter.

(1) Setting

The fertilizer should be mixed well with the soil and the soil should be made fine and level. Onion sets should be "planted" as follows:

- (a) Mark off the rows very lightly (as a guide only) not over eighteen (18) inches apart.
- (b) Place the sets firmly but shallowly (half the set above ground level) three (3) inches apart in the row.
- (c) Set the larger cull sets between those already set, making them one and one-half ($1\frac{1}{2}$) inches apart in the row. The cull sets are to be drawn before crowding occurs and used for green onions.

Any surplus sets may be used for green onions in the same way. Set onion plants about four (4) inches apart in the row and slightly deeper than the seedlings grow.

c. (#3) Early Cabbage

Early cabbage is more certain to yield a crop than late cabbage, but unless lunches are to be served during July or early August, it should be eliminated because early cabbage is not suitable for storage.

Cabbage is a heavy feeder and responds well to liberal use of manure and fertilizer, even in the "hill", if very thoroughly mixed into the soil. The term "hill" means the spacing in the row, never the raising of the soil above ground level.

If cabbage has been grown on the land recently, use Yellows-resistant All Seasons, Marion Market, or Iacope, in order of preference.

d. (#4) Lettuce, Radishes, Tendergreen

The garden space allotted to these vegetables is to be proportioned optionally.

For units closing early, lettuce and radishes should be eliminated, using the space for tendergreen, which is to be canned in May.

Allow forty (40) days for lettuce to mature; thirty (30) days for radishes; thirty-five (35) days for tendergreen.

e. (#5) Mustard, Rape, Turnip Greens

This planting of optional greens is also for use fresh from the garden, except for units that close early. For such units, it is to be canned.

Spring greens should be sown in rows to facilitate practical pest control, weeding, and gathering without trampling. This as per Planting Chart.

Mustard greens should be ready for use in forty-five (45) days, rape in forty (40) days, and turnip greens in forty-five (45) days.

f. (#6) Peas, Carrots.

While these are for optional proportioning, most of the space should be allotted to carrots because of their nutritive value. Furthermore, peas are expensive to produce.

(a) Peas

Plant peas in pairs of rows with a spacing of six (6) to eight (8) inches between rows and three (3) feet between pairs. Thus the dwarf varieties will support themselves and the tall varieties may be supported by a single line of poultry wire or brush.

Smooth varieties (such as Alaska and Radio) should be sown at the first opportunity, about one (1) inch deep. The sowing of wrinkled varieties (such as Little Marvel and the tall, late Telephone) should be delayed until after March 15th.

To encourage bearing well into warm weather, plant wrinkled varieties three (3) or four (4) inches deep, depending on the dryness of the soil, and cover the seeds only one (1) inch. Level the soil by later cultivation.

Very early peas may be used fresh from the garden by May 15th.

(b) Carrots

Carrots should not be sown until the latter part of March, because the seeds germinate slowly and the seed leaves are frail.

Carrots should be sown quite shallowly ($\frac{1}{4}$ inch).

Radishes, sown in the row with them, will mark the rows for cultivation and are removed by the time the carrots are ready to be thinned.

Very early carrots may be used fresh by May 15th.

B. Special Seasonal Information - APRIL

1. April Plantings

a. (#7) Beets

Early beets should be sown in early April. Beets for canning are grown only as a safeguard against hazard of failure of the late crop, which may be stored. Therefore, they should be kept down to a minimum (1%).

b. (#8) Mustard, Rape, Turnip Greens, Spinach

This group provides optional choice between kinds of greens and is to be used for canning after School Lunch Units have closed.

For School Lunch Units which close early and which will use most of the March-sown greens for canning, the April planting may be reduced proportionately. The land thus freed may be added to the early tomato allotment for use fresh in late summer, when such School Lunch Units usually are reopened, or it could be added earlier to the March planting of cabbage or of Prizetaker onions, to be used fresh in late summer.

If sown during the second half of April, this planting of greens should be ready for canning by early June.

In order to get uniformly nice leaves for easy handling at canning time, it is important that greens for canning be thinned as per Planting Chart.

c. (#9) Tendergreen

This is part of the canning supply of greens for all School Lunch Units, even those units which close in late winter and open in July. This planting should be kept intact, because the space was set apart to provide a minimum early August supply of the green beans that are to follow, for just such units. (Other units should can the beans, as their winter season is longer.)

This planting of tendergreen should be ready to can in thirty (30) days, but it still will be tender if it stands much longer.

d. (#10) Beans

In order to get the bulk of the canning of green beans out of the way before tomatoes are at their height, beans should be planted as early as is practicable.

As soon after the middle of April as the soil is reasonably warm, some variety of beans that resist rotting in cool, moist soil should be planted. (Red Valentine, Tennessee Greenpod, and Bountiful are recommended in the order given.)

Plantings of early beans should be as large as labor and canning equipment can handle while in prime condition (2%).

Plant these only one (1) inch deep.

These hardier varieties have strings, and, while of excellent quality if gathered when young and tender, should be canned when they are about two-thirds mature size, for they develop "shuckiness" and poor quality very rapidly after passing this stage.

With prompt germination, they should be ready to can in about sixty (60) or sixty-five (65) days.

e. (#11) Beans

If the soil is definitely warm by the last week in April, it is well to risk a planting of Stringless Greenpod at this time. They are of the very best quality, are absolutely stringless and remain in prime condition for canning much longer than the hardier varieties.

If the soil is not warm, plant the cool-resistant varieties again.

With prompt germination, Stringless Greenpod should be ready to can in about seventy (70) days.

The hardier varieties should be ready for canning in about sixty (60) days.

C. Special Seasonal Information - MAY

1. Care of the Growing Crops

a. Cultivation

For any well-drained soil, cultivation should be shallow and level. Its principal purpose is to kill weeds. The best kind of cultivation is the shallowest cultivation that will destroy weeds. Even scraping the surface with a sharp hoe is fully effective, as there is no value in stirring such soil after proper initial preparation.

b. Special Fertilization

Onions, lettuce, greens, cabbage and other foliage crops should be side-dressed with nitrate of soda, or with dry, pulverized poultry manure. Side dressing is done in the following manner:

- (1) Nitrate of soda should be sown along the sides of the row at the rate of one (1) pound per hundred (100) feet of row. It will burn foliage and should not be left on the leaves, or touching the stems, of young plants. It may be worked lightly into the soil, if desired, or it will dissolve soon without attention.
- (2) Poultry manure is also scattered along the sides of the row at the rate of one (1) bushel to three hundred (300) feet of row. It is of some advantage to work it lightly into the soil.

The first side-dressing should be made about a

month after seeding or setting. A second side dressing is advisable two or three weeks later.

Plants make much better use of two or three light applications made two or three weeks apart, than one heavy application. In fact, too heavy an application of nitrate of soda or poultry manure will kill the plants.

