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Opportunities for Better Family Living Through Planning Your Food Supply

Extension Service State College

TENSION CIRCULAR 390

MARCH,

OPPORTUNITIES

for Better Family Living through

PLANNING YOUR FOOD SUPPLY

The Resources of Your Own Farm Will Help You Live Better for Less Money. Put Them to Work for You.

This Circular is One of the "Opportunities for Better Family Living" series.

The Complete Series Includes:

Conserving Your Health
Planning Your Food Supply
Economizing on Your Clothing
Improving Your Home Conditions
Improving Farm and Home Business

EXTENSION SERVICE
SOUTH DAKOTA STATE COLLEGE

Foreword

An acre or two of land for a vegetable garden; facilities for freezing, storing, canning fruits, vegetables and meats; a flock of chickens for poultry and eggs; cows for milk, cream, butter and cheese; a home produced meat and fat supply for shortening and soap making; home raised cereals for breakfast foods and home baked bread and rolls; are good farm practices at all times and during the present emergency are the "home lines of defense."—NORA M. HOTT, *State Home Demonstration Leader.*

It is going to cost farm families more to live in 1941. Products from South Dakota farms are expected to bring higher prices; however, these prices may not offset the higher cost of living. To increase the amount of the family living secured from the farm is a practical means for a farm family to meet such a situation. A good garden for fresh vegetables, canning and storage can save the family $150.00 to $200.00 in cash expenditures. Proper care and management of a farm poultry flock and a few good cows along with canning, curing and processing of farm meats will further reduce cash farm living costs and insure a more adequate diet.

Extension Service specialists have filled this circular with suggestions that will assist any family in living better for less cash.—LOUIS I. THOMPSON, *Assistant Director in Charge of County Extension Agents*

This is the first of a series of five circulars issued by the extension service on the "Opportunities for Better Family Living" program. Circulars are as follows:

Planning Your Food Supply
Conserving Your Health
Improving Your Home Conditions
Economizing on Your Clothing
Planning Farm and Home Business

Table of Contents

Planning Your Family's Food Supply

The purpose of this circular is to:

Show the value of home produced foods and indicate the kind of diet that will keep a family in health. Suggestions are given on the production methods and other practices that will provide the family with a good food supply. If further information is needed than found in this circular, references are given in order that the reader may know where to secure this additional information.

Farm families are entitled to:

A comfortable and pleasant home and enough of the right kind of food to keep them well. Most of this food can be grown on the farm. They are also entitled to sufficient additional income to provide educational privileges for themselves and their children and to be able to dress in good taste. A farm family is also entitled to some assurance of security.

A well-planned program of home production:

Assures the family of an excellent food supply and reduces the cash outlay for food. This in turn releases cash for the purchase of other things. A home production program, therefore, makes a higher standard of living possible.

The value of home produced products:

Is greater than is usually realized. The value of the home produced food amounts to about $175. Having to pay $175 less in cash for food each year, means that it will be available for other family needs such as better clothes, home conveniences, high school and college education for the children, vacation trips now and then, more participation in community and church affairs and savings accounts.

Eat the Right Foods

Food Budget Planning

I. The right food will:

1. Build and repair your body.
2. Keep it in good running order.
3. Supply energy for work and play.
4. Help prolong your life.

Since the right food is a basis for good health you will wish to start your family food planning by comparing the food your family eats with the moderate-cost good diet. To do this:

1. Figure out the total amount of each food group actually consumed in a week by your family.
2. Figure out also for a week the total amount of each food group which your family would eat according to Table I.
3. Compare each food group of 1 and 2 and write down your findings: Example: My family uses 10 qts. of milk (more or less—same amount?) than moderate-cost good diet indicates.
4. Lastly write down how you plan to improve your family's diet.

II. To figure out the total amount of each food group actually consumed in a week by your family in order to compare it with the moderate-cost good diet do the following: (If you know the exact amounts, use them instead).

1. **Dairy Products:**
   Consider 1 lb. of cheese as equivalent to 1 gal. of milk and add this to the total milk supply.
2. **Butter; other fats:**
   Include cream as butterfat, estimating that 1 qt. of 40 percent cream is 1 lb. of butterfat.
   Other fat—include bacon, lard, chicken fat, tallow if eaten and purchased fat. Separate fat from dressed weight of carcasses and add it here.
3. **Lean meat, poultry and fish:**
   Write down the total number of pounds of meat used in a year. Include beef, veal, pork, lamb, poultry, fish, and divide by 52 for the average amount consumed weekly.
   These foods are adequate proteins. One can be substituted for another to a certain extent.
4. **Eggs:**
   Include those used in cooking as well as those served at meals.
5. **Fruits and vegetables:**
   a. Figure 3 oranges, potatoes, carrots, turnips, bananas, 1 grapefruit, 1 head celery, 1 pt. canned fruit, vegetable or meat as weighing a pound each.
   b. 1 lb. of fresh fruit—3 servings.
   c. 1 lb. root vegetables—3 servings.
   d. 1 qt. canned vegetables—8 servings.
   e. 1 qt. canned fruit—6 servings.
   f. Consider tomatoes as vegetable or fruit.
   g. Substitute stored for canned vegetables or the reverse.
   h. Consider juices as fruit or vegetable.
   i. Include pickles and relishes only as condiments. They add to the palatability of food. They are an extra budget item.
6. **Flour and cereals:**
   Include every cereal, white and dark flour, cornmeal, breakfast foods, macaroni, rice and baked goods when purchased.

7. **Sugar and other sweets:**
   Estimate that 1 pt. or 1½ lbs. of molasses, honey or preserves equal to 1 lb. sugar.

III. Figure out also for a week the total amount of each food group which your family would eat according to Table I.

1. Check your family food needs on Table I.
2. Multiply the amounts of food listed for each member by the number in that age group.
3. Include food needs for hired help with that of the family.
4. Estimate the number of visitors and number of meals served them.
5. Count children for the time they are at home for meals including school lunch.
6. Add up finally the total amount for everyone by each food group and the result will be the total amount of food for the time for your household.

Table 1.—A Moderate-Cost Good Diet

Family Members	Kinds and Quantities of Foods for a Year											
	Milk	Butter	Other fats	Lean meat, poultry, fish	Eggs	Mature dry legumes, nuts	Tomatoes, citrus fruits	Leafy, green, yellow vegetables	Other vegetables, fruits	Potatoes, sweet potatoes	Flour, cereals	Sugar
	Qts.	*Lbs.*	*Lbs.*	*Lbs.*	*Doz.*	*Lbs.*	*Lbs.*	*Lbs.*	*Lbs.*	*Lbs.*	*Lbs.*	*Lbs.*
Children under 2 yrs.	260	7	—	—	18	—	80	80	—	50	40	3
Children 2 to 3 yrs.	365	10	—	20	26	—	80	130	100	90	65	7
Boys:												
4 to 6 yrs.	365	15	—	40	30	3	80	130	135	100	80	15
7 to 8 yrs.	365	25	—	80	30	7	80	180	180	100	100	25
9 to 10 yrs.	365	25	15	100	30	7	90	200	240	120	130	40
11 to 12 yrs.	365	25	15	130	26	7	90	200	280	130	130	40
13 to 15 yrs.	365	25	25	140	26	15	100	160	365	160	170	50
16 to 19 yrs.	365	25	55	160	22	15	100	160	410	220	200	80
Girls:												
4 to 7 yrs.	365	15	—	40	30	3	80	130	135	100	80	15
8 to 10 yrs.	365	25	—	80	30	7	80	180	180	100	100	25
11 to 13 yrs.	365	25	15	100	30	7	90	200	240	120	130	40
14 to 19 yrs.	365	25	15	130	26	7	90	200	280	130	130	40
Men 20 yrs. and over:												
Very active	180	25	75	200	22	15	100	160	390	300	300	100
Moderately active	180	25	40	160	22	10	100	160	330	160	180	65
Sedentary	260	25	15	130	26	7	90	180	210	130	120	40
Women 20 yrs. and over:												
Very active	180	25	40	160	26	15	100	210	365	160	170	65
Moderately active	180	25	25	130	26	7	90	210	280	130	140	50
Sedentary	260	25	15	130	26	7	90	180	210	90	80	40
In pregnancy	365	25	15	130	30	7	90	250	325	130	130	40
In lactation	365	25	40	130	30	7	100	250	380	160	160	50

