More About Labor Coming

To meet the food needs of "Uncle Sam" and her allies, Iowa farmers are facing one of the heaviest assignments they have ever had. The problem of labor is undoubtedly one of the most serious obstacles.

In this issue we are offering some labor saving suggestions. The article deals mostly with crop production and particularly corn. To give you definite methods of stretching your limited available labor is difficult; Iowa farmers for years have been working toward more efficiency in their use of labor.

We realize, therefore, that the article here is far from complete. Many of you probably have thought of other methods of cutting labor corners. In the next issue—July—we shall attempt to give you more suggestions about possibilities of harvesting that may aid in stretching labor.

The Authors

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Those Pigs on the Cover

A vocational agriculture student in Boone County lost his sow at farrowing. He was not to be beaten. Those pigs were husky and he wanted to save them—more food for a nation calling for expanded food production.

And so—a good American genius—he found a way to keep those pigs alive. The bottles with their nipples were fitted into a board with holes bored the right size. A system of lowering and raising the bottles at feeding time was devised and the Hereford pigs came to "love" their foster mother in real porker fashion.

The pigs put on pounds. Their owner prospered.

(This photograph was taken from the book, "Reporting FFA News," by Charles E. Rogers, journalism head at Iowa State College.)

Pods of Those Vegetable Soybeans

We haven't much doubt but that if you try vegetable soybeans in the green stage you will like the taste of them—but you may not like the job of hulling them.

For several years the Iowa Station provided samples of vegetable soybeans for Iowa farmers to try. There was a variety of enthusiasm and lack of enthusiasm among those who tried them.

The big "joker," it seems, is that the pods are extremely tough. It is almost impossible to hull them without parboiling them first.

When they were covered with boiling water and boiled for 5 minutes, the time required for hulling 1½ pounds of beans in the pods was reduced from 2 hours to about 20 minutes.

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Agricultural Experiment Station, Iowa State College of Agriculture and Mechanic Arts, R. E. Buchanan, director, Ames, Iowa.
PRODUCE more in 1942 than ever before and do it with less labor and a reduced supply of equipment.

That, in brief, is the challenge thrown out to Iowa farmers as their contribution to the Nation's war effort.

The war has already taken a good many young farmers and farm laborers; more will go into service. Still others are working in factories making airplanes, ammunition and other material concerned with the execution of the war.

The Nation's factory facilities are being directed as fully as possible to the production of war equipment, and this has resulted in a shortened supply of farm equipment.

And so the situation is bad with little hope of it getting better until we have won the war.

Increased production with reduced labor can be had only by increasing the length of working hours or by increasing the efficiency of labor, power and machinery.

Many Iowa farmers are now working as many hours per day as they can. It will be difficult for any farmer practicing diversified agriculture to increase appreciably the number of hours he works. The alternative, then, is to consider greater economies in the use of power and machinery.

About 60 percent of the cost of production is attributed to labor, power and equipment even in normal times. But the number of hours of man labor and horsepower required to produce a crop varies widely on Iowa farms. Much of this variation is the result of difference in topography, though some variation is the result of the combination of labor, power and machinery the farmer uses.

To make man labor go farther in field work often requires using larger equipment, or combining two or more implements and pulling them with increased horse or tractor power. The man on the small farm, especially, may find it to his advantage to cooperate with neighbors in purchasing larger equipment and in doubling up on teams to operate it.

Despite Labor Shortage, Iowa Farmers Are Asked to Produce More Than Ever Before

By C. H. VAN VLACK and J. B. DAVIDSON

There will undoubtedly be more exchanging of machines between neighbors—especially the more costly machines—so that each machine may be used more nearly the full amount of time that it might be operated. Furthermore, farmers who own the larger implements may do the work for several neighbors as well as their own to the advantage of all. Several instances of this kind have been reported in Iowa this spring.

Farmers with general-purpose type tractors use considerably fewer total hours of man labor for growing an acre of corn than other farmers with standard tractors or those who use horses. This was shown in a survey made in Iowa and Pocahontas counties by John A. Hopkins, Jr., of the Iowa Station, in the National Research Project Survey. The man hours used with a general purpose two-plow tractor were 4.9 hours per acre; 7.4 hours for two-plow standard tractor farms; 6.1 hours for three-plow standard tractor farms and 9.3 hours for horse farms.