2. Pest Control

The fight against garden diseases and insects begins in earnest in May. The control of these pests depends upon the care taken in selecting the right spray, in the manner of preparing the spray; in choosing the sprayer; and in the manner of applying the spray.

a. Sprays

Liquid sprays are somewhat more effective than dusts and are to be recommended for small acreages. In general, there are three kinds of sprays for combating three types of pests:

- (1) Arsenates of calcium, lead, and magnesium are stomach poisons against most chewing insects.
- (2) Rotenone, nicotine sulphate, and pyrethrum are contact sprays against most soft-bodied sucking insects. Rotenone kills most insects, both chewing and sucking, and retains its potency for several days.
- (3) Bordeaux mixture, while inexpensive, is the best spray against leaf diseases in general, and, as a repellent or poison, against leaf hoppers and flea beetles.

Combination Sprays - Bordeaux mixture is the basis of most combination sprays. When spraying against diseases, it is usually advisable to add poisons or contact sprays, or both, to the Bordeaux mixture. By using such a combination spray, most pests of all types may be controlled with the same application.

Do not mix rotenone with Bordeaux, as the lime in the latter destroys the potency of rotenone.

b. Preparation of Sprays

Ready-mixed Bordeaux, in powder form, may be purchased from any merchant dealing in spraying

materials; however, it may be prepared at somewhat less cost in the following manner:

- (1) Make a stock solution by dissolving one (1) pound of bluestone (copper sulphate) in five (5) quarts of water. Put the bluestone in a cloth sack and hang it over the water so that only about an inch of the sack and bluestone will be in the water. (If poured into the water, it will not dissolve unless constantly stirred.) Bluestone stock will keep indefinitely. It may be kept in a jug, tightly corked to prevent evaporation. Only wood or earthenware containers should be used because bluestone attacks metal.
- (2) When ready to spray, pour nine (9) quarts of water into a three (3) gallon compressed air sprayer. Pour in one (1) quart of bluestone stock (measure with a milk bottle or Mason jar). Add four (4) ounces of fresh screened hydrated lime, close the sprayer tank and shake endwise ten or twelve times.

You now have two and one-half ($2\frac{1}{2}$) gallons of 4-4-50 Bordeaux mixture in a three (3) gallon sprayer, leaving room for compressed air.

Pump air into the sprayer tank (until an eighty (80) pound boy would have difficulty in adding more) and you are ready to spray.

Bordeaux mixture should not be mixed until immediately before it is to be used, as it spoils quickly.

c. The Sprayer

A three (3) gallon compressed air sprayer with a hand-operated cut-off valve at the near end of the rod is suitable for most School Lunch Gardens. Two factors are important in selecting a sprayer:

- (1) The nozzle should be set at a ninety (90) degree angle with the spray rod. When set at this angle, both the undersides and top sides of the leaves can be sprayed, from an upright position, without changing the nozzle setting.

It is impossible to do a good job of most spraying with the nozzle set at forty-five (45) degrees, as most sprayers on the market are set. This may be overcome by

two simple precautions:

- (a) Select a sprayer the nozzle of which is threaded (not soldered) onto the rod.
 - (b) Insert a standard 1/4-inch street ell between the nozzle and the rod.
- (2) A brass sprayer tank is a better value than a galvanized tank, which is soon "eaten up" by Bordeaux mixture. Brass is not affected by it.

d. Spraying

Shake the sprayer tank endwise frequently to keep the spray well mixed and add pressure, as necessary, to maintain a "smoky-fine" mist. Spray in the following manner:

- (1) Hold the sprayer nozzle as far from the plants as it can be held without wasting the spray (without much of it missing the plants).
- (2) Keep the nozzle moving steadily forward (not back and forth) so the spray will be evenly distributed.
- (3) Too much spray at one place will cause the tiny droplets to run together and drip off. (In much the same manner, a clover leaf will retain a film of dew until it reaches a certain thickness, after which it starts dripping and most of it drops to the ground).
- (4) Spray the undersides of the leaves from both sides of the row and then spray the top sides (walking the row three (3) times, except when spraying against the Mexican bean beetle).

e. Sprays for Specific Crops

(1) Potatoes

Beginning when the plants are two (2) to four (4) inches tall, spray thoroughly with 4-4-50 Bordeaux mixture. Repeat as often as necessary to keep both sides of the leaves visibly covered until the plants are too large for it to be practical to spray them.

If sprayed in this manner, even March-planted Cobblers can be kept green until August. If kept green this late, the resulting higher yield of potatoes may feasibly be left in the ground until seasonable for storage in mounds or a cellar. If this is not done (and only potato "bugs" are controlled) leaf hoppers (causing "hopper-burn") and flea

beetles will cause the foliage to begin to die by late June. Then it will be necessary to dig the reduced yield of potatoes in midsummer and to risk special, temporary storage.

If Colorado beetles or other such chewing insects are present, add five (5) rounded tablespoons of calcium arsenate to two and one-half (2 1/2) gallons of Bordeaux mixture.

If aphids ("lice") are present, add five (5) tablespoons of nicotine sulphate to two and one-half (2 1/2) gallons of Bordeaux mixture.

It is a waste of time to apply special, separate sprays when combination sprays are just as effective.

(2) Cabbage

When the first cabbage butterflies appear, spray with a rotenone extract or "cream", following directions on the can. Repeat every few days until near maturity, unless all signs of butterflies, "worms", or loopers have disappeared. Rotenone is harmless to human beings.

Liquid sprays will roll off the sleek leaves of cabbage unless applied as a thin film of "smoky-fine" mist. As soon as the plants have dried off, repeat, as necessary, for a heavier coverage. Do not use calcium caseinate spreader with rotenone because the calcium caseinate will weaken the rotenone.

If arsenates or other poisons are used, they must never be applied after heading begins. If "lice" are present, add nicotine sulphate.

Rotenone dust of not less than one percent (1%) strength is effective and may be used at any time, as it is harmless to human beings.

(3) Greens

Rotenone controls all insects infesting greens except the harlequin cabbage bug.

If the harlequin cabbage bug cannot be controlled by hand-picking, the next best thing may be to sacrifice the mustard as a "trap crop". The harlequin bug prefers mustard over other greens

and may accumulate on it. If so, the mustard may finally be sprayed with kerosene and burned.

(4) Tomatoes

In the absence of pests, tomatoes normally remain green throughout the growing season.

Bordeaux mixture, applied at two-week intervals, is the control for septoria spot (rust) and the flea beetle, the principal spray-controlled pests.

Hand-pick hornworms (tobacco worms) or add calcium arsenate to the Bordeaux mixture as for potato "bugs".

If "lice" are present add nicotine sulphate to the Bordeaux mixture.

