THE SUGAR BEET

The Root of Success

December, 1942

THIS Month's Cover

is a picture of our new sugar factory located at Nampa, Idaho. This new sugar mill is the only beet sugar factory in America to be built during World War II. Its construction, achieved with the full approval and co-operation of the War Production Board, required a minimum of new strategic materials. It is now turning out daily approximately 600,000 pounds of pure "White Satin" sugar to help replenish the dwindling sugar stocks of a nation at war.

In the Heart of One of America's Finest Beet Growing Areas

Here in the Nampa district, first prospected as a beet-growing area in 1906, but reserved till now for a permanent development as one of the nation's most important sugar producing regions, has been located a 2000-ton-a-day beet sugar mill. The yearly output of this mill alone could supply the entire yearly ration allowance of sugar at the rate of a half-pound a week to all the housewives living in four states the size of Idaho . . . with some to spare! And well it should, now that the sugar industry of the west has been drafted to supply the sugar requirements of thirty western states, and substantial portions of the needs in six more.

An Appreciation . . .
A Promise . . . and a Plea . . .

The builders of America's newest sugar mill, and Idaho's most modern, are grateful to the people of this valley for their splendid co-operation and assistance in the arduous construction period just ended. Hundreds of workmen have labored diligently, sometimes feverishly, to complete the task by harvest time. Architects, engineers, mechanics, craftsmen, laborers, equipment manufacturers, supply men, transportation companies, government officials and the public, generally, have united wholeheartedly to complete the project for an early October opening on schedule! For such cooperation, The Amalgamated Sugar Company expresses sincere appreciation, and pledges in return its co-operation to make and keep this area among the most important sugar beet regions of the nation.

THE SUGAR BEET

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A Job Well Done

Last spring and again this fall the beet sugar industry faced one of the most critical situations in its history. This was particularly true in those areas where acreage had been increased substantially. The draft, war industry and construction of war projects had so depleted our field labor resources that the situation at times appeared desperate.

Now the largest crop in Company history has been thinned and harvest is nearly complete. The factories will turn out a record breaking total of 2,900,000 bags of sugar. Quality of the beets is higher than average and the yields in most of the Company area will exceed the yield on any like acreage in the United States.

Our farmers and the Company are deeply grateful to schools, business firms, luncheon clubs, chambers of commerce, and others who shouldered the load in an outstanding and practical demonstration of community spirit. The arduous work was done in many cases at considerable personal sacrifice.

The American citizens of Japanese ancestry who might have stayed in the relocation camps at leisure and at tax-payers' expense voluntarily saved a substantial part of the crop that now flows in an unbroken stream of sugar from our warehouses to the men of the Army and Navy, to most of our States and for Lend-Lease aid to our Allies.

Looking to 1943

Prospects for next year appear much brighter in many ways. On December 5th Secretary of Agriculture Wickard was appointed National Food Administrator and the sugar industry placed under his control. In announcing some of the goals for food production for 1943 the Secretary stated there would be no restrictions on sugar beet acreage and every effort should be made to plant to the limit of present processing facilities.

The sugar agency under Secretary Wickard has expressed their concern over present returns to growers and apparently is convinced that the growers' income must be substantially higher in 1943 than it was in 1942 if production goals for sugar beets are to be achieved. It is expected that soon after the turn of the year an announcement will be made that will assure the growers better prices for this crop.

The labor picture also appears brighter. The War Manpower Commission who have stated that "farmers may be certain that the government will take whatever steps are necessary to assure enough labor for 1943's record agricultural goals," is collaborating with Agriculture in laying plans to provide labor for a record agricultural production next year. Most important feature of the plan for next year is a highly mobile army of experienced full time farm workers, aided by the corps of local volunteers to meet peak season demands. Plans will be announced in detail as soon as spring planting begins.

