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Chile Peppers

Fresh

Frozen

Canned

Dried

CIRCULAR 221



Agricultural Extension Service
University of Arizona, Tucson

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Chile is the Spanish name for peppers grown in Arizona, New Mexico, and below the border in Mexico. They are grown in many home gardens throughout the state.

What is more colorful than the strings (ristras) of brilliant red chiles hanging from the roof to dry!

Cochise County boasts that Cochise chile grown in the Sulphur Springs Valley is plump, thick and meaty, and tastier than most. The first crop is sold green to canneries. The second picking is sold red to be dehydrated.

Spanish American families use large quantities of green and red chiles, dried or canned, for winter use. They use chiles twice a day and dry from 10 to 15 strings for winter use.

University of Arizona
College of Agriculture, Agricultural Extension Service
Chas. U. Pickrell, Director

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5M--November 1954--Circular 221

CHILE PEPPERS

Fresh, Frozen, Canned, and Dried

By **Elsie H. Morris**
Extension Nutritionist

Many varieties of chiles are grown in the Southwest, some being hotter than others. The smaller the pods of chile the higher the degree of pungency—and the hotter.

Anaheim chile is one of the mildest and most popular. College No. 9, a more pungent chile developed by the New Mexico Agricultural Experiment Station, has a large, tapering, fleshy

pod, and a very attractive red color. College No. 6 has fleshy pods, but is milder.

Green chiles, called chiles verdes, are preserved by canning, drying, or freezing. Formerly, practically all red chile was preserved by drying. Today, the puree of fresh red chile is frozen and makes an excellent chile sauce.

Food Value

Chile—whether fresh, canned, or dried—is an excellent source of carotene (vitamin A). There is little loss of carotene during canning, freezing, or cooking. More is lost in drying.

Fresh green and red chiles are a very rich source of vitamin C (ascor-

bic acid.) Canning, freezing, and cooking cause some loss. But because of the high initial vitamin C content, most freshly canned, frozen, or cooked chiles can be considered a good source of this vitamin. Most of the vitamin C is lost in drying.

Methods of Peeling

Chiles have a thin, tough skin which can be removed by several methods. These are the hot paraffin dip method, the hot oven or broiler method, blistering, and the hot oil dip method.

Hot Paraffin Dip

1. Melt paraffin in large can in kettle of boiling water. (Paraffin is an oil base and flammable. Eliminate danger of flash fire by melting over water.)

2. Wash *fresh* green chiles. Dry thoroughly to avoid spattering of hot paraffin. Prick skins with fork or knife to prevent pods from exploding from steam formed by the hot oil.

3. Heat paraffin over low direct heat until bubbles break the surface or until a thermometer (candy or deep fat) reaches approximately 250° F. Have a pot lid handy to extinguish blaze in case of a flash fire. The flash point of paraffin is 390° to 400° F.

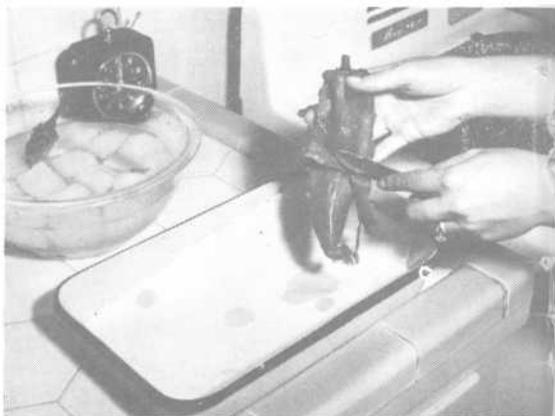
4. Lower frying basket into the melted paraffin or use tongs. Place two chiles at a time in the hot paraffin.

5. Allow chiles to blister and turn white all over. (Approximately 4 minutes.)

6. Remove peppers from hot paraffin and put into *cold* water. Add ice cubes. The paraffin hardens at once.

7. Work on newspapers to avoid necessity of removing hardened wax from equipment or sink.

8. Peel chiles. The skin comes off with the paraffin. This leaves the pepper clean and whole, with no traces of oil, which could become rancid.



The skin comes off with the hardened paraffin.