Only wilt-resistant varieties provide assurance against fusarium wilt. (See Planting #14)

3. May Plantings

a. (#12) New Zealand Spinach, Swiss Chard

The small allotment of garden space for these summer greens is to provide greens for canning at any time during the summer when other work is not pressing and for use fresh until frost. These summer greens occupy the ground from early May until frost.

- (1) New Zealand spinach usually is preferred, because it is ordinarily liked better and may be gathered at any convenient time. Only the tender tips of branches are harvested, breaking them off at no greater length than they will snap off cleanly.

"Spot" plant (as per Planting Chart) three (3) or four (4) seeds to the "hill" (level) and one and one-fourth (1 1/4) inches deep, later thinning to one (1) plant.

While early May is not too late to expect a good stand, soaking the seeds in warm water for an hour or two before planting is an advantage.

- (2) Swiss Chard yields enormously and, while very large leaves are tender, the flavor of oversize leaves is a bit pungent. The outer leaves should be pulled

away as they reach suitable size, leaving the crown to produce new leaves. (Plant and thin as per Planting Chart)

b. (#13) Beans

This planting of beans is to occupy the space from which March-planted lettuce, radishes, and tendergreen (#4) have been removed.

Plant Stringless Greenpod about ten days or two weeks after planting #11 was made. Plant one (1) inch deep.

These should be ready for canning in about sixty-five (65) days.

c. (#14) Tomatoes

This planting of tomatoes is to be used for canning and should be set as early in May as the soil becomes definitely warm, in order that most of the canning can be done before the School Lunch Unit opens.

Pritchard and Marglobe or Rutgers are suitable varieties, are fusarium wilt-resistant, and, if set at the same time, will effect some measure of succession ripening. Pritchard is an earlier variety and has a shorter bearing season than the other, and, if used, should be limited to one-fourth of the ground, or less.

If the site has not had tomatoes on it or too near it recently, Bonny Best (early), Greater Baltimore or Stone may be used safely.

(1) Plants

Stocky plants for the early crop (at least once transplanted) are well worth the additional cost.

Plants for the June-set tomatoes and late cabbage may be grown between the rows of early tomatoes and will be removed before the tomatoes need the space. For each acre in the garden, sow 1/10 ounce of tomato seed and 1/20 ounce of cabbage seed, five or six weeks before setting time. Thin tomatoes to four (4) inches in the row; cabbage to three (3) inches.

(If more greens for canning are needed, tendergreen

also may be sown between early tomatoe rows and will be harvested before the tomatoes need the space.)

(2) Fertilizing

General recommendations (III-A-3) apply for tomatoes.

If fertilizer or rotted manure is used in the "hill" they must be mixed well into the soil over an area of at least a square foot.

(3) Setting

Tomato plants should be set so that very little of the main stem below the main branches is above ground level, but the roots should not be over five (5) inches deep in most soils, or they will not get sufficient air.

If long, "shanky" plants must be used, set them in the following manner:

- (a) Open a trench extending from the center of the "hill" a distance equal to the length of the stem from the main branches to the roots and in the direction of cultivation. The trench should be about five (5) inches deep.
- (b) Lay the plant horizontally in the trench, bending the stem slightly so that the top (from just below the main branches up) will extend above ground at the center of the "hill".
- (c) Cover with loose, moist soil, pressing the soil firmly to the roots and more gently to the stem. The soil should be level when the job is done.

(4) Pests

Two precautions are usually advisable against early tomato pests.

- (a) To be certain of "clean" plants and for early protection against flea beetles and leaf spot, the plants may be dipped (just before setting, so they will dry off promptly) in fresh Bordeaux mixture (no stronger than 4-4-50). If "lice" are present, add nicotine sulphate according to directions on package.
- (b) For early-set tomatoes, cutworms are likely

to be a serious enemy for several weeks. Therefore, it is good practice to wrap the stems loosely, with paper containing no injurious substances, as they are set. The wrapping should extend from two (2) or more inches above ground to about two (2) inches below ground. If the wrapping is lower on the stems than necessary for protection it may interfere with new root development.

d. (#15) Sweet Potatoes, Winter Squash

These are storage vegetables to be proportioned optionally, however, squash should be held to the minimum, or omitted, unless land is plentiful.

These vegetables require similar storage conditions and ordinarily may be kept in storage past midwinter.

(1) Winter Squash

Plant in level "hills", three (3) or four (4) seeds per "hill", thinning later to not more than two (2) plants per "hill".

Mature fruits are ready to be stored when killing frosts come.

(2) Sweet Potatoes

Sweet potato slips should be set on perfectly-drained soil, preferably with a clay subsoil. They may be set on a ridge, if desired. Setting on hills is a waste of space. If the land is "rich", use only superphosphate with manure. The richer the soil, the more important is the superphosphate. For sweet potato soils below average fertility, general fertilizing recommendations apply. Slips with black spots on the stems or roots, (indication of black rot infection) should be avoided. Dust roots and stems of sweet potato slips with sulphur, as a preventative against scurf.

Sweet potatoes ordinarily are dug at the time of the first light frost.

e. (#16) Beans

This planting of green beans is to occupy the space vacated by March-planted greens (#5). The seed should be planted about one and one-half (1 1/2) inches deep and covered only one (1) inch.

The beans should be ready to can in sixty-five (65) days.

f. (#17) Okra, Peppers

The small allotment of space for this pair of optional crops is primarily to supply the okra needed for soup mixture.

(1) Okra

"Spot-plant" okra, two (2) or three (3) seeds per "hill" and one (1) inch deep. Thin to one (1) plant. Okra should come into bearing in two (2) months.

(2) Peppers

Set peppers as per Planting Chart. Sunnybrook, the variety recommended, is the pimiento type and suitable for canning. If peppers are set, planting should be kept to the minimum. Peppers should come into bearing in about sixty (60) days.

g. (#18) Blackeyed Peas, Kidney Beans, Dwarf Horticultural Beans ("Fall" Beans), Lima Beans.

Of this group, blackeyed peas are the most economically produced. Red kidney beans are a fair substitute for Chili beans. In this group, if the yields are in excess of the amounts needed for soup mixture green-shelled, they may be allowed to mature and be stored as dry-shelled seeds. However, plantings should be kept to the minimum, particularly lima beans.

Plant as per Planting Chart. All should be planted about one and one-half (1 1/2) inches deep and covered only one (1) inch.

h. (#19) Carrots

This planting of carrots is for the storage supply and it is important to observe every safeguard against failure.

If sown too early, the roots will be coarse and of poor quality; if sown too late, there is danger of getting a poor stand.

Take the following precautions in sowing carrots:

- (1) Sow the seeds by May 15th. If sown later, a poor stand is likely to result, unless unseasonable cool, moist weather should prevail.
- (2) Sow one-half (1/2) inch deep and cover only one-fourth (1/4) inch with humus or rich, sandy soil that will not "bake".
- (3) Roll a wheel hoe over the final covering of soil or otherwise gently press the soil in close contact with the seeds. This slight compacting of the soil about the seeds makes for prompt and even germination.