The difficulty with the standard tractor is that it is economically impractical for the row-crop grower, since it necessitates keeping enough horses to plant and cultivate the crop.

The general-purpose tractor, on the other hand, is very efficient in the use of man labor. Only about half as many man hours are required with the general-purpose tractor as with horses.

An analysis of the records of members of the Iowa farm business associations made in 1939 by Wylie D. Goodsell of the Iowa Station showed that farmers with different types of equipment varied from 6 to 15 minutes per bushel to grow and harvest each bushel of corn.
C. K. Shedd, E. V. Collins and J. B. Davidson of the Iowa Station in an experiment in 1939 under favorable conditions, with corn yielding 85.8 bushels to the acre, grew and harvested the corn with an expenditure of 2.7 minutes to the bushel, or about half that of the lowest figure in the farm business associations. That record can be duplicated by farmers under favorable conditions using similar equipment.

Here is what the investigations we have carried on at the Iowa Station, in cooperation with the Bureau of Agricultural Chemistry and Engineering of the United States Department of Agriculture, have shown:

1. A tandem-disk harrow is more effective than a single-disk harrow in filling up tractor wheel tracks and leveling off other irregularities in the soil surface.

2. One tillage of plowed ground with a tandem-disk harrow and spike-tooth harrow just before planting is generally sufficient preparation of the seedbed. Additional tillage—such as disk ing the ground at various times before the final seedbed preparation—did not improve the weed control, stand or yield of the corn.

3. One tillage with a single-disk harrow or with a field cultivator is not sufficient seedbed preparation.

4. For lighter operations and final preparation of the seedbed, the spike-tooth harrow is preferable to other machines, except for spring plowing when a rotary hoe section is attached to the plow.
5. Early cultivation with a spike-tooth harrow, spring-tooth weeder or rotary hoe is effective in killing small weeds when the soil has been lightly crusted by a moderate rainfall. Labor and power requirements in using these machines are low.

6. Early cultivation with a sweep cultivator after the corn is large enough for thorough covering of the weeds in the corn row will destroy practically all weeds.

7. Early cultivation was omitted in an experiment through a 6-year period without causing any reduction in yield except in one year when wet weather prevented later cultivation at the proper time.

8. Sweeps do a better job of cultivating than shovels. Disk hillers are the most effective equipment for covering weeds in the corn row.

9. An experimental spring-tooth weeder rear attachment for a tractor cultivator effectively finished the kill of weeds and leveled the soil between corn rows.

10. Good control of weeds can be had in drill-planted corn without any excessive ridging of rows by using sweeps, disk hillers and a spring-tooth weeder rear attachment.

11. It takes less labor and power with the lister method of culture, but yields are not so good as with the surface-planter method here in central Iowa.

Practically speaking, the only reason for cultivating corn is to kill weeds. If there are no weeds, then there is no need of cultivating. The theory once generally accepted that it is necessary to maintain a good dust mulch on the surface in order to prevent the loss of moisture has been thoroughly disproved.

Most farmers do not cultivate corn too much, but some are expending more labor on corn cultivation than the results obtained justify. Seldom is there any reason for cultivating more than three times.

Iowa farmers generally are convinced that shallow cultivation is better than deep cultivation for corn. Some farmers, however, are reducing yields, at the cost of more power, by cultivating too deeply.

Soybean cultivation competes for time with corn cultivation. Those who are growing soybeans can hold down labor in cultivating the beans by preparing a good seedbed, as one would prepare it for corn, harrowing it just before the beans are planted. The ground may then be harrowed again just before the beans are up, when they are about 3 inches high and again when about 6 inches high.
The use of the harrow will enable covering much more ground in a given amount of time, thus greatly reducing the man labor needed for soybean cultivation.

Livestock Problems

Since we cannot cover all of the possibilities of saving labor, this article is intended to deal mostly with crop production and corn in particular. But here are a few suggestions about possible short-cuts with livestock and poultry that you may or may not already have put into practice. These suggestions are offered by members of the Extension and Station staff of Iowa State College.