9. Remove stem and seeds with knife.

10. Leave whole and flatten.

Chiles peeled by the hot paraffin wax dip method retain their bright green color and fresh flavor. The enzymes which cause changes in color and flavor are destroyed in the hot dip. No further blanching is necessary if the chile is to be frozen.

Oven or Broiler

1. Place peppers in a hot oven or broiler (400° to 450° F.) for 6 to 8 minutes.

2. Remove from heat and allow to stand in a wet towel to steam for 15 minutes.

3. Remove skin, stem, seeds, and membrane.



After chiles have blistered and turned white in the hot paraffin, remove them and put them in ice water.

Blistering

1. Blister the skin of the peppers thoroughly on a hot stove or with a flame, turning frequently to prevent scorching.

2. Wrap the peppers in a towel and allow to stand for 10 minutes to steam and for the skins to soften.

3. Slash skin and insert knife at tapered end, pulling the skin off toward the stem. Remove seeds and stem.

Hot Oil Dip

1. Wash, dry, and prick pods with a sharp fork or knife to prevent spat-

tering of hot oil by exploding pods.

2. Immerse the whole chiles in the hot cooking oil (350° to 390° F.) for 2 or 3 minutes. Have a cover handy in case of a flash fire.

3. Plunge into cold water. Slip off the skins; remove stems and seeds.

The objection to the use of the hot oil dip is that some oil adheres to the chiles, making them difficult to handle and giving an unpleasant consistency to the finished product. The oil may become rancid if the frozen chile is stored for several months, causing undesirable changes in flavor.

Freezing

Carefully prepared frozen green chiles retain most of the vitamin C and carotene (vitamin A) of the fresh product, but lose vitamin C rapidly when the frozen chiles are thawed.

Frozen chiles may be used as fresh or canned chiles. Frozen chiles, when thawed, may be used in making Chile Rellenos. Twelve to fifteen peeled fresh green chiles will fill a pint container.

Here are simple directions for freezing chiles:

1. Peel chiles. See directions on pages 3 to 5.

2. Remove stem and seeds.

3. Flatten whole chiles to remove air and fold once for easy packing and handling.

4. Pack in moisture-vapor proof package, excluding as much air as possible. Double squares of waterproof paper placed between chiles will make for ease of handling when thawing.

5. Freeze and store at or below zero degree Fahrenheit.

6. Storage life is about 9 months to one year.

Before freezing, place double squares of waterproof paper between chiles for ease in separating when thawing.



Canning

Green chiles canned by the following method retain 60 to 80 percent of the original vitamin C content. There is little or no loss of vitamin A.



Process green chiles in half-pint jars or small tin cans.

Chiles must be canned in a pressure canner to be safe.



Process green chiles in one-half pints or small tin cans (4 ounces) because the peppers make a dense pack. Half-pint jars usually contain enough chiles for a family meal. Most commercially canned chile is in small cans.

1. Wash chiles. Remove peel, stem, seeds and membrane. See directions for peeling on pages 3 to 5.

2. Pack the prepared, folded whole chiles tightly in jars, leaving $\frac{1}{2}$ inch head space. Do not add liquid. Add $\frac{1}{2}$ teaspoon of salt to pint jars or one teaspoon of salt to quart jars.

3. Exhaust 20 minutes. Place jars or cans without lids in a pan with hot water about 2 inches below the top of the container. After 12 minutes the chiles may be packed down with a spoon. The chiles will shrink and it will be best to use one jar or can to refill others. Leave $\frac{1}{2}$ inch head space. Exhausting allows for a fuller pack.

4. Seal and process in a pressure canner. See tables on page 7 for time and pressure at various altitudes.

Use Pressure Canner

Because chile is a low acid vegetable, it must be canned in a pressure canner to be safe. Temperatures higher than that of boiling water (212° F.) are necessary to kill the spores of bacteria which may cause spoilage and food poisoning. In canning tomatoes and chile together, it is likewise necessary to process the mixtures in a pressure canner.

Always boil home canned vegetables 15 to 20 minutes before using, because of the danger of botulinus poisoning.