When the plants are about an inch tall, thin to one and one-half (1 1/2) to two (2) inches apart in the row, by scraping

away the surplus plants with a sharp-edged spoon, or similar tool, in order not to disturb the roots of the plants remaining.

D. Special Seasonal Information - JUNE

1. Care of Growing Crops

a. Cultivation

As the season advances and the soil becomes drier, shallow, level cultivation becomes increasingly important.

Deep cultivation is expensive and always harmful if close enough to the plants to sever roots.

After-rain "crust" should always be broken before it forms (before the surface becomes dry), by very shallow and level cultivation. (See "May")

2. Pest Control

Certain of the growing crops and the seedlings for later settings require attention.

a. Seedlings

Thin the tomato seedlings for June setting and keep them covered with Bordeaux mixture, adding nicotine sulphate if "lice" are present. If flea beetles are present in large numbers, use rotenone as a separate spray.

Thin the late cabbage seedlings and spray them frequently with rotenone, if any insects are present.

b. Potatoes, Tomatoes, Cabbage, Greens

Continue the control measures outlined in May against the pests of these vegetables.

c. Beans

Several insects infest beans but the Mexican bean beetle is the most serious pest.

The Southern bean beetle and other native beetles do early-season damage that looks threatening but rarely proves serious.

If seriously infested, use rotenone or magnesium arsenate.

The Mexican bean beetle is the most serious pest infesting beans. The devastating little yellow, spiny larvae may be effectively poisoned only before they are a week old. They feed only on the undersides of the leaves.

Magnesium arsenate spray is effective against the Mexican beetle; but it must not be applied after the pods are set, because it is POISONOUS. The proper strength is five (5) rounded tablespoons to two and one-half (2 1/2) gallons of water. If magnesium arsenate is used, watch warily for the first yellow clusters of eggs to hatch. Spray where they feed (the undersides of the leaves) before any of the larvae are a week old. Walk the row twice, spraying from both sides. Spray in this manner each ten (10) days until pods begin to set.

After pods set, use only rotenone, which is harmless to human beings.

A simpler way to control the Mexican beetle is to use nothing but rotenone, applying the first spray when the 16-spotted adults first appear and repeat each ten (10) days as long as any adults, eggs or larvae are present. Do not delay spraying until injury can be seen from a standing position; for then it will be too late.

3. June Planting

To be more certain of prompt, even germination and a uniform stand, make all summer plantings in the following or similar manner:

Cover the seeds with fine soil to only half the depth planted. Press the soil gently but firmly (with the foot, by rolling a wheel hoe, or otherwise) to settle the soil closely about the seeds.

Finish covering with a little more loose soil (short of level) and the job is done.

As the season advances and soil becomes drier, these principles of planting become increasingly important.

Depth of planting may be governed by the following general rule:

Plant all seeds at a depth eight times their thickness.

a. (#20) Beans

This planting follows April-planted tendergreen (#9). Plant two (2) inches deep and cover one (1) inch.

These beans should be ready to can in about sixty (60) days.

b. (#21) Sweet Corn

This planting will supply fresh corn for School Lunch Units that open early in August and may be used in soup mixture by other units.

Plant as per Planting Chart, on garden space previously occupied by early carrots and peas (#6).

c. (#22) Late Tomatoes

This setting should supply tomatoes fresh from the garden from late August until frost.

Set the plants rather deeply (but not over six (6) inches) and level. Leave as much dirt clinging to the roots as is possible. If the soil is dry, set the plants as follows:

- (1) Open a hole to the depth the plant is to be set (almost up to the main branches).
- (2) Place the plant and cover the roots with a small amount of loose soil.
- (3) Pour a cupful of water into the hold to "puddle" the soil about the roots, taking care not to wet the soil too near the surface (this avoids "baking").
- (4) Later, after the water has soaked in, come back and fill the hole just to level with loose soil.

Do not press the soil around plants that have been set with water, as the "puddling" action of the water will do the job without forming a clod about the roots.

Begin the tomato spraying program promptly and keep it up until the plants are too large for practical spraying.

d. (#23) Sweet Corn

This planting of corn is to be used primarily in soup mixture during the latter half of August, when tomatoes are at the height of ripening. For School Lunch Units that open in the summer, a portion of it is to be used fresh from the garden.

This corn should be ready for use in sixty (60) days.

e. (#24) Beans

This planting of snap beans is limited to one unit (1%)

of garden space because it is ready to use when other canning demands much attention, however, for School Lunch Units that open in July or August this planting supplies beans fresh from the garden.

Plant the seeds two (2) inches deep and cover them one (1) inch.

These beans should be ready to pick in sixty (60) days.

f. (#25) Beets

This planting will supply beets to be used fresh from the garden during the fall months, and for winter storage.

It is difficult to get a good stand of beets at this season of the year, therefore, it is important that directions for midsummer planting (III-D-3) be followed.

Plant the seeds one and one-half (1 1/2) inches deep and cover them only three-fourths (3/4) inch deep, preferably with humus, very "rich" soil, or other suitable material that will not "bake".

Under favorable conditions, these beets may be used fresh by late August. They should not be dug for storage until about October. (Beets will not be affected by light frost, but will be injured by freezing.)

g. (#26) Late Cabbage

This setting is to supply cabbage fresh from the garden during late fall, and for a winter storage supply.

Cabbage is a heavy feeder and responds well to liberal applications of rotted manure and commercial fertilizers. If manure or fertilizer is applied in the "hill", it should be well mixed into a square foot of soil for each "hill". The soil should be level when plants are set and kept level.

Late cabbage should not be set in dry soil. Therefore, set the plants following the first good rain after the plants are barely large enough to set and before July 1st. If the soil remains dry until July 1st, water and set the plants as for tomatoes. On the evening before the plants are to be drawn, they should be soaked heavily with water. This will prevent stripping of the rootlets from the plants and will cause more soil to cling to the roots.

It is advisable to take the precaution of growing late cabbage plants in two ways:

- (1) Spot-plant the seeds, two (2) or three (3) seeds per "hill", where the plants are to stand and thin to one (1) plant when the insects are under control. This spot-planting is done in May at the same time the seeds are sown to grow plants for resetting.

The main hazard to successful stand from spot-planting is insect injury.

- (2) Seeds are also sown during the first half of May to produce plants for resetting. Drought is the main hazard to a successful stand when resetting is practiced.

Thus some of the plants may be set wherever the stand of the spot-planting is poor or the plants unthrifty.