The one big labor saver on the dairy farm is the milking machine. Tests at the Iowa Station have shown that one man with a machine can replace about two and one-half hand milkers—he can cut the time for milking in half. Although farmers are urged now to keep cows that normally would not be considered good enough producers to stay in the herd, shortage of labor for dairy farmers may become so acute as to make it necessary to sell off the poorer cows in order to properly care for the better ones.

With hogs, the one big labor-saving procedure is to use self-feeders. In the use of self-feeders, one should watch to see that they are letting the feed down properly and are kept filled. Automatic waterers are another labor saver.

Pushing hogs along with a well-balanced ration is one means of saving labor, for that gets the hogs ready for market sooner. It's a real labor saver if the hogs are ready for market at 6 months rather than at 7, 8 or 10 months of age.

The cattle feeder who is feeding out cattle on grass can with equally good results full-feed his cattle once a day rather than following the usual practice of feeding twice a day. Tests at the Wisconsin Station have shown this to be true.

One possible saving with poultry is to provide feed storage space in the hen house for 2 to 4 weeks feeding. Having water piped to the hen house will save labor too.

With young chicks, use as large feeders as possible so that they need be filled less frequently than smaller feeders. Market springs can be got ready for sale in a much shorter period by confining them to the brooder house and pen until they are marketed.

Large capacity range feeders for pullets on range save labor, as do large waterers. If barrels cannot be obtained, waterers can be made in the shape of troughs with reels over them similar to those used on feeders. Providing storage facilities on the range for grain, mash and water will greatly save time in tending the growing chicks.

Many farm people have undoubtedly been studying this labor problem seriously and have thought of many means of saving labor, but perhaps some of the suggestions offered here will help a bit.

Corn Cultivation Speed

It's a temptation to speed up in cultivating corn with the row-crop tractors, but tests carried on at the Agricultural Engineering Farm of Iowa State College show that at 5 to 6 miles per hour, the job of killing weeds is likely to be poorer than at a slower speed.

In the tests made by the agricultural engineers, they found that a speed of about 2 1/2 to 4 miles per hour was approximately best from the standpoint of doing a good job of cultivation.

It is true that the cultivator can be adjusted to do a fairly good job of getting the weeds at the high speeds, but it is necessary to slow down in turning at the ends and there the fields are apt to be weedy if high speeds are used.
ANY IOWA farm people who have plenty of eggs in the spring find themselves with none to sell in the fall when the price goes hiking up because of the scanty supply, and not even enough to eat.

In March, 1940, we made a study of egg consumption in Iowa and found that 6 of the 99 counties have a deficit of eggs the year around—they produce less than they use. These counties are Black Hawk, Dubuque, Scott, Wapello, Polk and Woodbury. Other counties which have a deficit in some 3-month periods of the year are: Appanoose, Cerro Gordo, Clinton, Des Moines, Fremont, Lee, Linn, Mills, Muscatine, Webster and Page.

Two years ago Farm Science Reporter suggested that those who have cold storage lockers might wish to try freezing some of their cheap spring eggs and storing them as “whites” and “yolks” or as mixed whole eggs to be used months later. A good many farm folks have tried this; some are enthusiastic about it, and others have not been satisfied.

Since that time we have done additional work here at the Iowa Station in an endeavor to improve the process of preparing eggs for freezing and also with storing eggs in the shells in water glass and with shells coated with oil.

The nutrition of our people must be good so that they can drive with our “Food for Freedom” campaign and other war efforts. It is essential that folks have ample supplies of eggs because they are a protective food—excellent sources of protein, fats and minerals, and spring eggs are especially apt to have considerable amounts of the essential vitamins (except vitamin C). An egg for each person per day the year around is essential.

Tests show that you can store eggs for as long as 6 months, either frozen or in the shell, without hurting their nutritive value, even though they may not retain all of their fine fresh flavor. Most of us eat a good share of our eggs in cakes, cookies, custards, salad dressings and the like. These stored eggs are perfectly satisfactory for cooking.

And so even folks who have sufficient supplies of fresh eggs the year around may find it profitable to store some eggs during the spring when prices are lowest of the year. The cost of storing eggs is very small.

One of the things our tests in the last 2 years have shown is that eggs which are going to be frozen and stored in lockers should not be too fresh! We have found that if you let eggs remain in the shells at a temperature of 70 to 80°F. for 3 to 5 days before they are broken out and frozen, you will have less trouble with the thick, gummy yolk. It’s when we have frozen the real fresh eggs that we have had trouble.