Time and Pressure Table for Processing Chiles in the Pressure Canner

		Pounds pressure at varying altitudes					
Containers	Process Time	Sea level to 1,000 ft.	1,000 ft. to 2,000 ft.	2,000 ft. to 4,000 ft.	4,000 ft. to 6,000 ft.	6,000 ft. to 8,000 ft.	8,000 ft. to 10,000 ft.
½ pint	20 minutes	10 pounds	11 pounds	12 pounds	13 pounds	14 pounds	15 pounds
Pint jar No. 2 can	25 minutes	10 pounds	11 pounds	12 pounds	13 pounds		
Quart jar No. 2½ can	35 to 40 minutes	10 pounds	11 pounds	12 pounds	13 pounds		

NOTE: Processing is at 240° F., which is obtained under pressure of 10 pounds at sea level. For processing at elevations above sea level it is necessary to increase pressure

½ pound for each 1,000 feet to secure 240° F. temperature. Do not increase processing times.

Canning Mixture of Chile and Tomato

1. Select fresh, firm green or red chiles or sweet bell peppers. Remove the thin, tough skin of the chiles by one of the methods given on pages 3 to 5.

2. Select ripe, firm tomatoes. Wash. Put tomatoes in a thin cloth or

mesh basket. Dip into boiling water about $\frac{1}{2}$ minute. Chill tomatoes in cold water. Core and slip skins off.

3. Combine tomato and chile in the amounts desired.

4. Fill clean hot jars and adjust lids.

5. Process in the pressure canner. See tables on page 7 for the time and pressure at various altitudes.

Sun Drying and Dehydrating

Sun-drying was used by the Indians of New Mexico and Arizona for preserving many fruits and vegetables when Coronado first explored this region. Arizona's clear, dry, weather is satisfactory for drying many foods in the sun. Dehydration is drying by means of artificial heat.

The Department of Home Economics Research of the New Mexico Agricultural Experiment Station found that dehydrated chile was of better color and texture than sun dried. Dehydration does the job quickly. It is less difficult to keep the food clean, and the product has a better color and usually retains more of the vitamins of the fresh food.

Dehydrating

Date curing boxes may be used as a dehydrator for chiles by suspending an electric light bulb to raise the temperature to 130° to 135° F. (See directions for construction in Circular 165, "Dates in Arizona," Agricultural Extension Service, University of Arizona, 1950.)

1. Peel chiles. See methods for peeling chiles on pages 3 to 5.

2. Place chiles in a colander and blanch over boiling water for 10 minutes to destroy the enzymes which cause changes in color and flavor, if other than the paraffin method is used.

3. Spread chiles in single layers on cheese cloth on racks or trays. Dehydrate at 130° to 135° F.

Freshened dehydrated chiles resemble freshly prepared chiles in color and appearance.

Sun Drying Green Chiles

1. Select full-grown pods. Wash, peel, slit pod, and remove seeds and stem.

2. Spread peppers in single layers on wooden trays or racks. Tilt trays to face the sun. Turn chiles occasionally. Cover trays with netting, screen, or glass to exclude dust and insects. Glass increases the heat so that an old window sash or hot-bed frame makes a good cover.

Usually, one or two days in the

direct sunlight is sufficient for drying chile. Bring the trays indoors at night or stack trays and cover with cloth to prevent wetting by dew.

The dried product should be crisp, brittle, medium green.

To use dry chile, soak one cup of dried chiles in two cups of water for one hour or more.

Sun Drying Red Chiles

1. Select mature dark red pods.
2. String and sun-dry. These strings are called ristras in Spanish. The dried product will have a shrunken and flexible, dark red pod.

To use, soak one cup of chiles in two cups of water for two hours.

Serving Chile Peppers

Chiles Rellenos con Queso

(*Rellenos* means stuffed, *con queso*, with cheese)

Yield: 8 servings

Oven Temperature: 325° F.

Ingredients

8 fresh, frozen, or 2 cans green chiles (4 oz.)