The full plan includes the mobile groups, to be transported at Government expense as crops mature; relaxation of local barriers which now restrict the movement of labor from state to state; transfer of experienced farm operators and workers now on sub-standard lands to productive areas; expansion of the U. S. Employment Service in order to place farm workers and fully mobilize volunteer groups; labor training and management program now being developed by Agriculture to aid farmers in making the most effective use of the fewer experienced workers. In addition, nearly all of the Japanese now in camps, who are eligible for agricultural work will be used as compared to the 16,000 in the season just ended.

The announcement which contemplates an increase in the mobility of labor and the transfer of farm operators from marginal lands to more productive areas will turn the spotlight on this territory, which contains some of the most productive farm land in the country, and is operated by proficient farmers. In very few sections in the country is the raising of sugar beets so economically sound as here. Since the advent of the resistant-type beet seed these farm lands have always exceeded the national average in yields per acre of sugar beets and again this year a large part of this territory produced the highest yields per acre in the nation.

Sugar is a sorely needed food commodity at this particular time. The beet sugar industry was called upon to increase its production in 1942, and responded by producing nearly 20 per cent more than in 1941 in spite of trying conditions throughout the year. The growers in the territory served by the Company's plants led the nation by increasing their production 39 per cent. The Company's plants can process 20 per cent more sugar beets than were delivered in 1942. Let's meet our country's call for more sugar by a 100 per cent output for 1943.

H. A. Elcock, Idaho district manager and G. Frank Walters, master mechanic at Twin Falls factory looking over the field of beets of H. L. Osterloh. This field was planted with segmented seed and thinned by Mr. Osterloh. This field has been cultivated and is ready for thinning.

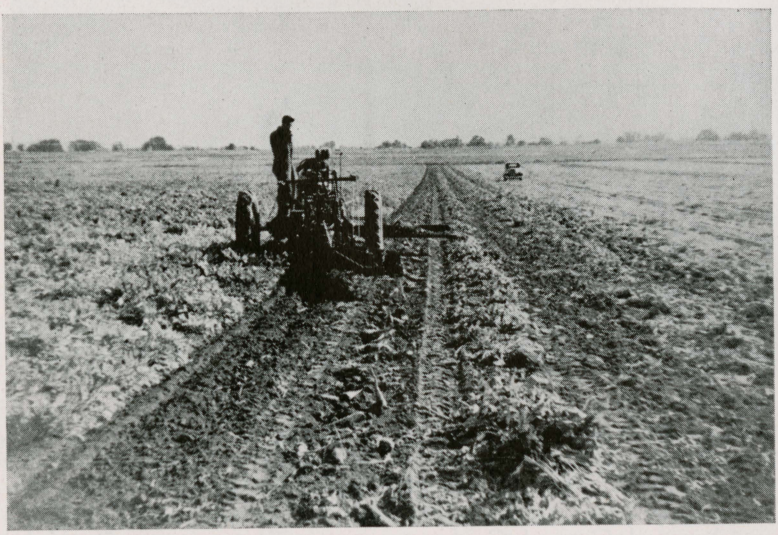
Segmented Seed Solution to Thinning Problem

H. L. Osterloh, Twin Falls, Idaho

Segmented seed planted in a well prepared seed bed, free from weeds, in my opinion is the solution to the beet growers' thinning problem.

After planting five acres of this seed, I find a good stand can be obtained after thinning due to a high percentage of singles. Thinning is much easier and time required is greatly reduced. Plants do not get the shock and set-back due to close hoeing. Thinning may be advanced or prolonged six to ten days depending on labor. I also find that plants from segmented seed are as strong and healthy as regular type seed.

H. L. Osterloh thinning his own beets. This field was planted with segmented beet seed.



John Deere beet topper in action.

Tests Prove Mechanical Topper To Be Practical

A new beet harvester, representing another step in the program of mechanizing the beet sugar industry, was introduced this year by the John Deere Implement Company.

Only a very limited number of these machines were available for use in 1942. One machine was made available to the Nyssa-Nampa District of the Amalgamated Sugar Company and was sold to Mr. B. G. Bybee, Ontario, Oregon, by the Hollingsworth Implement Company of Ontario.

