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COOPERATIVE EXTENSION WORK IN AGRICULTURE AND HOME ECONOMICS.

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BOYS' AND GIRLS' CLUB WORK.**SOME HOME CANNING DIFFICULTIES AND HOW TO AVOID THEM.**

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[This circular is a part of the series of follow-up instructions used in the home canning club work in the Northern and Western States, the complete series including NR-21, NR-22, NR-23, NR-24, NR-25, NR-26, NR-28, NR-29, NR-30.]

FLAT SOUR AND SPOILAGE IN CORN AND PEAS.

Canned corn and peas (as well as beans and asparagus) may show no signs of spoilage and still when opened have a sour taste and a disagreeable odor. This specific trouble is known to the canner as "flat-sour," and can be avoided if the canner will use fresh product; that is, one which has not been gathered more than 5 or 6 hours, and will blanch, cold-dip, and pack one jar of product at a time, and place each jar in the canner as it is packed. The first jars in will not be affected by the extra cooking. When the steam-pressure canner is used the jars or cans may be placed in the retort and the cover placed in position but not clamped down until the retort is filled. Rapid cooling of the products prevents overcooking, clarifies the liquid, and preserves the shape and texture.

Corn.—Corn seems to give the club member the most trouble, but with a little care and study this product may be canned as easily as any other grown in the garden. A little experience in selecting the ear and ability to recognize corn that is just between the milk and the dough stage are important. Blanch not longer than 5 minutes and then cold-dip (for which purpose a plunge in cold water is sufficient). Cut the corn from the cob with a sharp knife and put it at once into sterilized jars. As the corn expands a little in processing the jars should not be filled quite full. Best results can be accomplished when two persons cut and one person fills. If it is necessary for one person to work alone, cut off sufficient corn to fill one jar, pour on boiling water, add salt, place the rubber and the cap in position, and put the jar at once into the canner. A little overcooking does not injure the quality of canned corn. Corn that has a cheesy appearance after canning had reached the dough stage before being packed. Corn should never be allowed to remain in the cold-dip, and large quantities should not be dipped at one time unless sufficient help is available to handle the product quickly. Water-logged or soaked corn indicates slow and improper packing.

Peas.—When peas are keeping well but the liquid shows a cloudy or hazy appearance, it indicates that the product was roughly handled in blanching and cold-dipping, or that split or broken peas were not removed before packing. When peas are too old and blanching is not carefully done the skins crack and the liquid becomes cloudy. Some waters of peculiar mineral content have a tendency to increase cloudiness.

FADED BEETS.

Small beets that run 40 to the quart are less likely to fade and are the most suitable size for first-class packs. The older the beet the more chance there is for loss of color. When preparing the beets leave on 1 inch of the stem and all of the tail while blanching. Blanch not more than 5 minutes and cold-dip. The skin should be scraped from the beet, not peeled. Beets should be packed whole, if possible. Well-canned beets will show a slight loss of color when removed from the canner, but will brighten up in a few days.

SHRINKAGE.

Shrinkage may occur during sterilizing from the following causes:

1. Improper blanching and cold dipping.
2. Careless packing, poor grading.
3. Sterilizing for too long a period.
4. Lack of judgment in the amount and size of product put into the container.

Shrinkage of greens or potherbs during the canning process is usually due to insufficient blanching. The proper way to blanch all greens or potherbs is in a steamer or in a vessel improvised to do the blanching in live steam above the water line. If this is done a high percentage of mineral salts and volatile oil is retained by the product.

DIFFICULTIES IN THE OPERATION OF CANNING OUTFITS.

The inexperienced frequently encounter difficulties, particularly loss of liquid from the containers, as a result of improper operation of the canning outfit used.

Hot-water bath outfit.—The following rules will help to avoid difficulties in the operation of this type of canning outfit:

1. Support the jars on a perforated platform sufficiently to permit the free circulation of water under, among, and around the jars. Towels, excelsior, newspapers, hay, and the like are unsatisfactory.
2. Have the water cover the tops of the jars by at least 1 inch.
3. Count time as soon as the water begins to *jump* over the entire surface.
4. Remove the jars from the water and tighten the covers as soon as the time is up.

Steam-pressure canner.—To secure the best results in the operation of the steam-pressure canner the following precautions should be observed:

1. Place each jar in the canner as soon as packed.
2. Have the water come to, but not above, the platform.
3. Have the canner absolutely steam tight.
4. When the canner has been filled, fasten the opposite clamps moderately tight. When this has been done, tighten each clamp fully.
5. Allow the pet cock to remain open until live steam blows from it.
6. Close the pet cock, allowing just a trace of steam to escape.
7. Force the pressure to the required point before counting time.
8. Maintain a uniform pressure during the sterilizing period. Fluctuations of pressure, such as running it up to 12 pounds, down to 7 pounds, and back to 10 pounds, cause loss of liquid from the containers.
9. Allow the canner to cool before opening the pet cock. Blowing the steam from the pet cock at the close of the sterilizing period is likely to cause a loss of liquid.
10. Have the pet cock completely closed during the cooling.
11. Open the pet cock before vacuum forms. A vacuum is shown by a rush of air into the canner when the pet cock is open. You can test this by placing the finger over the end of the pet cock. If a vacuum has formed it will draw the flesh of the finger into the opening. The formation of a vacuum is objectionable because it may result in loss of liquid from the container.
12. Remove the jars from the canner and tighten the lids as soon as the canner is opened. The wire bails on glass-top jars should not be so loose that they will not go in with a snap.