From *Food and Life*, Yearbook of Agriculture, 1939, U. S. Department of Agriculture, pages 338-39.
Monthly total (divide family total by 12)
Weekly total (divide family total by 52)

The moderate-cost good diet gives a daily balance of nutrients from the groups considered important in family food planning and should be followed whenever possible. It allows daily:

1. **Dairy Products**
   Milk
   (1) Amount needed—growing child needs ¾ to 1 qt.
   Expectant or nursing mothers—1 qt.
   Other family members—1 pt. or more.
   (2) Kinds—whole, skim, dry, canned, evaporated and buttermilk; cheese, cottage or other.
2. **Butter**—at least a serving daily; use other fats also.
3. **Lean meat, poultry, or fish**—1 or more servings.
4. **Eggs**—3 or 4 eggs a person per week; few in cooking. If family can afford to use more eggs it is advisable to do so.
5. **Dried peas, or beans** used sometimes as the main dish instead of meat.
6. **Tomatoes, oranges, grapefruit, raw cabbage, turnips**—1 serving.
7. **Leafy, green or yellow vegetables**—1 serving.
8. **Other fruits and vegetables**—1 serving.
9. **Potatoes, sweet potatoes**—1 serving.
10. **Cereals**—cereal dish daily; bread every meal.

Canning Fruits, Vegetables and Meats

Home Canning Will:

1. Save food that might otherwise go to waste.
2. Cut the cost of the entire food bill.
3. Give a good return for home labor.
4. Give greater variety to the diet.
5. Save time since it is ready to eat on short notice.
6. Release money to use for other family and home needs.

To Can Fruits:

For all canning wash containers, rubbers, and tops in hot soapy water and rinse in hot water.

1. Make sirup, thin, medium, or thick, depending upon sourness of fruit.
2. Select only high quality fruit.
3. Prepare fruit as for serving.
4. Precook certain fruits in boiling sirup in order to shrink them—apples, peaches (after peeling), apricots, pears, pineapple, plums, rhubarb.
5. Fill jars with hot fruit and cover with boiling sirup.
6. Pack most berries raw and cover with hot sirup.
7. Seal if boiling hot, otherwise partially seal.
8. Process in hot water bath according to time table.
9. Seal, cool in upright position and store.

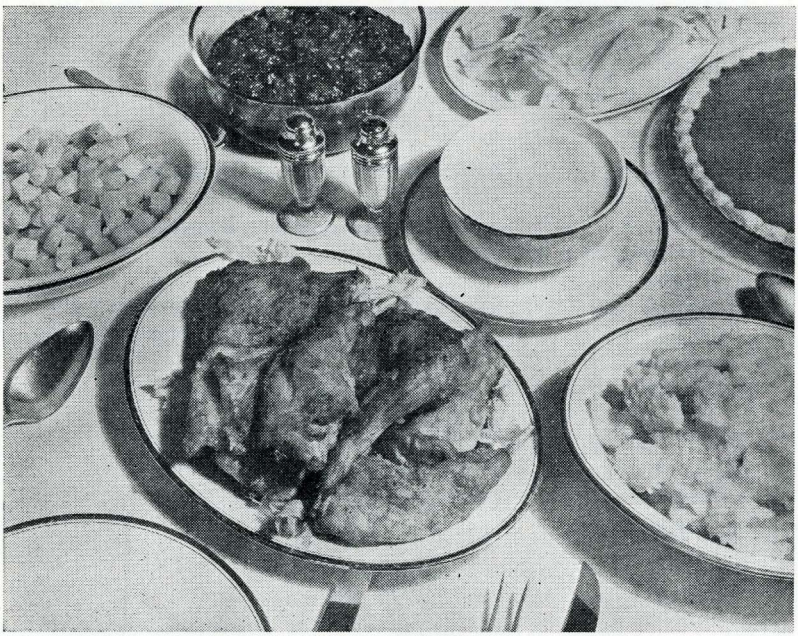
To Can Non-Acid Vegetables:

1. Select only high quality vegetables.
2. Prepare as for cooking and cut into desired pieces.
3. Add boiling water, simmer by time table to shrink and heat vegetable.

4. Pack in jar (pack starchy vegetables loosely); add ½ teaspoon salt per pt., boiling water to cover.
5. Seal if boiling hot, otherwise seal after processing.
6. Process only in the steam pressure canner by time table.
7. Seal if not previously sealed. Check seal at least.
8. Cool in upright position and store in dry place.

To Can Meats:

1. Can only meat of excellent quality, slaughtered and handled in sanitary manner and properly chilled.
2. Cut meat into serving pieces; precook in oven or in water until the red color disappears and the meat is hot through. Do not fry since meat is likely to be hard, dry and off flavor.
3. Pack meat hot in jars, pressing it down closely.
4. Cover with strained boiling hot broth, 1 teaspoon salt to 1 qt.
5. Use 5 tablespoons of granulated gelatin moistened in cold water to a qt. of hot broth if desired.
6. Can the meat alone—greater variety in serving.
7. Leave proper headspace (1 inch).
8. Seal if contents boiling hot, otherwise after processing.
9. Process meat in steam pressure canner, only, by time table.
10. Seal if not previously sealed; examine the seal.
11. Cool in upright position.
12. Label and store in cool, dry place.



A Balanced Meal—All Produced on One South Dakota Farm

Table 2.—Time Table for Processing Fruits, Vegetables and Meats

FRUITS—Water Bath 212° F.	Pts.	Qts.		VEGETABLES—Steam Pressure Canner—10 lbs. pressure. Glass Jars	Pts.	Qts.		MEATS—Steam Pressure Canner—15 lbs. Pressure. Glass Jars	Pts.	Qts.
	Pack raw; Cover with hot sirup	Precook; Pack Hot	Pack at 160°-170° F. Process 180° F.	Pack Boiling Hot				Precook-Pack Boilng Hot		
Apples		15		Asparagus	30	35		Beef	90	120
Apricots	25	15		Beans—				Chicken—		
Beets, pickled		30		fresh lima	50	55		with bone	65	75
Berries	20	5		snap	30	35		boned	85	120
Cherries	25	5		dried	80	90		Lamb, mutton	85	120
Currants		5		Beets, Baby	30	35		Liver paste	90	
Gooseberries	20	5		Carrots	30	35		Pork	90	120
Peaches	25	15		Corn—				Soup	40	45
Pears		20		Whole Kernel	60	70		Veal	85	120
Pimentos		40		Cream			75			
Pineapple	30			Greens			60			
Plums	20	5		Mushrooms	25	35				
Rhubarb		5		Peas	45					
Sauerkraut		30		Pumpkin			60			
Strawberries	45	5		Squash			60			
Tomatoes	45	5		Sweet						
Tomato Juice		none		Potatoes	95	120				
Fruit Juice			20	Vegetable Soup	60	70				

Numbers indicate minutes for processing in glass jars.

Freezer Locker Storage

Freezer Locker Storage of Fruits:

1. Select quality fruit of varieties recommended for freezing.
2. Prepare fruit as for cooking.
3. Pack fruits in sirup or dry-sugar—apricots and peaches sirup only.
4. Sirup pack: Use sirup of 15½ cups sugar to 1 gal. water.
5. Dissolve sugar in cold or hot water. Do not cook.
6. Cover fruit with cool sirup. No ice.
7. Dry sugar pack: 1 lb. of sugar to 3 or 4 lbs. fruit.
8. Sift sugar evenly throughout the fruit.
9. Pack the fruit only in recommended containers.
10. Seal container leaving headspace of 1½ inches.
11. Keep the fruit cool until delivered to locker plant.