1 pound Monterey (jack) cheese

4 eggs

4 tablespoons flour

6 tablespoons butter, margarine or lard

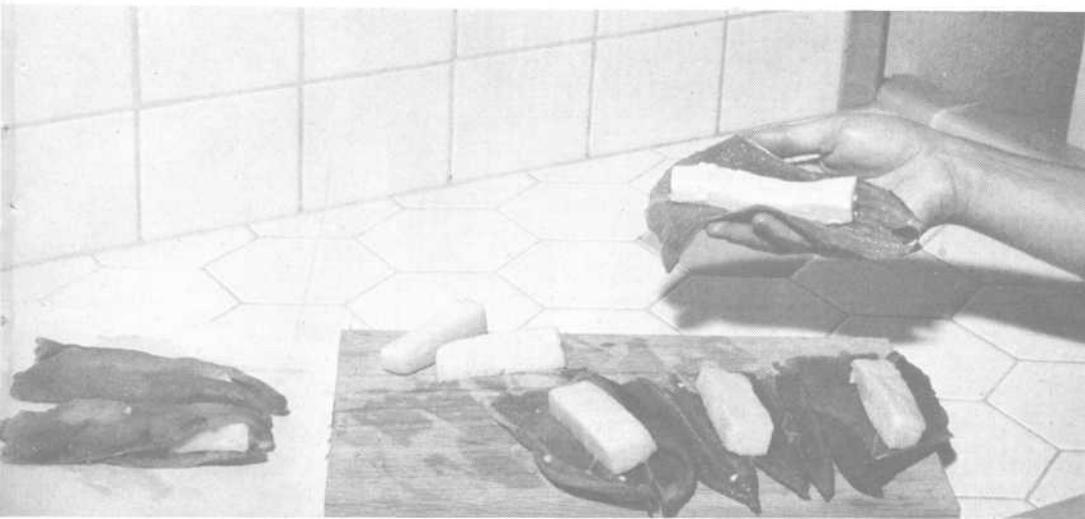
parsley (garnish)

Directions

If using fresh green chile peppers, first remove the skin. Check methods on pages 3 to 5. Canned chiles may be used when the fresh are not available. Frozen chiles which have been thawed may be used.

1. After the chile peppers are peeled, cut Monterey cheese or mild American cheese into pieces about the size of dominoes. The cheese may be inserted into the chiles or the chiles may be cut into strips and a strip of chile wrapped around each piece of cheese.

Place cheese pieces in the peeled chiles.



2. Next, prepare a batter using one egg for every two chiles and one tablespoon of hot water to each egg, and enough flour (1 tablespoon for each egg) to make a thin batter. Beat egg whites until they form soft peaks. Fold in beaten egg yolks and flour.

Sauce for Chiles Rellenos

Ingredients

- 2 tablespoonfuls lard or fat.
- 2 onions
- 3 cloves garlic
- 2 tablespoonfuls flour
- 1 can tomato paste (8 ounce)
- $\frac{1}{2}$ cup water
- oregano—crumbled (a pinch)
- $\frac{1}{2}$ teaspoon salt

Directions

1. Sauté chopped onions and garlic until golden brown in hot fat.

2. Mix flour with fat. Add tomato paste, water, oregano, and salt. Cook mixture to consistency of gravy, at least 15 minutes.

To Serve

Pour sauce over chiles rellenos, top with grated cheese, and put into 325° F. oven for 15 minutes or until grated cheese melts.



Place the stuffed chile on cooked batter and cover with more batter.

3. Place batter the size of a 6-inch by 4-inch oval into a greased skillet. Place a stuffed chile on it and cover with batter. Cook over low heat until golden brown; then turn with a spatula and brown on the other side. Drain on paper towels. Place on a bake-wear serving platter, cover with sauce and top with grated cheese.

4. Place in 325° F. oven until the cheese melts. (About 15 minutes.)

Chiles rellenos may be prepared ahead of the meal, cooked, and stored in the refrigerator. When ready to use, add the sauce and grated cheese. Place in 325° F. oven for 30 minutes, or until the grated cheese melts.



Add sauce and grated cheese and put into the oven until the cheese melts.

Salsa de Chile

(Green Chile Relish)

Excellent relish to serve with meats and beans.

Ingredients

- 1 pound green chile—fresh, canned, or frozen
- $\frac{1}{4}$ cup vinegar
- $\frac{1}{2}$ teaspoon salt
- $\frac{1}{4}$ cup water
- 2 tablespoonsful olive or corn oil

Directions

1. Wash chiles. Remove stems and seeds.
2. Grind through a food chopper.
3. Mix all ingredients in sauce pan. Cook slowly for 20 minutes. Stir.
4. Serve as a cold relish.