Late cabbage should be stored in earth mounds, or in a suitable cellar, before hard freezing occurs.

h. (#27) Late Potatoes

Late potatoes are capable of producing very high yields, if weather conditions are favorable, but they are less dependable than the early crop because dry, hot weather is likely to prevail at planting time, making it difficult to obtain a good stand.

Potatoes from the late crop will keep in storage until late spring without sprouting while spring-grown potatoes will sprout excessively by midwinter. For this reason, it is desirable to plan for the late potato crop to supply about half the potatoes needed, however, it is advisable to plant late potatoes only if moisture conditions are favorable at planting time.

Begin watching for a good, soaking rain about June 15th. If the rain comes before the end of June, plant the Green Mountain variety, which is suitable for planting at this time.

Late potatoes should be planted in the following manner:

- (1) Lay off the furrows as for early potatoes.
- (2) Mix the fertilizer into the furrow as for early potatoes, however, fertilizer lower in nitrogen, such as 3-8-6 may be used. Apply at the same rate.
- (3) Plant late potatoes at least five (5) inches deep and cover them only two (2) inches.
- (4) Unless the soil is quite moist, step gently on

each seed piece as it is covered. This presses the soil into close contact with the seed piece and tends to keep the soil about the seed piece more moist and cooler for several days.

Late potatoes should never be covered by throwing a ridge over the seed.

Cultivation should be shallow and no more soil should be worked to the potatoes than necessary to bring the furrows to ground level. It would be better not to fill the furrows quite to level until hot weather is over.

if the soil remains dry until July 1st, do not plant Green Mountain. Wait for an early July rain and plant Snowflake or other "July" potato.

E. Special Seasonal Information - JULY

1. Conserving Soil Moisture

a. Cultivation of Growing Crops

For small plants, a shallow, thorough scratching with a rake or wheel hoe before a crust forms after each rain, will do much to off-set the lack of sufficient rainfall.

For such gross feeders as corn, it is advisable to discontinue cultivation after the plants are a foot tall. By this time a network of rootlets has completely occupied the soil from row to row and will intercept soil moisture before it reaches the surface. Deep cultivation after this time is disastrous.

Sow the soil improvement crops (cowpeas in #21 and crimson clover in #23) in the June plantings of corn at the last cultivation, if a good rain has fallen. If the soil is dry, delay these sowings until the corn crops have been harvested. If at that time the soil is not deeply moist, and does not become moist by the end of August, do not sow crimson clover. Sow hairy vetch in September.

b. Cultivation of Soil and Later Planting.

The soil for later plantings should be likewise shallowly stirred before a crust forms after each rain. This is the best assurance of the

moist, friable tilth necessary for the prompt germination of "timed" plantings and an even flow of vegetables to the canning unit.

2. July Plantings

a. (#27) Late Potatoes

If a good soaking rain does not come until early July plant some of the "July" potatoes, preferably Snowflake or other of the McCormick family.

If a rain does not come until the latter half of July, plant Cobblers, unless the seeds are too expensive due to storage costs.

If the soil is still dry, after a month and a half of watchful waiting, do not plant any late potatoes. The danger of failure and loss of the seed would be too great.

b. (#28) Beans

This planting of beans follows early beets (#7).

Summer planting directions (III-D-3) apply.

These beans should be ready to pick in sixty (60) days.

c. (#29) Sweet Corn

This corn is for use fresh from the garden in early September. It follows April-sown greens (#8).

This corn should be ready to use in sixty (60) days.

d. (#30) Beans

This is perhaps the last planting of snap beans and is increased to two units (%) of space because beans remain in prime condition longer in cool weather. It follows the earliest planting of beans (#10).

These beans should be ready to use in sixty (60) days.

e. (#31) Sweet Corn

This is the last planting of corn and is for use fresh from the garden in late September, if it can beat the frost. It is to follow beans (#13).

Sow cowpeas in the row with the corn, at the rate of one

fourth (1/4) pound per hundred feet of row, at the time the corn is planted. The cowpeas are for soil improvement. (Oats should be sown at the last cultivation.)

F. Special Seasonal Information - AUGUST

1. Pest Control

Early beans may escape the ravages of the Mexican bean beetle, or survive them, because the adult beetle does not ordinarily emerge from winter quarters until well into May and the voracious larvae are not present until around June 1st.

Later plantings of beans usually are attacked as soon as the seed-leaves emerge from the ground. Therefore, if control measures are neglected, the beans may never reach blooming stage.

2. August Planting

a. (#32) Celery Cabbage

Celery cabbage has proven to be about the most popular of the salad crops grown for School Lunches. As a pot-herb, it is not as popular as common cabbage. Like common cabbage, it may be stored in earth mounds or other uniformly cool, moist ventilated quarters.

Sow thinly, or spot-plant two (2) or three (3) seeds per "hill" about fifteen (15) inches apart, one-half (1/2) inch deep and thin to one plant.

"Rich" soil and nitrate side-dressing also apply to celery cabbage.

Celery cabbage matures as the growing season ends; but will not withstand as much frost as common cabbage.

b. (#33) Turnips

These turnips are primarily for the storage supply of roots. They may also be used fresh from the garden in the fall, as greens or roots.

After the first good rain in August sow the seeds broadcast (with crimson clover) at the last cultivation of beets. (#25)

The roots should be stored before hard freezes, usually by early November.

c. (#34) Lettuce, Radishes

These optional crops should be sown after the removal of bean vines (#20), on garden space first occupied by tendergreen (#9).

Any of the spring varieties of radishes are suitable for fall use fresh from the garden. White or Rose China or Black Spanish may be stored in mounds for winter use, but these winter varieties require at least ten (10) weeks to mature. Spring varieties require only four (4) to five (5) weeks, if conditions are favorable.

If there is a good rain before the end of August, sow crimson clover and Italian rye grass, making this the last cultivation, and weed by hand thereafter. If the soil is not fully moist by the end of August sow vetch and rye grass in September.

d. (#35) Turnip Greens, Tendergreen, Kale

Sow the seeds of these optional greens broadcast (with crimson clover) at the last cultivation of late tomatoes (#22) after the first good rain in August. Additional succession sowings (at intervals) may also be made, as needed, after the vines of early varieties of early tomatoes (#14) have been removed.

The tendergreen is for fall use only.

Seven-top turnip and Siberian kale are hardy and may be used in the fall, at time during the winter, and again in early spring, when new growth is resumed.

3. Soil Improvement Crops.

a. (#36) Cowpeas

Since we cannot depend upon procuring barnyard manure for School Lunch Gardens, the growing of green manure catch crops following March plantings (the land that should be fall-plowed) becomes a more dependable source of soil-building vegetable matter. For this reason, the same land that is March-planted this season will logically be reused for March plantings next spring (locating plantings in 2-3-4-5-6-1 order, for rotation).

Crops such as cowpeas or soybeans (annual legumes) are suitable for this purpose. Soybeans should be used only on land that has recently grown them successfully because

artificial inoculation is not dependable the first season, Practically all Kentucky soils are naturally inoculated for cowpeas.