Table 3.—Canning and Storage Budget*

(Plan for 42 Nonproducing Weeks)

	Average per One Adult		My Family	
VEGETABLES	**Canned**	**Stored**	**Canned**	**Stored**
Beans	8 qts.	12 lbs. dried		
Beets	4 qts.	10 lbs.		
Cabbage	6 qts. kraut	30 lbs.		
Carrots	6 qts.	16 lbs.		
Corn	6 qts.	2 lbs. dried		
Greens	9 qts.	-------		
Onions	-------	11 lbs.		
Parsnips and turnips	-------	20 lbs.		
Peas	10 qts.	-------		
Potatoes	-------	165 lbs.		
Pumpkin	-------	10 lbs.		
Squash	-------	10 lbs.		
Tomatoes	25 qts.	-------		
FRUITS				
Apples	20 qts.	1 bu.		
Berries	7 qts.			
Cherries	3 qts.			
Peaches	6 qts.			
Pears	3 qts.			
Plums	3 qts.			
Rhubarb	2 qts.			
Juices	6 qts.			

* From "Using Home Resources"—Nebraska Extension.

Basis For Figuring Family Budget

Boy 14-17 yr. ..... ⅓ more than adult budget
Girl 13-17 yr. ..... Same as adult budget
Child 8-12 yr. ..... ⅔ of adult budget
Child 4-7 yr. ..... ½ of adult budget (minus corn, onion, cabbage)
Child under 4 yr. ..... ⅓ of adult budget (minus corn, onion, cabbage)

12. Deliver prepared fruit to the locker plant quickly.
13. Freeze at 0^0 F. or below. Store at 0^0 F.
14. Blueberries, cherries (red), currants (red), raspberries, strawberries and rhubarb are packed in sirup or dry sugar pack.

Freezer Locker Storage of Vegetables:

1. Select only varieties recommended for freezing.
2. Prepare vegetable as for cooking.
3. Blanch vegetables by time table—corn blanched only in steam. Table 3.
4. Cool vegetables rapidly in cold water.
5. Use dry or brine pack for vegetables.
6. Dry pack: Fill containers with prepared vegetables.
7. Leave headspace—1½ inches.
8. Seal container.
9. Brine pack: Prepare 2% salt solution—1 t. of salt to 1 qt. of cold water. Do not add ice.

10. Cover vegetables with brine leaving headspace.
11. Keep prepared vegetables cool.
12. Deliver vegetables very shortly after prepartion to freezer locker plant.
13. Freeze at 0^0 F. or below. Store at 0^0 F.

Table 4

Vegetables	Scalding	Packing
Asparagus and beans, green	2 to 3 minutes in steam. Cool in water	2% brine or dry pack
Beans, lima and peas	1½ to 2½ minutes in steam or hot water. Cool in water.	2% brine or dry pack
Brussels sprouts and carrots	3 to 5 minutes in steam or boiling water. Cool in water.	2% brine or dry pack
Corn, sweet, whole kernel	2 to 3 minutes in steam. Cool in water. Cut from cob.	2% brine or dry pack
Greens	1 to 2 minutes steam. Cool in water.	2% brine or dry pack

Cutting Food Costs at Home

Home Production

1. Raise a garden, vegetables and fruits.
2. Raise poultry and produce eggs.
3. Produce, butcher and cure meats.
4. Produce sufficient milk, cream and butter for family needs.
5. Make surplus milk into cheese, especially cottage cheese.
6. Make bread and pastries.

Making Your Own Bread Will Pay You Good Wages

7. Produce grains and exchange some for flour and cereals.
8. Prepare ready-to-eat cereals.

Home Preservation

1. Preserve eggs when least expensive.
2. Process meats and non-acid vegetables in steam pressure canner.
3. Process acid fruits in boiling water bath.
4. Make jellies, jams and pickles.
5. Store root vegetables by approved methods.
6. Use freezer locker storage for certain fruits, vegetables, meats.

Use Good Meal Planning Practices

1. Know food values and how to use them.
2. Plan meals ahead of time.
3. Prepare low-cost meals and serve them attractively.
4. Utilize leftovers in attractive dishes.
5. File tested recipes.
6. Make a picture scrapbook of attractive foods.

Use Good Buying Practices

1. Buy only pasteurized milk and cream.
2. Buy day old bakery products.
3. Buy cracked wheat at flour mill, inexpensive cereal.
4. Buy unroasted wheat germ for breakfast cereal.
5. Buy fresh and canned foods in season.
6. Buy in large quantity, depending upon storage.
7. Buy bulk foods if clean and will keep.
8. Check grade of product with price.
9. Buy gallon water packs and recan.
10. Buy from producer.
11. Study labels in comparison with contents.
12. Buy on a basis of adequate budgeted needs.
13. Check weights and cost with cost-weight table.
14. Recheck grocery bills for correct weight and cost.
15. Buy when foods are at the lowest price.
16. Compare cost and quality of food bargains.
17. Substitute inexpensive foods for expensive foods—when approximately of the same food value.

Food Preparation

1. Use the protective foods, milk, eggs, fruits and vegetables generously.
2. Add variety by using the staple foods in different ways—onions, cabbage, potatoes, lard, canned and cured meat.
3. Prepare leftovers in different ways.
4. Prepare foods only in amounts that will be eaten.
5. Extend the flavor of protein foods with cereals.
6. Learn new ways to serve low-cost foods.
7. Prepare the vital organs of animals in palatable dishes.
8. Serve whole grain, cornmeal, rice, oatmeal as new cereals, breads and desserts.

Reduce Cooking Costs

1. Use a steam pressure cooker wherever possible.
2. Use correct time and temperature in cooking.
3. Cook food in large quantity when it can be served attractively over a period of several days.
4. Serve one dish and oven meals to save time.
5. Cook a number of foods at the same time.
6. Cook foods correctly to save food value and make them more palatable.

Consult your Agricultural or Home Extension Agent or write:

SUZAN Z. WILDER, *Extension Nutritionist* for:

REFERENCES

F. B. No. 1762—Canning Fruits, Vegetables and Meats
Freezer Locker Storage of Fruits and Vegetables

A Satisfactory Garden by Simple Rules

I. A Garden Pays Because:

1. Per acre returns are higher than for other crops.
2. Transportation costs and dealers' profits are saved.
3. Family income may be increased $75 or more.
4. More nutritious products can be served the family.

II. Essential Factors of a Successful Garden Are:

1. Carefully selected site.
2. Provision for adequate moisture.
3. A suitable plan.
4. Climatically adapted varieties.
5. Timely and suitable culture.

III. Moisture and Site Should Decide the Garden Spot:

A. **Choose a warm and sunny site protected from winds,** preferably sandy loam soil, two or three times the area needed for vegetables to permit crop rotation and soil sanitation.

B. **Increase** available soil moisture by:

1. Adding finely pulverized, well-rotted manure, or other fertilizers.
2. Collecting snow on garden with windbreak, snowfence or snowdrifts.
3. Catching runoff with contour ditches or terraces.
4. Diverting snow or rain water from runoff to planting site.
5. Irrigating from small dam, stream or well.

C. **Conserve soil moisture** by:

1. Windbreaks of sunflowers, hedges, trees or other obstructions.
2. Weed eradication.
3. Surface mulch of loose soil or other material renewed whenever soil is packed by rains or irrigation. Good crops of tomatoes and potatoes are produced with minimum water by mulching moist soil with 4 to 12 inches of straw.
4. Prevention of any runoff by terracing.

IV. The Garden Plan Should Provide For:

1. A rotation of crops to combat insect and disease infestations, and aid in keeping the soil clean and fertile.
2. An arrangement of plantings, allowing maximum protection, moisture conservation and production.