Using Water Glass

But only real fresh eggs—not over 8 hours old—can be satisfactorily stored in the shell. To store eggs in the shell, either dipping them in oil or storing them in water glass is satisfactory. Water glass, which can be bought at the drug store, is the cheaper and probably will prove
more satisfactory for most people. Here are the general rules for storing in water glass:

1. Use clean fresh eggs that are not over 8 hours old. We have found that starting with real fresh eggs is highly important if the eggs are to retain their firm yolk, white characteristics and good flavor for several months.

2. Place the eggs small end down in a crock or stone jar. You can build up several layers, but avoid too many because of the danger of the weight breaking those at the bottom. Now cover the eggs with a water glass solution made by diluting 1 part of commercial water glass with 9 parts of boiled water. Ten quarts of the solution will cover 15 dozen eggs.

3. Cover the water glass solution with a thin layer of white mineral oil to avoid evaporation of the water.

Use of Mineral Oil

We have tested and found white mineral oil satisfactory for coating the shells. Though other oils may be used, we have tested the following with satisfactory results:

Premier—Standard Oil Co. (Indiana)
Eureka—Standard Oil Co. (Indiana)
White Rose—Standard Oil Co. (Indiana)
Carnation—Sonneborn and Son (New York)
Klearol — Sonneborn and Son (New York)

These oils usually can be obtained from retail or wholesale druggists, or the local tankcar oil dealer.

The rules for treating eggs with oil are:

1. Use clean sound eggs that are not over 8 hours old.
2. Dip them in oil at 70 to 90°F. (using wire baskets) for a few seconds.
3. Drain to remove the excess oil, then place the eggs, small end down, in regular egg cases or better yet, in clean crocks.
4. After they are treated, the eggs should be kept in the coolest place available — not cooler than 32°F. nor over 65°F.
5. Avoid storing the eggs where there are strong odors, because the eggs may pick them up.

We have found in using oil that eggs properly treated and handled will keep in excellent condition for 3 months and in edible condition for 5 months. Those stored in water glass will be somewhat superior in keeping quality, but are so tightly sealed that the shells must be punctured before boiling or they will crack.

Freeze Them

Two years ago Farm Science Reporter told how to freeze cheap spring eggs for use in the high priced and scanty supply months of fall and early winter. Some of the folks who put eggs in their lockers at our suggestion did not like the frozen and thawed yolks because they were inevitably somewhat gummy. Those who praise the method like the convenience of having yolks or whites readily available without the necessity of having to “think up something to do with the whites or the yolks.”

Because of the interest in freezing and storing eggs in cold storage lockers, we are repeating here the procedure, with the improvements which we have

Eggs can be preserved in the shells by dipping them in mineral oil.
of yolk.

c. Honey—2 tablespoons to 2 cups of yolk.

Whether you use salt, sirup or honey depends on how you plan to use the eggs. Most all recipes will work well with salted yolk. A few foods, such as scrambled eggs, cannot be made with sweetened yolk, but sweetened yolk works fine with baked goods or mayonnaise.

6. The yolks are now ready to package for the freezer. We have found the waxed cartons work best, but you can use glass jars or tin cans.

The glass, wax and tin offer good protection against drying out in the locker. If covers are not available for the tin cans, cover the eggs after they are frozen with a small amount of water which will protect the surface from drying. All containers should be filled not fuller than an inch of the top to allow for expansion.

Once the eggs are prepared and in the container they should be frozen promptly. The yolk is likely to sour rapidly when held above freezing. The whites do not spoil so easily. The eggs are first placed in the freezer and later transferred to the locker after they are frozen.

Egg yolks and whites may be taken home as you need them, thawing and keeping them in the refrigerator. If you are in a hurry, they may be thawed in warm water (120-125° F.). We find that it is not safe to keep thawed yolks more than 48 hours even though they are in the refrigerator because of the danger of souring. Thawed whites may be kept as long as a week in the refrigerator, before they are used without undergoing any serious change.