Tortillas con Queso y Salsa de Chile

(Tortillas With Cheese and Chile Sauce)

Directions

1. Fry tortillas quickly in a small amount of fat; then drain on paper.
2. Sprinkle with grated cheese and place in oven until cheese melts.

To Serve

Place on serving plate. Add Salsa de Chile, shredded lettuce, and chopped olives.

Chile Made From Dry Red Chiles

Ingredients

- 24 dried red chiles
- 2 tablespoonsful fat
- 2 cloves garlic
- 2 onions
- 2 tablespoonsful flour
- 1 teaspoon salt
- $\frac{1}{2}$ teaspoon oregano
- 1 cup tomato juice

Directions

1. Wash 24 dry red chiles. Remove stems and seeds. Cover with water and boil for 30 minutes.
2. Sieve or put through a food mill.
3. Sauté 2 onions, 2 cloves of garlic, add two level tablespoonfuls flour and stir to make a smooth paste.
4. Combine with chile paste. Add one cup of tomato juice, one teaspoon of salt and $\frac{1}{2}$ teaspoon oregano. Simmer $\frac{1}{2}$ hour.

Chile Con Carne

Ingredients

- 12 red chiles
- $\frac{1}{2}$ teaspoon salt
- $\frac{1}{4}$ teaspoon oregano
- 1 lb. round steak
- $\frac{1}{4}$ teaspoon cumin seed
- 1 small garlic bud

Directions

1. Soak chiles (see top of page 9), mash well, then strain.
2. Cut meat into small pieces, put in greased skillet, and cover. Cook slowly till almost done, then add chile juice, salt, cumin seed, oregano, and garlic.

Serve on hot fried tortillas.

(Recipe through the kindness of Mrs C. H. Campos, Graham County.)

Enchiladas

Yield: 3 servings.

Oven Temperature: 325° F.

Ingredients for Chile Sauce

- 2 tablespoonsful butter or margarine
- 2 tablespoonsful chile powder (red ground) or fresh red pulp
- $\frac{1}{2}$ cup onions finely chopped
- 1 teaspoon salt
- 2 tablespoonsful flour

Chile Sauce

1. Melt butter in a sauce pan and fry onions lightly until golden. Add

flour and blend well.

2. Add chile powder, salt, and water and cook until thick, stirring constantly.

Mexican Cheese Sauce

Ingredients

- 2 tablespoonfuls butter or margarine
- 2 tablespoonfuls chopped bell pepper or green chile
- 1 tablespoonful flour
- 1 teaspoon salt
- 1 teaspoon chile powder or red pulp
- 1 teaspoon mustard
- 1 cup cooked corn
- 1 cup tomato juice
- 1½ cups grated American cheese
- 1 egg

Directions

1. Melt butter in top of double boiler. Then sauté (brown lightly in fat) the chopped pepper *over direct heat*.

2. Add seasonings, flour, tomato juice, and corn. Stir constantly until smooth. Place over water and cook for five minutes.

3. Add grated cheese. Allow it to melt slowly.

4. Beat egg and add to the hot mixture.

Fried Tortillas

Ingredients

- 9 tortillas
- fat for frying
- ½ cup grated cheese

Directions

1. Heat fat below smoking point in skillet. Fry the tortillas. Do not fry them too crisp or they will break.

2. Drain on paper.

To serve

1. Cover hot fried tortilla with Mexican cheese sauce, then add chile sauce.



To serve enchiladas, cover fried tortilla with Mexican cheese sauce and add chile sauce.

2. Repeat this process until three tortillas are stacked. Cover with Mexican cheese sauce and chile sauce. Sprinkle with grated cheese.

Sprinkle enchiladas with grated cheese.



3. Place enchiladas in 325° F. oven until the grated cheese melts. Serve on piping hot plate.

Baked Pinto Beans

(A Popular Recipe With Arizona Homemakers)

Yield: 4-6 servings

Time: 3 hours

Temperature: 350° F.

1 pound pinto beans

6 cups water

3 tablespoonfuls brown sugar or molasses

1 can tomatoes and chiles (1½ cups)

½ pound lean bacon, fresh side pork, or ham trimmings

pinch oregano (crushed)

½ cup chopped onions

Directions

1. Fry onions, brown lightly in fat.

2. Place cooked pinto beans in casserole.

3. Add onions, 3 tablespoonfuls brown sugar or molasses, 1 cup canned tomatoes and chile, 1 teaspoon salt, ⅛ teaspoon pepper, pinch of oregano, and bacon, fresh pork, smoked pork or other meat.