A. **Two Garden Rotations:**

1. With ample ground:
   a. seed sweet clover with thin nurse crop—tall stubble left to catch snow.
   b. manured and plowed deeply June 1 to 20; clean fallow.
   c. potatoes, sweet corn and other garden crops.
2. In limited space:
   a. manured and plowed in early June; clean summer fallow.
   b. vegetables and sweet corn; crop residues removed; manured and plowed early.
   c. potatoes; sweet clover seeded with last cultivation; plowed for summer fallow next June.

B. **The Planting Arrangement:**

1. Locate windbreaks where they will:
   a. collect snow on the garden area.
   b. Keep out hot winds, prevent evaporation and erosion.
2. Alternate strips of corn with potatoes, tomatoes and shorter crops to protect, not shade them.
3. Plant pumpkins, squash, cucumbers in low places in corn.
4. Plan garden on paper, locating on high side of area the more drought resistant perennials—rhubarb, asparagus and multiplier onions; biennials—carrots, turnips, parsnips—space for horse cultivation if irrigation impossible.
5. Keep hot beds or cold frames in use to mature early vegetables.

C. **Select vegetable varieties to meet family budget needs:**

1. Select seed that matures under South Dakota conditions.
2. Buy right quantity of seed. Know approximately planting date and expected yield.
3. Select certified seed potatoes such as Bliss Triumphs, Early Ohios, or Irish cobblers, preferably 2 kinds.
4. Keep right insecticides on hand to insure a potato crop.

Table 5.—Vegetable Varieties, Amount and Time of Planting For A Family of Five

Kind	Amount of Seed	Approximate Planting Date	Lineal Foot Row	Expected Yield & Amt. Req. Yrly. For Family of 5
Bean	4 lb.	May 10	400 ft.	200 lbs.
Beet	3 oz.	May 1	200 ft.	125 lbs.
Cabbage (early)	1 pkt.*	May 10	100 ft.	80 lbs.
Cabbage (late)	½ oz.†	May 10	200 ft.	100 lbs.
Carrot	1 oz.	May 1	125 ft.	150 lbs.
Cucumber	½ oz.	May 20	100 ft.	100 lbs.
Lettuce	½ oz.	April 15	100 ft.	25 lbs.
Onion	¼ lb.	April 15	200 ft.	125 lbs.
Parsnips	½ oz.	May 1	100 ft.	90 lbs.
Peas	2 lbs.	April 15	200 ft.	75 lbs. in pods
Pepper	1 pkt.	May 20	50 ft.	3 doz.
Pop Corn	½ lb.	May 10	200 ft.	20 doz.
Pumpkin	1 oz.	May 20	100 ft.	125 lbs.
Radish	1 oz.	April 15	100 ft.	60-70 bunches
Rutabaga	1 oz.	April 15	200 ft.	50 lbs.
Spinach	½ oz.	May 1	50 ft.	25 lbs.
Squash	1 oz.	May 20	100 ft.	80 fruits
Sweet Corn	3 lbs.	May 15 to June 20	1200 ft.	40 doz.
Swiss Chard	1 oz.	April 15	50 ft.	70 lbs.
Tomato	2 pkt.†	May 20	400 ft.	8 bu.
Turnip	½ oz.	April 15 August 1	100 ft.	50 lbs.
Potato	2 bu.	April 15	1400 ft.	14 bu.

NOTES

1. String beans, corn, lettuce, peas, and radishes are planted in successive plantings 10 days or two weeks apart to insure fresh vegetables.
2. The number of feet may be modified to family needs.
3. Rows should be far enough apart to allow horse cultivation in the country.

* or 50 plants.
† or 100 plants.

Table 6.—Vegetable Varieties For South Dakota

(Named in order of their preference for growing at home)

Asparagus—Mary Washington, Palmetto

Beans, Bush, Dry Shell—Navy, Great Northern, Red Kidney
Beans, Bush, Green Pod—Stringless Green Pod, Stringless Black Valentine, Bountiful, Tendergreen, Giant Stringless Green Pod
Beans, Bush, Wax Pod—Improved Golden Wax, Wonder Wax, Pencil Pod Black Wax
Beans, Bush, Lima—Henderson Bush, Burpee Bush, Fordhook
Beans, Pole, Dry Shell—Horticultural
Beans, Pole, Green Pod—Kentucky Wonder, Oregon Swiss Giant
Beans, Pole, Wax Pod—Golden Cluster Wax, Kentucky Wonder Wax
Beans, Pole, Lima—Burpee's Best
Beets—Detroit Dark Red, Crosby's Egyptian, Good for All, Improved Blood, Ohio, Canner

Cabbage, Early—Jersey Queen, Marion Market, Golden Acre
Cabbage, Late—Wisconsin Hollander, Wisconsin Ballhead, Red Hollander
Carrots—Chantenay, Danver's Half-long, Imperator, Red Cored Chantenay, Tendersweet
Cauliflower—Snowball, Dry Weather

Corn, Sweet—Golden Cross Bantam, Marcross, Spancross, Early June
Corn, Pop—Japanese Hulless, South American Mammoth, Black Beauty, White Rice
Cucumbers, Slicing—Arlington White Spine, Straight 8, Davis Perfect, Longfellows
Cucumbers, Pickling—Chicago Pickling, Early Russian, Early Cluster National Pickling

Eggplant—Extra Early Dwarf, Black Beauty, Early Dwarf Purple, Blackie
Endive—Green Curled, Broad Leaved Batavian

Kale—Dwarf Green Curled, Dwarf Curled Scotch
Kohlrabi—Early White Vienna

Lettuce Leaf—COS, Grand Rapids, Black Seeded Simpson
Lettuce, Head—Iceberg, Big Boston, Hanson, Stonehead Riveria

Muskmelon—Hearts of Gold, Early Zephyr, Hale's Best, Honey Rock, Benders Surprise, Chipman's Lake Champlain

Onion, Red—Red Globe, Wetherfield
Onion, Yellow—Sweet Spanish, Prizetaker, Early Red Flat, Mountain Danvers
Onion, White—White Globe, Silverskin

Parsley—Moss Curled, Curled Dwarf
Parsnips—Hollow Crown, Guernsey
Peas, Early—Alaska, Gilbo, Little Marvel, Thomas Laxton, Glacier
Peas, Main Crop—Alderman, Telephone, Hundredfold, Lincoln, Potlatch
Peppers, Sweet—Ruby King, Early Giant, Sunnybrook, Winsor A, Harris Earliest
Peppers, Hot—Red Cayenne
Potato, Certified Seed—Warba, Early Ohio, Bliss Triumph, Irish Cobbler, Katahdin
Pumpkins—Cheyenne, Small Sugar, Big Tom, Orange Winter Luxury

Radish—New Comet, Crimson Giant, White Icicle, French Breakfast, Scarlet Globe
Radish, Winter—Chinese Rose, White Strasburg, Black Spanish
Rhubarb—Ruby, McDonald, Victoria

Salsify—Sandwich Island
Spinach, Early—Long Standing Bloomsdale, King of Denmark, Julian, Nobel
Spinach, Summer—New Zealand
Squash, Summer—Giant Summer Crookneck, Straightneck, Early White Bush
Squash, Winter—Buttercup, Banquet, Hubbard, Des Moines (Table Queen), Delicious
Swiss Chard—Lucullus

Tomatoes, Early—Penn State, Victor, Allred, Red Heart, Red Skin, Break O'Day
Tomatoes, Midseason—John Baer, Bonny Best, Red Head, Red Bird, Red River
Tomatoes, Late—Stokesdale, New Globe, Marglobe, Grothen's Globe
Turnips—Purple Top White Globe, Purple Top Strap Leaf, Extra Early Purple Top Milan

Watermelon—Dixie Queen, Early Kansan, Kleckley Sweet, Northern Sweet

V. Cultural Pratices:

A. Soil Preparation

1. Avoid spring plowing, delays early planting, seriously depletes soil moisture. Clean summer fallowing or fall plowing, collection of snow drifts on planting site, is usually best. Spring plowing must be followed closely by packing to prevent loss of soil moisture.
2. Prepare fine-textured surface with subsurface soil well-packed for small seeded vegetables to bring moisture to surface and permit germination.
3. Apply stable manure, well-rotted, not to exceed eight tons per acre before summer fallowing or fall plowing. In spring tillage, if finely

spread, it may be used as mulch and worked in with surface cultivation.