MOLD ON CANNED GOODS.

Mold may develop on canned goods:

1. If the seal is defective.
2. If, after sterilizing, the tops are removed from the jars to replace the rubber ring. The jars should be returned to the canner for at least 5 minutes when this is done.
3. If the jars are kept in a damp place where the rubbers may decompose, mold may enter through these decomposed rubbers.

DIFFICULTIES DUE TO IMPROPER SIRUP DENSITY.

Unsatisfactory results frequently follow from the use of sirups which are not of the density best suited to the particular purpose for which they are employed. The following table gives the proportions of sugar and water required to prepare sirup of any desired density. No allowance has been made for evaporation.

Proportions of sugar and water in sirup of different density.

Desired sirup density.	Amount of sugar.	Amount of water.	Desired sirup density.	Amount of sugar.	Amount of water.
<i>Per cent.</i>	<i>Pounds.</i>	<i>Quarts.</i>	<i>Per cent.</i>	<i>Pounds.</i>	<i>Quarts.</i>
12	1½	5½	35	7	6½
15	3	8½	40	2	1½
18	4½	10½	50	2	1
24	6	9½	60	6	2
28	7	9	64	16	4½

BREAKAGE OF JARS.

When breakage of jars occurs it is due to such causes as:

1. Overpacking the jars. Corn, pumpkin, peas, lima beans, and sweet potatoes swell or expand in processing. Do not fill the jars quite full of these products.
2. Placing the cold jars in hot water, or vice versa. As soon as the jars are filled with hot sirup or hot water, place them immediately in the canner.
3. In a steam canner having too much water in the canner. The water should not come above the platform.
4. Allowing a cold draft to strike the jars when they are removed from the canner.
5. Having the wire bail on glass-top jars too tight, thus breaking the jars when the lever is forced down.

DEFECTIVE JARS.

To detect defects in screw-top jars:

1. Place the top on the jar without the rubber. Turn it down tight. If the thumb-nail can be inserted between the top and the glass, the top is usually defective.
2. Place the rubber and the cap in position and screw them down lightly. Pull the rubber from its position. Release it. If the rubber returns to its position between the top and the jar, the top is defective.

To detect defects in glass-top jars:

1. Place the glass top on the jar without the rubber. Tap around the outer edge of the top with the finger. If the top rocks, it is defective.
2. Put the wire bail into place over the top of the cover. If it does not go in with a snap, even when the tightening lever or the clamp spring is up, remove it from the tightening lever and bend it to make it tight. This tightening of the bail should be done every year before using.

HOW TO TELL GOOD RUBBERS.

A good rubber will stand considerable pulling and jerking and will return to its original shape. A good rubber will also stand several hours of boiling in a hot-water bath outfit without being affected.

ARE TIN CANS SUITED TO HOME CANNING?

If the raw food products intended for canning are in sound condition; if the proper sanitary precautions are observed, and the one-period cold-pack method is strictly followed (as described in NR-24 of this series of circulars), it is entirely safe and practical to use tin cans for all kinds of fruits, vegetables, and other food products. It is true that canned foods may be rendered unfit for use through improper handling of the product before packing and that decomposition may occur after canning owing to insufficient processing, improper sealing, or the use of leaky containers. This condition, however, is no more likely to be encountered in foods put up in tin than in products canned in other types of containers. Most canned foods which are in a spoiled condition readily show this condition through the swelling of the can or by odor or taste. Canned foods showing such evidences of decomposition should of course not be used. Certain foods which are high in protein, such as meats, peas, beans, and fish products, may undergo decomposition without making this condition obvious to the senses. It is therefore essential that the greatest care be taken to subject such products to ample processing in the course of preparation. It should be remembered that canned foods, after opening the containers, should be treated as perishable products and should be handled with the same precautions that are applied to fresh products.

BAD EFFECTS OF TOO MUCH SALT.

Most vegetables as well as meats are injured in flavor and quality by an excessive use of salt for seasoning in the canning process. A little salt is very palatable, and its use should be encouraged, but it is better to add no salt in canning than to use too much. It can be added to suit the taste when canned goods are served.

WATER FOR HOME CANNING.

Water used for home canning should be pure, soft, and as free from sediment and excessive mineral content as possible. Clear drinking water is generally usable. Softening, hardening, or discoloration of vegetables because of the character of the water is an exception to the rule in home canning.

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