Whippoorwill is the most widely distributed variety of cowpeas in Kentucky. However, any variety, or mixed seeds, will do. The smaller-seeded varieties of soybeans, such as Pekin or Virginia will sow a larger area per pound of seed.

Sow cowpeas (or soybeans) broadcast after the following plantings:

- (1) Early Potatoes (#1)
When the potato vines definitely begin to die, work a slight ridge of soil to the row to protect the tubers from the sun. Sow the cowpeas and cover with a fourteen (14)-tooth cultivator, rake or other "scratching" tool that will leave the soil level.
- (2) Onions (#2)
Sow cowpeas as soon as the onions are harvested, covering them shallowly and level.
- (3) Early Cabbage (#3)
Sow the cowpeas in July, raking the seed in where the cabbages are still standing.
- (4) Snap Beans (#16)
Sow cowpeas after the bean vines are removed in late July.
- (5) Sweet Corn (#21)
Sow cowpeas at the last cultivation of the corn, about July 15th.

b. (#37) Crimson Clover

Crimson clover should never be sown on dry soil. It germinates so rapidly that the first light shower will cause it to sprout and, unless the soil is wet deeply enough to sustain growth until the plants are well established, they will die. The best assurance of a good stand of crimson clover is to sow it only after a good, soaking rain. If this precaution is taken, crimson clover is a dependable crop anywhere in Kentucky, if the stand is established at least eight (8) weeks before frost so the plants can get a good start.

If the soil is not deeply moist at some time during the period when crimson clover can be sown seasonable, do not sow crimson clover at all, sow hairy vetch later.

Both crimson clover and hairy vetch should be sown with a light seeding of Italian rye grass two (2) ounces for each one percent (1%) of one (1) acre. This will make a

dense sod and encourage nitrogen fixation.

Crimson clover should be sown in or after the following crops, if moisture conditions are right:

- (1) New Zealand spinach, Swiss chard (#12)
Sow crimson clover and Italian rye grass at the time of the first heavy rain in July.
- (2) Early Tomatoes (#14)
If the vines of the May-set tomatoes have not fallen over at the time of the first heavy rain in July, sow the clover and grass at that time, raking the seeds in with a garden rake. (If early fall greens are desired, a small proportion of these also may be sown before raking in the seeds.)
If the tomato vines have fallen over, the seeding of the cover crop will have to be delayed until the tomato vines have been removed.
- (3) Okra, Peppers (#17)
Shell beans, Kidney, Lima, Horticultural (#18)
Rake in the clover and grass seeds between the rows of these crops after the first heavy rain between July 15th and August 15th. It is not likely that this seeding will be practical in the blackeyed peas, which usually close the middles (between rows) and normally remain green until frost.
- (4) Late Carrots (#19)
Sweet Corn (#23)
Beans (#24)
Sow the clover and grass at any time in July that moisture conditions are right. Make this the last cultivation.
- (5) Beets (#25)
Cabbage (#26)
Beans (#28)
Corn (#29)
Sow clover and grass at the last cultivation, preferably during the first half of August. Also sow turnips (#33) in the beets before raking in the cover crop seeds.
- (6) Beans (#30)
Corn (#31)
Celery Cabbage (#32)
If the soil is moist, sow clover and grass in these crops during the second half of August and at the last cultivation. Otherwise sow without grass in September.
- (7) Lettuce, Radishes (#34)
Following the first good rain after the plants are up, and thinned, sow clover and grass and rake the seeds in. If the plants are not big enough to thin until September, sow hairy vetch and grass. Weed by hand after the cover crop is sown.

(8) Sweet Corn (#31)

Sow spring oats in this corn at the last cultivation.

Sow oats at the rate of one (1) pound per unit ($\frac{1}{4}$ of 1 acre).

Because this land is to be fall-plowed, cowpeas were to be planted in the row with the corn at the time the corn was planted, as it will be too late to sow cowpeas at the last cultivation of the corn. The oats are sown to produce a good sod in time for fall-plowing.

c. (#38) Hairy Vetch

Sow hairy vetch and Italian rye grass after winter squash and sweet potatoes (#15) and after late potatoes (#27), if the potatoes are dug before October 15th. If dug later than this, sow rye.

Hairy vetch is also to be sown instead of crimson clover when the sowing of the clover is delayed beyond the end of August by dry weather.

V. WINTER STORAGE OF VEGETABLES

A. Dry Shelled Beans and Blackeyed Peas

The common bean weevil and the cowpea weevil may be controlled, without injury to the seeds, as follows:

1. Carbon Disulphide Fumigation

After the seeds are thoroughly dry (air-dry), treat them in the following manner:

- a. Place the seeds in a tight container that has a close-fitting lid.
- b. Four the carbon disulphide into a shallow dish (1 teaspoon is ample for a one (1) bushel container.
- c. Place the dish on top of the seeds and close the container.
- d. Put the closed container in a temperature of 75 degrees Fahrenheit, or warmer, and allow to remain for 48 hours.
- e. After the seeds have been fumigated for 48 hours, store them at once in cloth or burlap bags hung in a dry, ventilated place until needed.

Carbon disulphide gas is VERY EXPLOSIVE and must not be exposed to the slightest spark or even very hot steam pipes.

2. The Heat Treatment

In smaller quantities, the air-dried seeds may be effectively treated against weevil by simply putting the seeds in shallow pans and heating them in an oven for thirty (30) minutes at 130 to 140 degrees Fahrenheit.

If the oven temperature can be controlled to remain between 130 and 135 degrees Fahrenheit, the seeds will not be injured even for planting.

B. Onions

Onions must be mature and thoroughly dry to keep well in storage. When the bulbs are grown and the tops begin to die, the onions should be pulled and left to dry in windows in the garden or on slatted or wire-bottom trays in an open shed. The tops then may be removed and the onions put in an airy place to cure.

Although onions will stand slight freezing, if not disturbed while frozen, they should be moved to cool, airy, protected storage quarters before freezing weather begins.

Slatted crates or open-mesh bags are suitable storage containers,

as good ventilation is a first essential to the keeping of onions. An attic, or other well-ventilated place that is dry and remains near 40 degrees Fahrenheit, would be ideal storage quarters for onions.

C. Sweetpotatoes

Sweetpotatoes should be mature when dug and should be left exposed to the air a few hours to dry. If the tops are prematurely killed by frost, cut the vines away immediately, severing them from the hill close to the ground.

Dig sweet potatoes carefully, because they bruise easily. Do not store bruised roots.

Sweetpotatoes may be stored in very dry mounds or caves; but it is much better to store them in the following manner:

1. Cure the potatoes in a dry, ventilated place at 80 to 85 degrees Fahrenheit for a period of two (2) weeks.
2. Remove Sweetpotatoes to dry, ventilated storage quarters that can be kept between 50 and 60 degrees Fahrenheit.