4. Kill the weed crop before seeding to save hand labor weeding, and delay seeding of the early vegetables.

B. **Planting and Care Requires Timeliness**

1. Use hotbeds for early vegetables—tomatoes, cabbage, and long season plants.
2. Plant frost-hardy vegetables—peas, spinach, onions or quick maturing crops, to use early spring moisture.
3. Plant quick-maturing crops—radishes, lettuce, carrots, beets, turnips —in spring or late summer if moisture is available.
4. Cultivate soon after heavy rains or irrigation, to break surface crust, prevent soil cracking and loss of moisture.
5. Remove or kill weeds before they use moisture.

VI. Raise a Home Fruit Garden:

Native and hardy introduced fruit-bearing shrubs such as golden flowering and black currants, chokecherry, wild plum, sandcherry, Juneberry, Buffaloberry, western elderberry, American (or Hibush) cranberry and certain introduced varieties such as Ural Mt. Cherry, Manchurian apricot and Siberian crab make excellent garden hedges and supply fruit as well.

VII. Use a Windbreak for Greater Comfort and Beauty

A. An efficient farmstead windbreak increases the net family income because, if well planned it—

1. Increases and conserves soil moisture of garden and orchard.
2. Cuts fuel requirements and saves livestock feed.
3. Collects snow and controls drifting.
4. Increases human and livestock comfort and satisfaction.

VIII. Beautify Home Grounds:

Arrange trees, shrubs, and flowers in groups, hedges and mass plantings in the background, along the borders of the yard, and to screen off unsightly views.

IX. Why Not Irrigate?

Enough good water may be running to waste to save your garden, your orchard, and windbreak.

A. **Irrigate the garden in order to:**

1. Hasten and increase the percentage of germination.
2. Assure a better stand of transplanted plants.
3. Carry the plants through periods of drought.
4. Insure the continuous growth of the plants.
5. Make possible intensive cropping.
6. Hasten maturity of the plants.
7. Increase yields.
8. Prevent injury sometimes from light frosts. (Plants standing in dry

soil suffer frost damage more quickly than those in wet soil.)
9. Improve condition of soil for seedbed preparation.

Controlling factors in successful garden irrigation are: an adequate supply of water and correct application of water.

B. **Develop a supply of water for irrigation by:**
1. Collecting runoff water and directing it over garden area, or holding it in furrows, ditches or terraces, until absorption by soil.
2. Storing flood waters by dams and catch basins, siphoning or pumping water to site as needed.
3. Diverting water from natural streams.
4. Pumping from surface or deep wells, if not too salty or alkaline.

C. Plan your Irrigation System—use subirrigated ground below dams, if available. Water a small garden with porous canvas hose.

Under most farm conditions the following applies:
1. Arrange rows on the level or contour of gradual uniform slope for even distribution of water.
2. Restrict the fall to a uniform grade between 3 and 12 inches per 100 feet to prevent erosion.
3. Lead or pump water into head ditch along highest part of garden and across ends of rows.
4. Run water in furrows between the rows.
5. Widen furrows into broad terraces bounded by decided ridges or dikes to prevent runoff, in irrigating orchard or windbreak.
6. Secure a portable pump, reasonably priced to raise water from wells, reservoirs, or stream lower than garden site.

D. **Be Systematic in Irrigation:**
1. Soak the ground before planting to assure seed germination. Use snow water if no other is available.
2. Water often to keep plants growing continuously.
3. Water when the plants show signs of wilting.
4. Water shallow rooted plants more often than deep rooted plants.
5. Use one fourth inch of water for small vegetables; one half inch to one inch for larger and maturing vegetables; apply small amount of water slowly and in close proximity to the plant.
6. Water in late afternoon, evening or early morning to conserve moisture.
7. Wet the soil down six or seven inches after the plants have started to make good growth.
8. Water once or twice a week during dry periods. A loam that balls has enough moisture for most crops.

E. **Irrigate the Fruit Garden:**
1. Water strawberries and raspberries until after ripening season. Shortage of moisture will cause berries to dry up.
2. Water other bush or tree fruits whenever they show signs of suffering from drought.

3. Irrigate in May or June or July to develop the fruit during the growing season.
4. Wet the soil to a depth of at least 4 or 5 feet at each irrigation.
5. Make a third irrigation in dry years in late fall when there is no danger of the trees and bushes growing. The object is to prevent drying out and winter killing. A mulch of straw, hay, or well-rotted manure afterward will greatly reduce evaporation.

F. **Use Artesian Water Carefully:**

Deep wells, surface and lake waters may contain alkali salts that may injure plants. Therefore watering must be done with caution. Actual test can not always determine whether certain water is satisfactory for irrigation.

Very often water with undesirable salts can be used for a time without serious injury to garden plants. After years of application the accumulation of mineral salts ruins the soil for crop production. Therefore, substitute rain or snow water for mineralized water whenever possible. Further sweeten the soil by thoroughly incorporating heavy applications of green barnyard manure.

Consult your Agricultural or Home Extension Agent or write:

FRANK I. ROCKWELL, *Extension Forester and Horticulturist,* for:

REFERENCES

Mim. Cir. 216—Storage of Fruits and Vegetables for South Dakota.
Ext. Cir. 372—Planning and Growing the Family Food Supply.
Ext. Cir. 366—Irrigating a One-Acre Garden.
F. B. 1522—The Home Fruit Garden on the Northern Great Plains.

This Home Irrigation System Enabled this McPherson County Farmer to Produce All the Vegetables his Family Needed and Left Some Over to Sell

It Pays to Raise the Family's Potato Supply

The potato supply problem is an important one in South Dakota. Farmers not in the commerical potato producing area must decide whether or not they shall raise potatoes for the family's food supply or import them by truck or rail. (Transportation costs are relatively high because potatoes are heavy and bulky.)

Potato culture is an exacting job and unless the producer is willing to carry out all the essential steps in successful potato raising he had no doubt better buy his potatoes, since his chances of success are very small, indeed.

Drought and heat are large factors and uncontrollably severe weather conditions can, admittedly, become too severe to produce a crop even if every good cultural practice is carried out. Nevertheless, many of the losses which have occurred have resulted from causes which could have been prevented.

The condition known as "running out" is in reality a diseased condition from diseased seed.

Potatoes are very susceptible to many diseases and insect hazards. All these must be controlled by proper methods by the producer. Commerical potato growers recognize this and generally prevent wholesale losses.

The only known way to control Mild Mosaic, Rugose Mosaic, Leaf Roll and Spindle tuber is to use **certified seed,** one of the essential practices. Scab and Rhizoctonia can be largely controlled by seed treatment. Sprays or dusting must generally be used to combat such insects as Colorado beetle, Flea beetle, Green leaf hopper and Blister beetles. Spraying with Bordeaux mixture controls both leafhopper and leaf disease. **Certified seed** can be bought for a reasonable price and the spray and dusting costs are very small.

Therefore, success in potato growing will depend, to a large extent, on, whether or not, the grower rigidly adopts the following program: (not one step can be left out).

1. Select favorable piece of land. (Preferably protected by buildings or other windbreak.)
2. Secure genuine **certified seed** of an adapted variety.
3. Treat seed stock for seed borne diseases.
4. Use approved cultural practices. (Time of planting, depth of planting, spacing, etc.)
5. **Have spray material available and ready for use at proper time.**

Raise Grain Sorghums to Insure Feed for Poultry and Hogs

Prolonged adverse weather conditions in South Dakota have at times been so severe that farmers in large areas have run out of corn or small grain con-

centrates for poultry and hogs, thereby forcing sales sometimes even of valuable breeding stock.