These thawed yolks and whites may be used just as you now use fresh egg whites and yolks. For convenience, you may use the following figures for estimating the amount of yolk and white corresponding to one egg:

2 tablespoons of white equals the white of one egg.
1 tablespoon of yolk equals the yolk of one egg.

Some folks may want to mix the whole egg before freezing, and this works very well. Mix whole eggs the same as yolks—with salt, sirup or honey.

We have found that egg yolks and whites prepared in the manner suggested may be stored in lockers a full year without loss of quality if the locker temperature is not higher than 5° above zero.

Only clean eggs, not over 8 hours old, should be preserved in water glass. Pack them with the small ends down in stone crocks or jars.
FOLKS who grow asparagus generally prize it as “tops” among their vegetable crops. There are good reasons for this: Asparagus comes popping through the ground early and generally is ready to eat long ahead of any other vegetable; it “hits the spot” in taste for most folks; it is a good vegetable to can or to freeze for cold storage lockers; it is easy to grow and harvest; once a planting is established, it will last for many years if given the right treatment.

For nearly 15 years we have been carrying on work here at the Iowa Station to answer such questions as: What age and size of plants or crowns are best for planting? Do male or female plants yield best? How soon after planting can spears be harvested? How late in the season can spears be harvested without reducing yields in future years? How should the plants be spaced to secure the best yield and large spears? How can weeds be controlled best? Do plants produce more spears and greater weight when cut at 6- to 9-inch lengths or 9 to 12 inches?

Here is what we have found and the conclusions we have drawn:

1. Plants 1-year old are superior to 2- or 3-year-old plants for setting out. We found little difference in the results from crowns weighing $\frac{1}{2}$ ounce to about 2 ounces, but when the crowns weighed less than $\frac{1}{4}$ ounce, results were not so good.

2. Male plants yield more spears and larger total weight than females, but the spears from female plants are larger individually and of better quality. Whether male or female plants are the better is not important, however, because one cannot afford to leave the plants 2 or 3 years in a nursery row to determine their sex before planting them.

3. Spring planting is best in Iowa. We had heavy loss with fall planting. (Massachusetts experiments have shown that deep planting as usually recommended is not necessary. From 4 to 6 inches from the top of the crown to the surface of the soil is sufficient.)

4. Do not harvest any asparagus the first season it is planted. The second season after planting, harvesting for a couple of weeks may do no harm to future yields. Harvesting never should continue more than 2 weeks the second season. The third season, do not harvest after June 1.

The photographs below, taken Sept. 1, 1939, show what happens when asparagus is harvested year after year early, medium or late. A large top growth is essential to build up and permit storing plant food to provide a satisfactory crop for the following year. The plant on the left produced much larger spears than the one at the extreme right in the spring of 1940. These tests showed that harvesting until June 15 gave the best all around results over a period of several years.
Plants Will Produce for Many Years if Given Proper Treatment, Tests at Iowa Station Show

5. Cutting until June 15 over a period of 13 years gave the largest yield in our tests. Cutting until May 1, May 15 or June 1 was not as profitable as cutting until June 15. Cutting until July 1 for 10 years materially reduced the size of the crop after the sixth year, and the size and weight of the spears dropped. Cutting until July 15 each year greatly shortened the profitable life of the planting—the quality of the spears as measured by average weight and diameter was so poor that the planting was rendered unprofitable after harvesting 5 years to this date. Many of the plants died, too, as a result of harvesting so late in the season.

6. On a highly fertile soil, the fertility of which is maintained by manure and commercial fertilizer, space plants 2 feet apart in the row and have the rows 3 to 4 feet apart. On less fertile soil, this spacing may be too close. It's easier to cultivate between rows spaced 4 feet apart.

7. You will get a larger yield if you cut the spears when 9 to 12 inches high than if you cut them at 6 to 9 inches. During the 3 years the “length of spear test” was conducted, more spears were secured when cut at the 6- to 9-inch length, even though the yield was less in 2 of the 3 years and about the same in the other year.

8. Salt was not found to be an efficient weed killer. It killed the broad-leaved plants such as pigweed and lamb’s quarter, but it only stunted the grasses, and they quickly recovered after rains. We found no evidence of salt benefitting asparagus.

9. The cheapest and easiest way to eliminate weeds was found to be by disking the field, then following with a spike-tooth harrow. These operations should be just before growth starts in the spring, again about May 15 and the final operation June 15 when cutting is stopped. A wide spring-tooth weeder will work equally as well as the disk and harrow.

