

NUTRITION

Soybean Boom

Armed forces and Lend-Lease buy soy products in great quantities. Increased use on American tables is predicted. This year's harvest is big.

By **GLENN SONNEDECKER**

► **RUBBER SUBSTITUTES**, cloth, high-protein food, plastics and vegetable oils are just a few of the manifold guises of the soybean. About 200 million bushels of beans are now roaring into hoppers of American processing plants to produce these and other products.

It's a new crop to many farmers. War has shot plantings up to 14,000,000 acres.

The soybean is one of the oldest crops used by man, however, being described in Chinese writings nearly 3,000 years before Christ.

In this country, production has been slow in developing. Now great fields of the legume are being harvested in the Midwest and South. Almost three-fourths of the crop is in Indiana, Illinois, Iowa, Ohio and Missouri. Of these the biggest producer is Illinois.

Flaxseed, cottonseed and cocoa mills have been converted to help handle the fall harvest.

Uncle Sam considers soybeans so important as a source of oil that a 40% increase in production was requested with a guaranteed market price.

Over 60,000,000 pounds of soya flour and grits have been purchased by the Agricultural Marketing Administration for shipment to our allies and for school lunches. Overseas, soy is used in meat products, baked goods, soups, ice cream and milk substitutes.

In Army Rations

The government is also adopting soybean products as part of the rations for the armed forces. So far, Army purchases have been confined to flour. The Marines are also using it in this form.

Wider usage has been hampered, asserted Colonel Rohland A. Isker of the Quartermaster Corps Subsistence Research Laboratory, because manufacturers threw soy products on the market that had not been scientifically prepared. This situation is being remedied.

From China, Java, India and other Far Eastern countries the Department of Agriculture has brought 2,500 distinct types of soybeans. Scientists experimented with these in the laboratory,

grew them in test fields, changed them. Garden varieties have been developed which do not have the objectionable taste formerly present.

Other research has developed debittering methods to improve the flavor of field varieties. Over sixty patents have been granted on this process alone.

The Army is now issuing a specification relating to soy products of many types.

"Up to the present time," Col. Isker explained, "the principal use by the Army of soybean flour has been in our K biscuits. The principal function underlying its use in this product is to provide as complete a non-meat protein as possible."

The Army will also be using soya in pork link sausages, bakery goods and macaroni products, it is reported.

Millions of men will thus be introduced to soybean foods through the Army. When we return to normal conditions, it seems likely that soybeans will become an accepted part of the American diet.

Germans Use Them

The Germans have used soybeans rather extensively in their diet for a number of years.

The High Command has even issued a German Army Soya Cook Book. A copy in the possession of the American Soybean Association reveals many interesting recipes.

One recipe which apparently appeals to German taste, is a soup containing beer, flour, and soya. A more conventional soup is made of beef, vegetables, flour and soya.

Most vegetable dishes used by the German Army contain soya in varying amounts. Typical directions read: "Mix with cold water, add to the vegetable, and let boil up briefly."

Soya flour is used by them to make meat go farther and as a means of economizing on fats. It is an egg substitute, used as a binder for dishes such as dumplings and pancakes, and as a thickener for gravies and sauces.

Mixed with water, it is a substitute for whole milk in cooking. The German

book points out that this is especially important during field operations.

Only salads and fruit dishes of the German Army cookbook seem to be completely without soy flour.

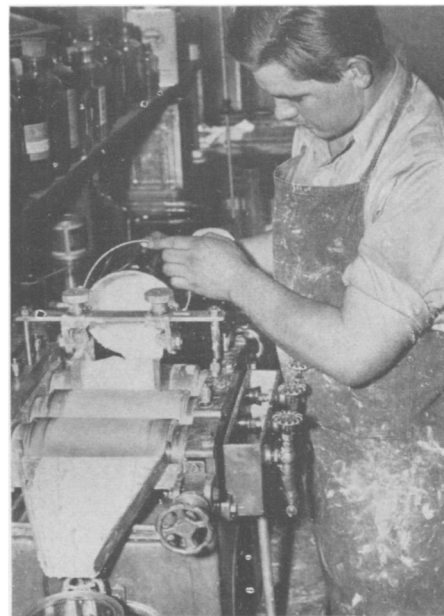
A similar expansion of the uses of soybeans can be expected in the United States, according to authorities.

"Next year the statistics on soy products for this year will look small," Donald S. Payne, senior technologist of the Agricultural Marketing Administration, declared at the recent convention of the American Soybean Association at Purdue University.

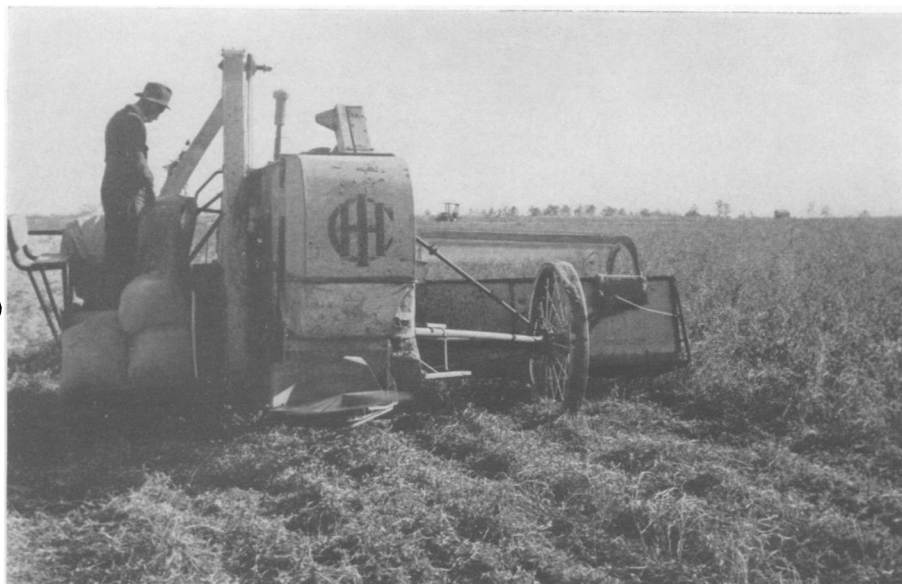
Although soybean products on American tables will soon be common, it is expected, few are now available at your grocers.