It has now proven that grain sorghums will produce considerable grain when drought, heat and grasshopers are too severe for corn and small grain production.

Therefore, many farmers have adopted the practice of planting a sufficient acreage of the earliest, hardiest grain sorghums for feed security.

Consult your Agricultural or Home Extension Agent or write:

U. J. NORGAARD, *Extension Agronomist,* for:

REFERENCES

F. B. 1332—Seed Potatoes and How to Produce Them.
F. B. 1367—Control of Potato Tuber Disease.
F. B. 1064—Production of Late or Main Crop Potatoes.
SDES-N-81—Sorghum Production in South Dakota.
Exp. Sta. Bul. 285—Sorghums for Forage and Grain in South Dakota.

Control Insects and Save the Garden

Insect pests and rodents seriously compete with the farmer in food production and storage. Insects cause an average annual loss of 10 percent to the grower. These nation-wide averages do not show regional outbreaks which have wiped out the entire production of an area.

General good management and adoption of preventative practices will reduce losses through rodents, insects and plant diseases. Producers will make a substantial contribution toward their self-sustenance, state and federal relief problems.

I. Garden Insects

1. Starve insects in late summer and early fall.
   Fewer insects will be noted the next summer if stalks and leaves are removed and burned immediately after crop harvest.
2. Till the garden in spring and fall.
   Fall tillage causes a high death rate of insects hibernating in the soil. Spring tillage destroys weeds, the early spring food of some garden insects.
3. Destroy weeds.
   Weed control is essential in controlling garden insects. Some major garden pests start on weeds, migrate to gardens and feed on weeds again during the fall.
4. Spray or dust thoroughly with the right insecticide at the proper time with proper equipment.

II. Potato Insects

Spray according to schedule.

Start when potatoes are six to eight inches high with a proper combination spray that controls insects and diseases. Spray if necessary every ten days to two weeks.

III. Fruits and Berries

Fruit and berry culture is a paying endeavor in certain localities. Very often these products are wormy or disease blemished. An insect and plant disease program will result in greater abundance of fruit and increase in the family income.

IV. Storage Pests

Have been increasing in the state. Sealed grain, stored household products show at times heavy losses by insects and rodents.

GARDEN CROP PEST CONTROL CHART

Crop	Pest	Description, Injury and Control
General Feeders	Blister Beetles	Elongate, usually gray; gray spotted to black beetles. Feed on potatoes, garden and field legumes, at times beets, onions, and other vegetables. Use barium fluoscilicate 1 part, cheap flour 3 parts; apply as dust. Or pyrocide (stabilized pyrethrum) as directed on container.
	Cutworms	Pale to dark colored worms hiding in soil; feed at night on foliage or by cutting plants at surface. Spread grasshopper bait mixed with molasses on soil around plants or along rows in early evening. Repeat 2 days later if necessary—poison may be spread before plants are up or are transplanted. Paper or tin can collars are often efficient.
	Grasshoppers	Scatter poison bait thinly around garden in early morning. Use no more than 20 lbs. to the acre. Repeat every 4 days. Keep bait on ground since arsenic may burn tender leaves.
	Flea Beetles	Small shiny black or striped beetles with jumping habits. Several species feed on a variety of crops, cutting leaves with fine shot holes. Dust with cube or derris dusts 1% rotenone strength—derris or cube dust may be purchased at usually 4 or 5% rotenone content. Dilute with cheap wheat flour to obtain 1% rotenone strength. (Do not use Lime with derris.)
	Aphids or Plant Lice	Green, black or gray plant lice feed on stalks or underside of leaves. Lice have sucking mouth parts. Spray thoroughly with Nicotine Sulfate (Black Leaf 40) 1½ teaspoons to 1 gallon of soapy water. Pyrethrum extracts; spray according to directions on container. Dust with 3% Nicotine dusts. Made by thoroughly mixing 1 oz. of Nicotine Sulfate to ¾ lbs. of hydrated lime.
Beans and Peas	Redspider	Small mites feed through sucking mouth parts. Webbing usually on under side of leaves. Use 1 oz. of potasium sulphide to 2 gallons of water. Dust with finely ground sulfur dust. (Be sure under side of leaves receive treatment.)

Beets	Aphids	See Beans.
	Flea Beetles	See General Feeders.
Cabbage Cauliflower Etc.	Aphids	See Beans.
	Flea Beetles	See General Feeders.
	Cabbage Maggot	Small white maggots which feed on and tunnel into roots and underground portions of stem. Use 1 or 2. 1—Moisten soil about each plant with ½ cup of Calomel solution (½ oz. Calomel to 5 gallons of water.) 2—Dust ground heavily about each plant with Calomel-hydrated lime dust (2 oz. Calomel to 3 lbs. hydrated lime; Mix thoroughly with flour sifter.
	Cabbage Worms Imported Cabbage Plutella Cabbage Lopper	Dust plants when worms first appear with derris of cube dusts (.75% to 1% rotenone content) Dust plants with activated pyrethrum dusts (Such as Pyrocide etc.) Repeat as necessary.
Carrots	Carrot Beetle	Bettle is a brownish-black oval insect a half inch long with heavy rounded body. Larva or grub whitish usually not injurious. Beetles do damage to variety of crops. Clean garden culture fall and spring. Add rotted manure to hold beetles in check.
Corn (Sweet)	Corn earworm	Greasy green to dark worm that feeds inside husk on developing kernels. Dust green corn silk with mixture of equal parts of lime and lead arsenate. Repeat two to three times. Clip off end of shuck as soon as silk shows first brown.
Cucumbers Melons	Cucumber Beetle	Small yellow and blacked striped beetles eat foliage and stems. Protect plants when small with fine screen of mesh cloth covers. Dust with activated pyrethrum dusts. Derris or cube dusts (1% rotenone) See flea beetles—General Feeders.
Pumpkin Squash	Plant Lice or Aphids	Small green plant lice on underside of leaves sucks sap. Turn over infested vines before leaf curl has taken place. Spray 1½ teaspoons Nicotine sulfate to 1 gallon soapy water. Dust with 3% Nicotine Dusts. See Aphis under Beans.
	Squash Bug	Large brown plant bugs that suck sap from under side of leaves, found under dirt clods near plant in early morning. Examine leaves for conspicuous yellowish to bronze colored eggs—remove and destroy. Trap bugs under burlap or boards placed close to vines. Examine early each morning and destroy. Spray nymphs or young bugs with strong Nicotine (2 teaspoons to 1 gal. soapy water) Does not kill adult bugs.
Onions	Onion Maggot	Small white maggots tunneling in bulb and stems. Apply calomel treatment (See under cabbage) when onions are 1 inch high 2 to 3 times per week.
	Onion thrips	Tiny slender insects feed on leaves of plant causing them to whiten finally to wilt. Usually found at leaf bases where leaves are close together. Nicotine sulfate (½ teaspoons to 1 gal. soapy water) under high pressure to drive solution into leafy Crown. Plant as early as possible. Spade or plow soil and destroy onion tops immediately after harvest.
	Colorado Potato beetle	Large rounded black and yellow striped beetles and red grubs which eat foliage.