We know other factors, in addition to the foregoing, have much to do with successful asparagus production even though they were not specifically studied in our experiments here at the Iowa Station.

It is important to remember that when the asparagus harvest is finished for the year, a large growth of brush or tops is necessary to insure a good yield the following year. Most of the growth in the early spring is from the food reserves which have been stored the previous year in the fleshy roots. Heavy tops mean that food is being stored in the roots. So practices which help build heavy tops increase the asparagus crop you will harvest next year.

One of the things you can do to build tops is maintain a high level of fertility by heavy manuring or using commercial fertilizer. Phosphate fertilizer in combination with manure is helpful in Iowa; on some soils potash will help.

Highly acid soils are not good for asparagus. A nearly neutral soil is best. When you are cultivating to get rid of weeds, don't go too deep because of the danger of injuring roots and crowns. Disking or putting the harrow or weeder in 2 or 3 inches deep is sufficient and won't do any harm.

Don't remove the tops in the fall until they have been completely killed by frosts or freezing. Plant varieties such as Mary or Martha Washington because they are partially resistant to rust, a fungus disease of the foliage.

Controlling insects is important. Asparagus beetle is sometimes serious in Iowa. Grasshoppers are partial to asparagus and when numerous seriously damage the tops of asparagus plants in late summer.

Above: Asparagus crowns 1-year-old dug from same nursery row. Figures above each are weight in grams. Top row crowns are too small to be used satisfactorily.

Left: Top row of spears are from plants harvested for 10 years until June 15 and those at bottom were from plants harvested until July 1 for a period of 10 years.
Two - Fuel Ranges

Mean Economical Baking

FUEL is precious these war days—it's real economy if you have a combination coal-gas or coal-electric stove, to preheat your oven with coal or wood and finish the baking with the second fuel.

Tests made by the Household Equipment Department at Iowa State College indicate that more gas and electricity are consumed while an oven is being preheated than during the actual baking process. The use of home-produced fuel or coal to do the preheating, therefore, would be a saving, and the use of controlled electric or gas heat for the actual baking would be an advantage.

Many homemakers have bought the combination range for another reason, of course—that of using coal or wood in winter and keeping the kitchen warm, and the other fuel in summer to produce a cool kitchen. Some combination ranges have two separate ovens—in this case the oven use presents no special difficulty or advantage, other than the effect on room temperature at the time used.

In combination ovens, however, the use of both fuels for the same baking process was found to work out very satisfactorily. When coal is the source of heat, it is difficult to regulate the oven temperature. The oven control does not function and the thermometer in the door of the oven does not register accurately unless the oven has been heated an hour or more. The indicated temperature tends to lag behind the actual heat—during the heating-up period the oven is hotter than the thermometer registers; during the cooling period it is cooler.

In stoves that have the thermostat bulb close to the firebox, it may not operate accurately when the preheating is done with coal and the baking with the second fuel.

In using coal, the longer the oven is preheated, the more evenly the heat is distributed throughout the oven, and the more nearly it is like the controlled heat from gas or electricity.

Food baked in a coal-heated oven must be placed on the floor of the oven for baking instead of on the racks—if put on racks it will burn on top before it is browned on the bottom. It is also necessary to use a slightly lower temperature or a shorter baking time when baking with coal.

Gas ovens require more room for air circulation around pans than the coal-heated ovens, and racks should be used. Combination ovens using gas should be large enough to allow clearance of at least an inch between pans themselves and between pans and the oven wall. If both racks are used, they should be at least 4 inches apart and 4 inches from the top and bottom.

When an oven has been preheated with coal and a switch is made to the other fuel, the heat distribution in the oven is similar to that obtained with gas or electricity alone. This means that the food can be baked on racks.

The chief objection to the use of the combination oven is the necessity for frequent removal of the various parts in changing over from the use of one fuel to another. This is especially true when one fuel is used for preheating, and the stove is hot when the change must be made.

Combination ovens have a flue which is opened when coal is used and closed by a damper when gas or electricity is used. In the coal-gas range, the vent enlarges automatically when gas is the source of heat. And when the oven is heated with coal, a metal slide covers the thermostat bulb.