If only a few bushels of sweetpotatoes are to be stored, they may be hung in open-mesh bags in the basement near the ceiling and at such distance from the furnace as proper temperature prevails. Ventilated upper-floor closets near the furnace flue, or other ventilated, dry quarters where proper temperature can be maintained, are suitable.

D. Winter Squash

Winter squash may be stored in a dry, ventilated basement or storage cellar; but it is much better to use an above-ground dry storage room.

Squash and pumpkins should be stored on shelves and placed so that the fruits will not touch each other. These vegetables will keep until late in the winter if stored in a well-ventilated place that can be kept near 50 degrees Fahrenheit.

E. Potatoes

Even light freezes ruin potatoes unless thawing is extremely slow. Early potatoes should be dug and placed in permanent, frost proof storage after the soil becomes cool and before freezes come.

Late potatoes ordinarily are not dug until the vines have been killed by frost.

Potatoes keep best when kept as cool as possible, short of freezing, and moist enough to prevent wilting. Any totally-dark, well-drained cellar, the humidity and temperature of which can be controlled by admitting or excluding outside air, is suitable for storing potatoes. If such a cellar is not available, they may be stored in outdoor earth mounds or banks. Mounds holding only a few bushels each are recommended, so that the entire contents may be removed to temporary storage convenient to the kitchen when they are opened.

Earth mounds for storing potatoes are made in the following manner:

1. Dig a round pit about six (6) inches deep on a high, well drained site.
2. Line the pit with a few inches dry straw or similar litter.
3. Put the potatoes on this straw lining in a conical pile the same size as, but not larger than, the pit.
4. Cover the potatoes with straw, carrying the covering up several inches above the apex of the potato pile.
5. Add two (2) or three (3) inches of dirt, leaving a good-sized wisp of straw extending well up through the earth covering for ventilation.
6. Shelter the straw "flue" against rain with a weighted cover of tin or a short board.
7. A drainage ditch, slightly deeper than the bottom of the pit, should encircle the mound (about 18 inches from the pit) so that the final earth covering will shed rainfall into it.
8. Open a trench from the lower side of the circular ditch to lead the water away.

As colder weather arrives, increase the earth covering to a foot or more, if necessary, to prevent freezing. If unusually cold weather should endure, threatening to freeze through the earth covering, add a covering of manure, straw, or other litter, as may be necessary.

F. Beets, Carrots, Turnips, Winter Radishes, Late Cabbage, Celery-Cabbage

Either of these vegetables, or any combination of them, may be stored in earth mounds in the same manner as described for potatoes.

Because it is difficult to open and close mounds when the ground is frozen hard, it is desirable to remove the entire contents

when the weather is suitable and put them in temporary storage near the kitchen. If, for this reason, several vegetables of this group should be stored together in the same mound, it is well to separate the kinds with a layer of litter and to place the beets and carrots first (in the middle) because they require somewhat more humidity (90 percent relative).

Any well-drained cellar, the humidity and temperature of which can be controlled by admitting or excluding outside air, will be suitable for the winter storage of the vegetables in this group, if due care is taken.

Cabbages may be laid in rows on shelves.

Neither cabbage nor turnips should be stored in the school basement because the disagreeable odor imparted will penetrate throughout the building.

The root vegetables may be put in ventilated hampers or crates, or in small piles along the cellar wall because too many in one pile may cause heating and spoilage.

Pull the root vegetables when dry and remove the tops, leaving two (2) or more inches of the stems on beets to prevent "bleeding" and loss of color.

VI. Definition of Terms

"Board" (the soil). To make the surface of the soil level with a board drag.

Catch-crop. A minor crop grown on the same soil and during the same season as the main crop at a time when it does not interfere with the main crop.

"Cool" crops. Crops that thrive best when the temperature is between 40 and 60 degrees Fahrenheit.

"Corking-over" of seed pieces. Formation of a cork-like, protective covering over the cut surfaces of potato seed pieces during the healing process.

5-10-5 fertilizer. Chemical fertilizer containing 5% nitrogen, 10% phosphoric acid equivalent and 5% potash.

Friable tilth. The soil layer that has been made crumbly (friable) as a result of cultivation or tillage.

"Friendly" arrangement. Location of crops with reference to each other in such a way that no crop will interfere with the normal development of any other crop.

Initial plantings. Plantings first to occupy their respective allotments of garden space during a given growing season.

Jointer. An attachment for a turning plow so arranged that it will cut a small slice of sod away from the land side of the main furrow slice just before the latter is turned, causing the sod to be turned under cleanly.

4-4-50 Bordeaux mixture. A spray for combating leaf diseases. The formula (4-4-50) got its name at the time it was first made in the proportion of 4 pounds of copper sulphate (bluestone), and 4 pounds of stone (unslaked) lime to 50 gallons of water. As now prepared, it really is 4-6-50 which is 4 pounds of copper sulphate and six pounds of hydrated lime to 50 gallons of water. (Six pounds of hydrated lime is equivalent to 4 pounds of stone lime making the active ingredient the same).

Leach. To dissolve and drain away

Long-season crops. Crops that require most of the growing season to mature.

Rolling coulter. A straight disk attached to a plow in such a position that it rolls just ahead of the share, cutting vertically through the sod to sever the sod of the furrow slice from that of the unplowed land.

Seasonable planting. Planting at the proper season for best results.

Short season crops. Crops that require a relatively small proportion of the season to mature and which may be followed by later main crops during the same season.

Side-dress. To apply (fertilizer) along the sides of the rows.