	Flea beetle	Small shiny black colored jumping beetles; feed on foliage; Deposit eggs around base of plant. Small white grubs feed on tubers.
	Potato Leaf Hoppers	Small light green to tan colored jumping insects suck sap from underside of leaves. Disseminators of hopper burn disease.
	Potato Aphis	Small pink and green lice suck sap from underside of leaves and on terminal shoot.
	Tip burn	Leaflets first show **V** shaped yellow to brown area at tip, later extends to leaf margins which roll, finally kills leaf—transmitted by potato leaf hoppers.
Potatoes		A regular schedule of pest prevention should be followed. **1.**—Plant certified seed potato—Treat seed potatoes before planting. **2.**—First spray when potatoes are 6 to 8 inches high. Use Bordeaux mixture (6-4-50). Dissolve 6 lbs. limate in 25 gal. water. In wooden container dissolve 4 lbs. copper sulfate. Pour lime solution and copper solution together into spray tank and use immediately. If chewing insects (Colorado potato beetle, and flea beetles) are present add up to one lb. of Paris green to this 50 gallons of Bordeaux mixture. If plant lice are present use Nicotine sulfate at the rate of ½ pint to 50 gallons of Bordeaux mixture. This is a combination spray for potato diseases and insects and to be effective must be timely. **3.**—Repeat every 10 days to two weeks depending upon local requirements. Do a thorough job.
	Potato Psyllid	Jumping plant lice. Found in Western South Dakota. Spray thoroughly with lime sulfate. I gal. liquid lime sulfur or 5 lbs. dry lime sulfur to 40 gallons of water.
Radishes and Turnips	Flea beetles	See General Feeders.
	Cabbage Maggot	See cabbage.
Tomatoes	Tomato	Large green worms feeding on foliage. When on few plants hand pick them and destroy. Large scale control use derris or cube dust (1% rotenone strength as for flea beetles.

Apple Spray Schedule

When and What To Use:

1st or Dormant Spray—apply spray in the spring before the buds open and temperature is **above** freezing.

Use—Liquid Lime Sulphur (33^0 Beaume) 1 gal.
Water 9 gal.

Spray intended for scale insects, mites and over-wintering fungus diseases.

2nd or Petal Fall Spray—applied when 90% of petals have dropped from blossoms.

Use—Liquid Lime Sulphur (33^0 Beaume) 1 gal.
Lead Arsenate 1 lb.
Water 40 gal.

Spray intended for codling moth, leaf chewing caterpillars and certain plant diseases.

3rd or Summer Spray—Spray is ordinarily applied last week in June.

Use—Liquid Lime Sulphur (33° Beaume) 1 gal.
Lead Arsenate 1 lb.
Water 40 gal.

Spray is intended for apple maggots, leaf chewing insects and plant diseases.

When plant lice are present in injurious numbers, Black Leaf 40 may safely be added to the above sprays at the rate of ½ pint to 40 gallons.

General Spraying Program for Plums and Sandcherries

First Spray: Before blossoms open spray with one part Commercial liquid lime sulphur diluted with 9 parts of water. Spray helps to control fungus diseases, scale insects, gall mites and plant lice. If scale insects, gall mites and plant lice were not present the preceding year, this spray may be omitted.

Second Spray: Shortly after the petals fall, spray with 1 part Commercial liquid lime sulphur diluted with 40 parts of water. This helps to control plum pocket and shot hole fungus. To destroy curculio or case-bearing insects, add 1 lb. of lead arsenate powder to each 40 gal. of spray.

Third Spray: In about two weeks repeat the second spray. Spray helps to control brown rot, pocket, scab, shot hole fungus and curculio.

Fourth Spray: If weather rainy and warm, repeat third spray two or four weeks after third spray was applied. Spray helps to control the fungus diseases enumerated above and take care of feeding insects.

1. Clean held-over spots, bins, storage spaces, old sacks.
   a. Use deodorized kerosene pyrethrum fly spray on floors.
   b. After drying dust with ordinary lime.
2. Fumigate with ethylene dichloride-carbon tetrachloride mixture using five to six gallons per 1,000 bushels of seed.
3. Rake over surface of stored grain periodically to allow a parasite to destroy Indian Meal Moth.
4. Rat-proof storage houses, bins and spaces.
5. Cut off food supply, destroy rats, mice by trapping, poisoning, gassing.

Consult your Agricultural or Home Extension Agent or write:

GEORGE I. GILBERTSON, *Extension Entomologist,* for:

REFERENCES

F. B. 1371—"Diseases and Insects of Garden Vegetables."
F. B. 1260—"Stored Grain Pests."
F. B. 1811—"Control of Insects Attacking Grains."
F. B. 1533—"Rat Control."
Miscellaneous Fruit Insects.

Protect the Family's Health With Clean Milk

Milk is the most complete and healthful human food. Home produced milk provides the cheapest source of food nutrients for the family up to at least one quart per day for each child and one pint per day for each adult. It does not pay to stint the family on milk in order to sell more cream for the purchase of foods of less food value than the milk. Greater consumption of home-produced milk means less need of expensive purchased foods.

I. To Produce Milk and Cream at Low Cost:

A. **Keep cows that are good producers**

1. Keep only cows that produce more than 200 pounds of butterfat or 600 gallons of milk yearly.
2. Keep records of production and cull out low producers.
3. Use a purebred sire from high producing ancestry.

B. **To Feed Adequately:**

1. Feed high quality home-grown roughage (preferably green alfalfa hay and corn silage).
2. Provide at least two pounds of good dry roughage or one pound of dry roughage and three pounds of silage per 100 pounds live weight per day. If roughage is of poor quality more will be required.
3. Provide one pound of ground farm grain for each 3 pounds (1½ qts.) of milk produced per day. If roughage does not contain alfalfa or other legume hay the grain ration should be ¼ linseed oilmeal or other protein concentrate.
4. Plan a pasture program that will provide good feed from early spring to late fall.
   a. Use fall sown rye for early spring pasture.
   b. Use sudan grass for hot weather pasture.
5. Dig a trench silo and fill it in good crop years to provide against a feed shortage in bad years.

C. **Keep cows comfortable**

1. Provide plenty of dry bedding.
2. Avoid cold drafts by closing cracks, keeping windows and doors tight.
3. Provide plenty of pure water at temperatures above freezing.
4. Furnish plenty of salt.

II. To Produce Quality Milk and Cream:

1. Keep only clean, healthy cows in a clean barn.
2. Clip thighs, flanks, and udders to keep dirt out of the milk pail.
3. Use covered milk pail.
4. Milk with dry hands.
5. Wash and scald milk utensils immediately after using and rinse in chlorine solution just before using.

6. Cool milk and cream quickly to reduce harmful bacteria.
7. Fence off mud holes in pastures.
8. Keep yards free of mud and filth.
9. Keep cows off pasture with weeds to prevent bad flavors in milk.

Consult your Agricultural or Home Extension Agent or write:

R. A. CAVE, *Extension Dairyman,* for:

REFERENCES

Exp. Sta. Bulletin 231—"Feeding the Dairy Herd for Profit."
Ext. Circular 153—"Pasture Crops for South Dakota."
Exp. Sta. Circular 22—"Production of Quality Milk and Cream on the Farm."
Ext. Circular 264—"Pit and Trench Silos."

Raise Healthy Chicks, Improve Diet, and Increase Income

Poultry production is important because:

1. Eggs are one of the most healthful and perfect foods.
2. It can be made into a very profitable enterprise.

I. Use Fundamental Procedure in Production

A. **Clean chicks of good breeding**

1. Raise only chicks hatched from pullorum-tested flocks.
2. Buy chicks from well-selected and well-bred flocks. Good breeding is essential for high egg production, early maturity and good body size.

B. **Hatch the chicks early**

1. Hatch general purpose breeds (Plymouth Rocks, Rhode Island Reds, Wyandottes, etc.) before April 15. They require 6½ to 7 months to mature.
2. Hatch light breeds (Leghorns, Minorcas, etc.) before May 15. They require 5½ to 6 months to mature.
3. Experiments have proved that early hatched pullets lay twice as many eggs as later hatched pullets.

C. **Clean brooder house**

1. Scrub brooder house and equipment throughly. (Use hot lye water, one pound to 30 gal. water.)
2. Spray thoroughly with 5% solution of creolin, or any other **good** disinfectant.
3. Clean litter changed often helps prevent disease.
4. Regulate brooder temperature before chicks arrive.