Heat from the firebox at the left of the oven is directed over the top of the oven and down the right side between the oven lining and the outside insulated wall and then down to the bottom of the oven. When gas is used, a removable baffle plate is placed in the oven over the gas burner to direct the heat. This plate is taken off or replaced with a burner cover to make an airtight oven when baking with coal. In electric combinations,

By LOUISE J. PEET

Based on tests conducted in 1941 by Arlean Pattison, instructor in Household Equipment at Iowa State College, Ames.
Do Cleaning Powders Scratch Porcelain Enamel?

(Based on a study by Evelyn Sparks,
Household Equipment Department)

Most household scouring powders and pastes scratch or dull porcelain enamel surfaces, according to tests made in the household equipment department at Iowa State College. Dirt and stains adhere readily to enamels that have been roughened by abrasives, additional scouring is necessary, and a vicious cycle of staining and scrubbing begins.

In the household equipment research laboratories, tests were made to determine the abrasive action of fourteen popular brands of cleaners on two types of porcelain enameled cast iron and three types of porcelain enameled sheet iron. Enough specimens were provided so that each cleaner was tested on a new, previously untreated enamel surface.

The scrubbing machine used to make the test consisted of a food mixer, the beaters of which were replaced by a padded 2 1/4-inch copper scrubbing disk. The enamel samples were mounted on a metal holder, and held against the pad with a constant force of five pounds by means of a pulley device. The planetary action of the beater shaft gave a motion to the scrubbing pad similar to the irregular circular motion employed by most women in scouring. Low speed was used.

At the end of 15 minutes scrubbing, nearly all of the cleaners had produced a fine-grain “etching” over the entire surface of the cast-iron enamels. As the scrubbing progressed, the central dulling was scoured off, leaving a smooth shiny surface. With the moderately active abrasives, pitting appeared next in this central area, and scratching last, if at all.

The harsher abrasives produced scratches, sometimes even during the first half hour of scrubbing, before the initial etching was greatly altered. The cleaners which caused pit-

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SOYBEANS

New Vegetable for Iowa Gardens

A NEW early-fall green crop for the Iowa farm garden is the vegetable soybean—comparatively unknown to most Americans but for centuries a chief protein and fat food for Orientals.

Soybeans are as important to the Asiatics as cereals are to the Europeans and Americans, and the products that have been developed from them far outnumber the cereal products. Many of these soybean products such as salad oil from the refined soybean oil, margarines and hydrogenated fats, soybean flour and soy sauce have been used in quantities in this country, but as a vegetable the beans are new.

Green soybean varieties vary a great deal as to palatability. They may have a pleasingly rich sweet and nutty flavor or they may resemble peas or baby lima beans; they may be flat and tasteless, or they may have a disagreeable, strong, bitter or sickeningly sweet flavor. As the bean matures the undesirable flavors are more pronounced. In general, the beans that are light-colored in the mature stage are the more desirable; those that are darker in color are more difficult to cook and less desirable in flavor.

To select at random from the hundreds of available varieties of both vegetable and field soybeans those that are palatable would be like groping in the dark. Through experimental trials over a 4-year period (1935–39), the Iowa Agricultural Experiment Station has tested 89 vegetable and 4 field types of soybeans. The characteristics which determine the acceptability of a variety of beans as a food are largely: Size, shape and color of bean; ease of shelling and cooking; texture, flavor and palatability of the cooked beans; ease of digestion and their nutritive value. Three vegetable varieties—Kanro, Jogun and Sac, in that order, were selected as the most desirable for human use at the green bean stage in Iowa.

Seed of only a few varieties of vegetable soybeans are available in Iowa. Kanro, probably the most suitable variety for Iowa, can be purchased from some of the leading Iowa seed firms. Vegetable soybeans need be planted at about the same time and in the same manner as snap beans—about the middle of May, after the danger of frost is past.

When seeds are planted on or about May 12, the period for picking at the green vegetable stage varies with each variety: For Sac, Aug. 15 to 26; for Kanro, Aug. 23 to Sept. 6, and for...
To cook soybeans, cover with cold, salted water, bring to a boil and cook uncovered 12 minutes.
Cut Red Clover in Full Bloom
For Best Hay and Seed Yield

The best time to cut both first and second crops of medium red clover for hay is when it is near the full-bloom stage. In cutting at this stage, the Iowa Station found that a good sized aftermath of about 1 ton per acre, was produced which could be used for pasture.