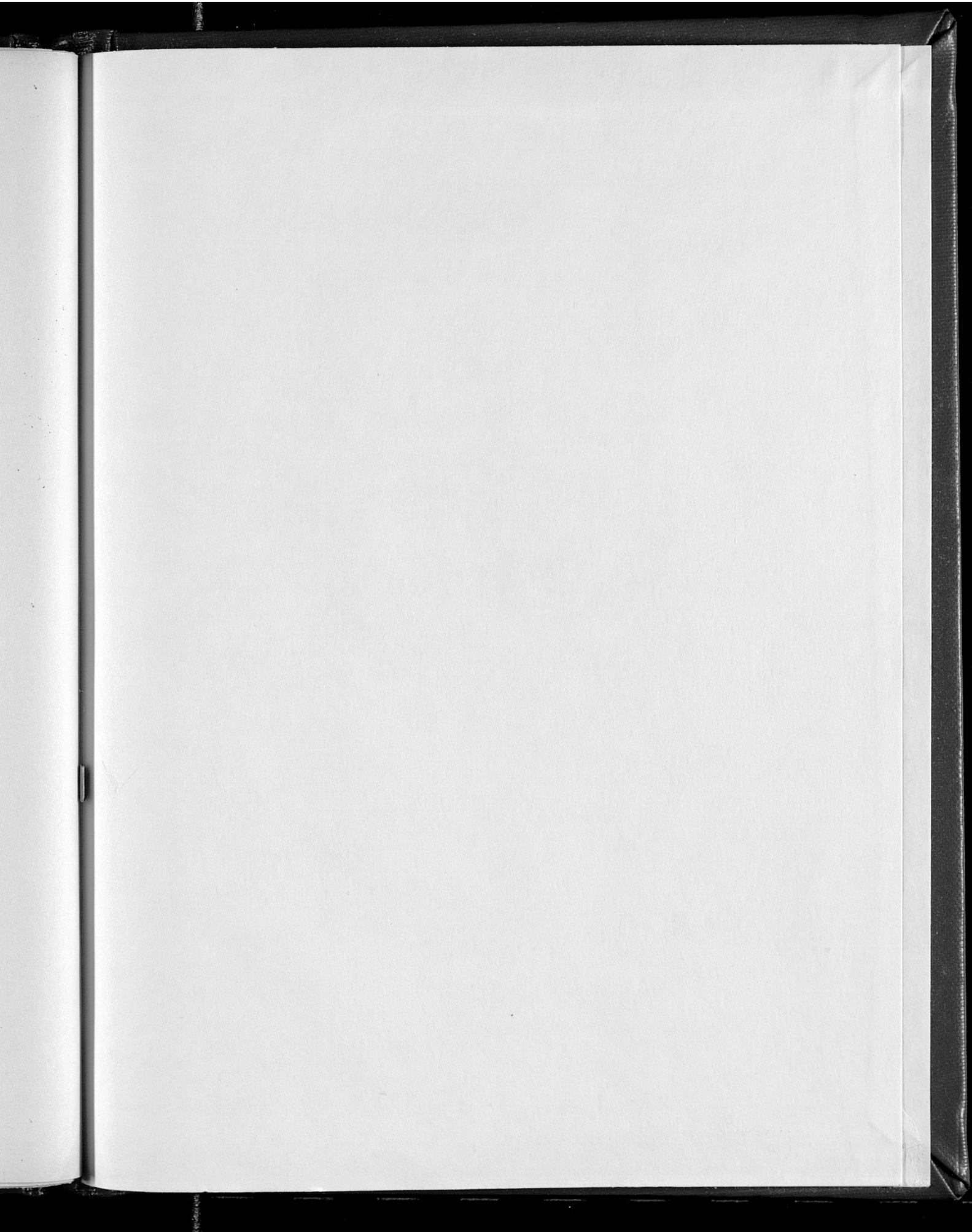
Street ell. A pipe ell (elbow) with interior threads at one end and exterior threads at the other.

Succession Cropping. The growing of more than one crop on the same land during the same season.

Succession planting. More than one planting of the same crop, made at intervals during the same season but not necessarily on the same land.

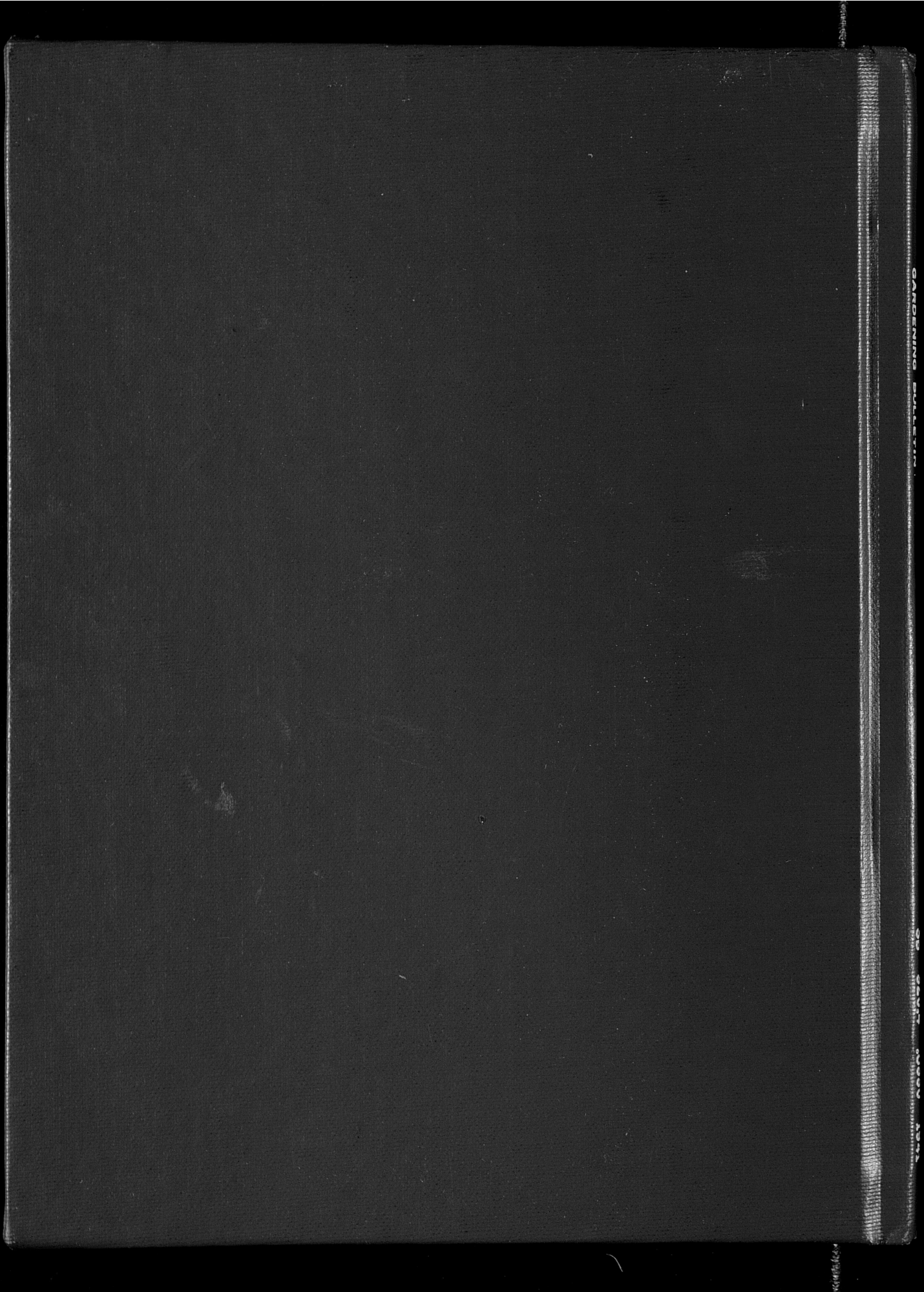
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