"The Agricultural Marketing Administration has inaugurated a new program to stimulate and foster the use of soya products, and this move clearly shows the government's recognition of their high food value," Mr. Payne pointed out. "The new program is designed to make this low-cost food available to the people throughout the United States as soon as possible."

Soybeans contain a nearly complete



A LABORATORY worker is shown grinding paints in soybean oil. Scientists are continuing to find new uses for the versatile soybean. This is an official U. S. Department of Agriculture photograph.



SOYBEAN HARVEST this year, totaling over 200 million bushels, will have many uses in the war effort. This is an official U. S. Department of Agriculture photograph.

protein and a greater quantity of available protein than any other plant. Supplemented by other foods, soybeans can substitute for meat.

Soya sausages are now being shipped abroad. The sausages contain about 20% soybean flour. They are said to have excellent flavor and higher protein content than all-meat sausages. They do not "fry away" nearly as much as ordinary sausage, often yielding over a fourth more of the finished food. Beans are used alone, either baked, boiled or in stews.

Companies who packed soy soups for lend-lease are now experimenting with their domestic use in this country.

Manufacturers are putting soya flour in cereal breakfast foods. Containing up to 20% flakes or grits, these products are being shipped lend-lease to Russia and other allied countries.

A similar product may be on the shelves of American retail stores before winter is over, suggests M. L. Wilson, assistant director of Defense Health and Welfare Service in Charge of Nutrition.

The British are buying large quantities of soybean flour sausages, and grits, Mr. Wilson reported.

High-fat soya flours are used principally in baked goods, blended with wheat flours. Ordinary flour is deficient in some amino acids that are abundantly present in soybeans, according to Dr. D. Breese Jones of the Bureau of Agricultural Chemistry and Engineering.

"Studies recently conducted in our

laboratory on the comparative growth-promoting values of the proteins of soybean, peanut, cottonseed flours, and also on their values for supplementing the proteins of wheat and patent wheat flour, have given some rather striking results," he told the American Soybean Association meeting.

Satisfactory growth depends on the ten essential amino acids being present in the diet. This remains true no matter how many vitamins or minerals may be present in bread.

"The results of our experiments show that, even after enrichment with eight vitamins and twelve mineral elements," Dr. Jones reported, "the growth-promoting value of white flour can be increased . . . fourfold with soybean flour (10 parts)."

Commercial Laboratory Research

Much research is also being done in commercial laboratories. Dehulling, debittering, and, in some cases, degerminating have been employed. Temperature control during processing was found to play an important role in both the nutritional and physical qualities of the finished product.

Several enzymes of the starch, protein and fat-splitting types are present. Scientists learned how to use these enzymes to good advantage or to destroy them when necessary.

Oil obtained from soybeans can be used to replace the vegetable oils and

● RADIO

Saturday, December 12, 1:30 p.m., EWT

"Adventures in Science," with Watson Davis, director of Science Service, over Columbia Broadcasting System.

William W. Gergoffen, of the U. S. Forest Service will tell how the war has affected Christmas greens.

Monday, December 7, 9:15 a.m., EWT; 2:30 p.m., CWT; 9:30 a.m., MWT; and 1:30 p.m., PWT

Science at Work, School of the Air of the Americas over the Columbia Broadcasting System, presented in cooperation with the National Education Association, Science Service and Science Clubs of America.

"Seeing the Unseen" will be the subject of the program.

fats formerly imported. This is a primary reason why the government has promoted the soybean program.

The rubber substitute, Norepol, is probably the greatest potential utilization of soybean oil. H. T. Herrick, director of the Northern Regional Research Laboratory of the Department of Agriculture, reported to the American Soybean Association meeting.

"This process was deemed of such importance in the war effort of this country," Mr. Herrick said, "that a secrecy order has been placed on it. . . . Suffice it to say that Norepol, while entirely different in composition from either natural rubber or the synthetic rubbers, has properties which will enable it to be used in many of the products in which natural rubber has been utilized in the past."

Plastics have also been produced from soybean meal. Automobile distributor parts, steering wheels and car accessories are a few examples.

Oils were extracted to make paints.

The protein was converted into fiber having many of the characteristics of wool. Developed as an upholstery fabric, it may also be used for clothes and blankets.

Science News Letter, December 5, 1942

"LANGUAGE IS A WEAPON"

■ ■ ■ Forge ahead, win special assignments, in global war and the ultimate peace, through ability to speak a foreign language.

MASTER ANOTHER LANGUAGE
quickly, easily, correctly
by LINGUAPHONE

The world-famous Linguaphone EAR-EYE Conversational Method brings voices of native teachers INTO YOUR OWN HOME. No English is spoken. You learn the new language by LISTENING.

Home-Study Courses in 29 Languages:
RUSSIAN JAPANESE SPANISH
PORTUGUESE CHINESE NORWEGIAN
and 23 others

Send for FREE book

LINGUAPHONE INSTITUTE
31 RCA Building, New York • Circle 7-0830