4. Bake covered in 350° F. oven for 30 minutes. Finish baking without cover, to brown.

Modern Short Method of Cooking Pinto Beans

(Using Pressure Sauce Pan)

Yield: 5-6 servings

Directions

1. Wash and sort beans.

2. Measure 4½ cups of water into kettle. Bring to boil. (Proportion — 3 parts water to 1 part beans.) Add 1½ cups of dry beans and boil for 2 minutes at sea level; 3 minutes at 3,000 feet; 4 minutes at 5,000 feet; and 5 minutes at 7,000 feet altitude.

3. Remove from heat. Allow beans to soak in this water for 1 hour.

4. Add 2 tablespoonfuls pork or bacon drippings to reduce foaming, and 1½ teaspoonfuls of salt.

5. Return kettle to stove. Adjust lid.

6. Allow steam to vent for 1 minute, as indicated by a steady flow of steam.

7. Place pressure gauge and bring to 15 pounds pressure for 10 minutes at sea level to 2,500 feet; 12 minutes at 3,000-4,000 feet; 14 minutes at 5,000 feet; and 15 minutes at 6,000 feet and higher.

8. Allow pressure to fall to zero.

9. Remove lid. The "pressure cooker" taste can be removed by cooking the beans a few minutes without the lid, after the pressure is down.

Note

If a regular kettle is used for boiling beans, allow 1½ to 2 hours to cook the beans. More time is required at high altitude.

Caution

In cooking dry beans in the pressure sauce pan, do not fill more than ⅓ full of soaked beans and water. Do not use the rack.

Green Chiles with Dressing

Peel and remove seeds of fresh green chiles. Cut chiles into strips. Add salt, vinegar, and olive oil. Eat as a side dish with beans or any main dish.

Green Chiles Stuffed with Cheese in Boiled Rice

Stuff peeled green chiles with a mild cheese. Before boiled rice is quite cooked, bury the stuffed chiles in it until the cheese melts.

Serve as a meat substitute.

(Recipe through the kindness of Mrs. P. V. Samano, Tucson, Arizona.)

Table of Elevations of Arizona Communities

<i>Place</i>	<i>Elevation</i>	<i>Place</i>	<i>Elevation</i>
Agua Caliente	516	Miami	3603
Ajo	1770	Mohawk	538
Ashfork	5160	Mormon Lake	7000
Benson	3523	Nogales	3839
Bisbee	5425	Oracle	4522
Bouse	1100	Parker	350
Bowie	3756	Payson	4906
Buckeye	980	Phoenix	1108
Camelback	1249	Pinedale	6500
Canilla	5255	Prescott	5389
Casa Grande	1400	Quartzsite	871
Chandler	1213	Red Rock	1856
Clemenceau	3460	Roll	257
Clifton	3465	Roosevelt (Gila Co.)	2275
Cochise Stronghold	4950	Sacaton	1280
Douglas	3930	St. Johns	5650
Flagstaff	6907	Salome	1775
Florence	1500	Seligman	5219
Fort Apache	5300	Snowflake	5644
Fort Defiance	6950	Springerville	6862
Ganado	6840	Tempe	1159
Gila Bend	737	Thatcher	2800
Globe	3440	Tombstone	4580
Grand Canyon	6866	Tuba City	4500
Holbrook	5069	Tucson	2423
Jerome	5250	Wellton	225
Kingman	3266	Wickenburg	2072
Litchfield Park	1180	Willcox	4200
Maricopa	1186	Williams	6750
Marinette	1150	Winslow	4848
McNary	7251	Yuma Valley	110
Mesa	1245		

Acknowledgments

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"Canning for Better Living," Circular 234, November 1952.

"Effects of Canning and Drying on the Carotene and Ascorbic Acid Content of Chile," Bulletin 327, April 1946.

"Home Drying of Foods in Wartime," Circular 192, June 1944.

"Some Factors Affecting the Ascorbic Acid Content of Chile," Bulletin 324, September 1945.

(Cover picture taken on the farm operated by Juan Gonzales,
McNeal, Cochise County, Arizona.)