Mammoth red clover gave the best yields by cutting the first crop for hay in the early bloom stage and a second crop in the quarter to full bloom stage. Mammoth seldom makes two good crops of hay, but in 1940, plots at the Iowa Station produced 4.65 tons to the acre as a total for the year.

The highest yield of seed in 1940 was produced when the first crop was allowed to go to seed without any cutting or clipping treatment. Plots producing seed in the first crop were harvested July 18 and produced a second crop of seed which was harvested Oct. 17. The total yield of seed was 216.3 pounds to the acre.

It is not often that one gets two crops of seed, but in 1940 there were heavy rains in late July and all through August which are credited with the two crops of that year.

When the usual harvesting method was followed of cutting the first crop in the early bloom stage and the second crop for seed, the yield of seed was 70.6 pounds to the acre in contrast to the 216.3 pounds obtained by cutting both crops for seed.

The first cutting of medium red clover in these experiments was made at six different stages of maturity, beginning with the bud stage on May 30 and ending July 18 with the mature stage. Second crops were harvested when 25 percent in bloom, full bloom and when seed was mature.

The procedure with mammoth red clover was the same except that the bud stage cutting came June 20 and the mature seed stage Aug. 8.

The plots of mammoth red clover allowed to set seed normally in the first crop produced the unusually high seed yield of 380 pounds to the acre. The yield was obtained on small plots where plenty of bees were at work.

Do Cleaning Powders Scratch - -

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- ting and scratching first were almost invariably the most damaging in the end.

- The sheet iron enamels reacted quite differently from the cast iron ones. Oftentimes the first 15 minutes of scrubbing produced a high polish. Later the first fine pebbling, characteristic of this type of enamel, was worn off to a smooth attractive surface. Soon, however, the harsher cleaners produced fine, very undesirable, concentrated pitting which increased as the scrubbing progressed. The harshest cleaners scratched the sheet iron enamels within a quarter or half hour. Again, early scratching preceded the most severe wear.

- As a result of this experiment the following suggestions on the care of porcelain enamels are given to the homemaker:
  1. The use of harsh abrasive cleaners should be avoided.
  2. Even more moderately abrasive cleaners will produce dullying or pitting, or both, over a period of months and years if used frequently.
  3. The prolonged use of baking soda was found harmless to enamel; it is therefore highly recommended as an aid to soap and water in cleaning of porcelain enamel surfaces.
  4. The abrasive effect of commercial cleaning powders and pastes cannot always be judged by their degree of solubility or by their price.

Soybean Planting Rate

When conditions are favorable for germination and you have seed with a high germination percentage, 1 bushel of soybean seed to the acre is the minimum rate that you should plant for 32-inch rows in order to get a top yield.

Tests at the Iowa Station in 1939 showed that any amount of seed from 1 to 2.2 bushels to the acre gave approximately the same yield. To test this further, the next year, the rate was dropped to 0.6 bushel to the acre. With this rate of seeding there was a highly significant drop in yield.

It didn't seem to make much difference whether a variety was early or late-maturing in the effect which late planting had on yield in 1940, but in 1939, the early varieties considerably outyielded the late varieties when they were planted late.

Normally the best time found to plant soybeans is immediately after corn planting is finished. One usually can expect a considerably reduced yield if planting is delayed as late as June 15.

Potatoes need to be sprayed or dusted throughout the growing season. Although spraying with a bordeaux mixture is considered preferable to dusting, the home garden patch of potatoes may be dusted. The standard potato dust formula contains 1 pound finely ground monohydrated copper sulfate; 4 pounds hydrated lime; ¼ to ½ pound calcium arsenate. Still another formula is: 8 pounds calcium arsenate and 100 pounds 325-mesh dusting sulfur, applied at the rate of 40 pounds to the acre.

The Danish Landrace breed of swine at the Iowa Station so far has shown more rapid gain, has longer bodies, produces larger litters, has plumper hams and coarser more open shoulders than Poland Chinas. The Landrace pigs are also weaker in their feet.