D. **Clean Ground**

1. Raise on clean ground where no poultry or poultry manure has been for two years.
2. Lower feed costs with green range such as clover, alfalfa, rye, oats or sudan grass.

E. **Clean feeding and provide:**

1. Plenty of feed and water.

2. Clean feeders and waterers.
3. A balanced ration.

During the fall and winter, these practices are recommended.

1. Segregate males. Can or freeze enough for home consumption. Sell the rest.
2. Cull non-producing old hens and sell them.
3. Thoroughly clean, scrub, and disinfect laying house and equipment.
4. Keep pullets and old hens separate. Prevents disease outbreaks.
5. Provide:
   a. 1 nest for every 7 hens.
   b. 1 lineal foot of feeder space for every 5 hens.
   c. 1 quart of water for every 3 hens.
   d. 9 inches roosting space per hen.
   e. 1 shell hopper for every 75 hens.
   f. 3½ square feet of floor space per hen.
   g. A straw loft.
   h. Dropping boards or dropping pits under the roosts.
   i. Plenty of clean, dry litter.
6. Clean house often.
7. Feed a balanced ration at all times.

Consult your Agricultural or Home Extension Agent or write:

RALPH MERNAUGH, *Assistant Extension Poultryman,* for:

REFERENCES

Extension Circular 389—"Feeding and Management for Egg Production."
F. B. 1652—"Diseases and Parasites of Poultry."
Extension Circular 148—"Chick Feeding and Management."

Raise Quality Livestock; Provide the Home Meat Supply

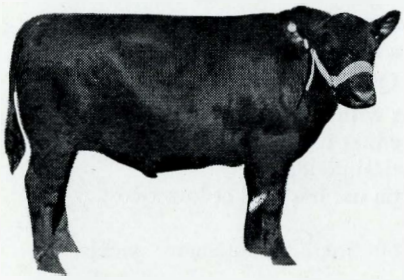
I. Produce Quality Livestock

A. **Grade Up Your Herd** and Increase Your Income by Always Using a Purebred Sire, Deep and Wide of Body, Low-Set and True to Breed Type.

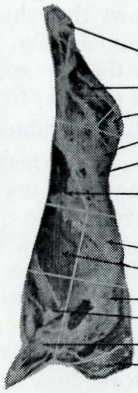
Table 7 compares market and meat value of choice and common butcher steers. The advantages of the choice steer from a quality, purebred sire and grade cow over the common steer are:

1. Returns 66.6% greater value over same periods of growth and fattening.
2. Matures earlier.
3. Gains more rapidly and cheaply on same feed.
4. Furnishes a higher percentage of dressed carcass. Choice steer dressed out 65%; common steer 45%.

Table 7.—You Will Get More Meat from a Good Butcher Animal

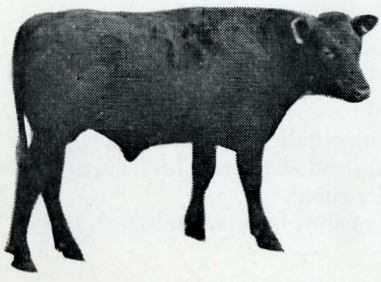


Choice Butcher Steer
1000 lbs. at $12.00 equals $120.00

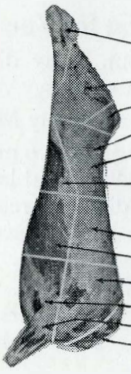


Choice Carcass (Yield 65%)

Hindquarter (48%)	
Shank	2.6% — 16.9 lbs.
Round	15.2% — 98.8 lbs.
Rump	3.9% — 25.4 lbs.
Loin end	7.2% — 46.8 lbs.
Short loin	10.5% — 68.2 lbs.
Kidney Knob	3.7% — 24.1 lbs.
Flank	4.9% — 31.8 lbs.
Forequarter (52%)	
Rib	9.6% — 62.4 lbs.
Plate	8.2% — 53.3 lbs.
Chuck	23.0% -149.5 lbs.
Brisket	6.2% — 40.3 lbs.
Foreshank	3.9% — 25.3 lbs.
Neck	1.1% — 7.2 lbs.
Weight of Carcass	650.0 lbs.



Common Butcher Steer
800 lbs. at $9.00 equals $72.00



Common Carcass (Yield 45%)

Hindquarter (48%)	
Shank	3.9% — 14.0 lbs.
Round	19.9% — 71.7 lbs.
Rump	3.2% — 11.5 lbs.
Loin end	7.0% — 25.3 lbs.
Short Loin	10.1% — 36.4 lbs.
Kidney Knob	1.1% — 4.0 lbs.
Flank	2.8% — 10.1 lbs.
Forequarter (52%)	
Rib	8.7% — 31.3 lbs.
Plate	6.2% — 22.3 lbs.
Chuck	26.1% — 93.9 lbs.
Brisket	4.2% — 15.1 lbs.
Foreshank	5.0% — 18.0 lbs.
Neck	1.8% — 6.4 lbs.
Weight of Carcass	360.0 lbs.

5. Produces a higher proportion of valuable cuts.
6. Produces less internal fat.
7. Produces higher quality beef. Finer textured, better color, greater marbling and palatability.
8. Gives more desirable finish and good conformation of carcass. Finish implies a smooth even covering of firm, white fat over the exterior of carcass and more marbling of meat. Good conformation implies a plump, blocky carcass with short neck and shanks; full loins; deep, plump rounds; well fleshed ribs and thick shoulders.
9. Yields more meat at less cost. Choice 1000-pound steer yields 650 pounds at 18.4 cents or $120.00. Common 800-pound steer yields 360 pounds at 20 cents or $72.00.

South Dakota experiments show calves sired by purebred, good quality bulls from common cows are worth $7.54 more per head than calves of common ancestry. Table 7 shows that choice market steer after fattening is worth $46.00 more than common steer. A good bull used to sire 35 calves returns $1,610 more per year than the common type bull. One year's crop of good quality calves will more than pay for a high quality, purebred bull.

B. **Use These Practices Also to Produce Quality Livestock**

1. Replace unproductive, aged females with improved young animals.
2. Keep animals growing. They make best use of their feed.
3. Start feeding before weaning (a critical period).
4. Feed balanced, adequate rations. You use less feed at lower cost.
5. Provide water and salt at all times.
6. Feed liberally for large production, mere maintenance yields no profits.
7. Improve pastures and range by rotation or deferred grazing, avoid too early pasturing and leave 25% of the cover each year.
8. Keep breeding animals thrifty, not over fat.
9. Use good feeding equipment to prevent waste of feed and labor.

II. Provide Quality Meat for Your Family

Quality meat is healthful, easily digested and nutritious. It furnishes protein, minerals, vitamins and energy vital to life.

A. **To Produce Your Own Quality Meat**

1. Slaughter one-year old cattle; 6 month-old sheep; 8 month-old hogs.
2. The 225-pound hog, 90-pound lamb, and 800-pound beef, cut attractively, are easily handled and readily cured.
3. Feed out the animal. Fat improves quality, texture, tenderness, flavor and protects cured meat.
4. Slaughter only healthy animals.
5. Feed steers, barrows and wethers for highest quality meat.
6. Keep animals off feed 18-24 hours and avoid excitement before slaughtering.
7. Wash down dressed carcass. Cover to protect from dirt.
8. Provide clean surroundings and use sanitary equipment.
9. Ripen beef 15-20 days at 36^0; lamb 2 weeks at 40^0; merely cool pork and poultry.
10. Expect good grade dressed beef to furnish 58% of live weight; hogs 75%; and lambs 48%.
11. Preserve meat by curing, canning or refrigeration.

Consult your Agricultural or Home Extension Agent or write:

G. A. McDonald, *Extension Animal Husbandman,* for:

REFERENCES

Extension Leaflets: Beef on the Farm
Pork on the Farm
Lamb-Mutton on the Farm

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