During the 1942 season Mr. Bybee harvested approximately three hundred tons of beets from fields that averaged a little better than nineteen tons per acre. According to Mr. Bybee he found the machine capable of handling from eight to ten tons an hour where conditions were at all favorable for operation. In addition to this fact, he found that the digger recovered many small beets that would have been overlooked by hand toppers. His principal objections to the machine were that it is designed for only one row operations and that in some places it is constructed too lightly for satisfactory operation under all conditions. He was very much pleased with the provisions in the machine for the saving of tops and with the condition in which the field was left after the harvest was completed. In talking over the machine and its operation with Mr. Bybee, he stated that

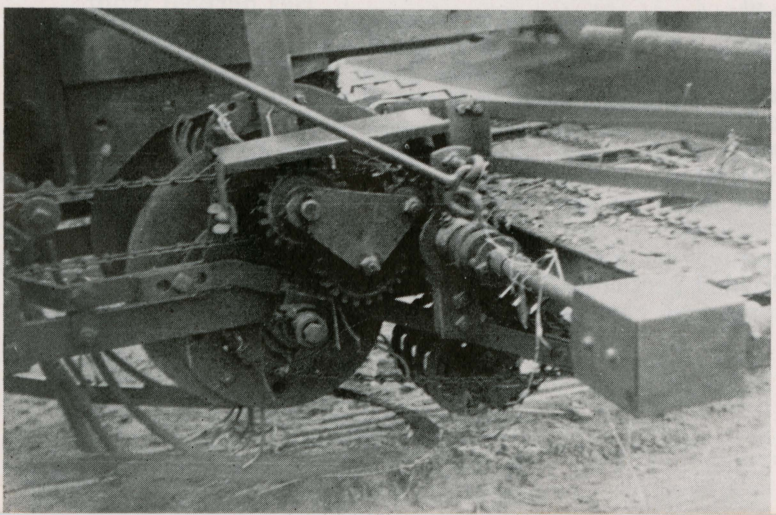
Topper places beets and leaves in separate windrows.

only two men were required for its operation, one a fourteen-year-old boy who drove the tractor, the other a man engaged in adjusting the operations of the machine. He stated that he believed that the digger would work under conditions too wet for hand topping and that the machine could be counted on to do good work so long as the ground was not so soft that it would bury itself.

The machine is designed as a one row harvester. The beets are topped in place, then lifted and delivered into windrows by means of a conveyor similar to a potato digger chain. The windrow conveyor boom can be adjusted to deliver as many as eight rows to one windrow from which the beets may be loaded to trucks either by hand or by a mechanical loader.

General observations made on the machine indicate extremely favorable possibilities in the mechanical handling of the sugar beet crop. As indicated, the use this year was more or less experimental. Some relatively minor adjustments will have to be made before operation will be satisfactory under all conditions. However the problems as indicated by this year's use are such that they should be rather easily overcome.

Mechanical harvesting associated with the use of segmented seed and the mechanical cross blocking of the stands should enable an almost complete mechanization of the handling of the beet crop in succeeding years.



Close up of beet topping unit. The row of four small wheels is device for gauging height of beet, U shape knife directly behind wheel raises and lowers with wheel. Note fingers extending down from drum which pick up tops.

Hairy vetch used as a green manure crop in the experimental orchard at Farmington.

Green Manure Crops For Soil Improvement

By D. W. Thorne, U. S. A. C. Experiment Station

Most farmers associate a dark color with highly productive soils. However, it is not the color itself but factors associated with dark color that cause plants to grow well. Soils composed primarily of mineral particles are light in color, often almost white, and as the amount of humus increases, the color becomes darker. It is soils high in humus, then, that are usually so productive.

Maintaining the soil in good condition is fundamental to increased production. This may be done in three ways: by the addition of crop residues, farm manures or green manures. This article tells of the use of green manure.

The term "humus" includes all of the finely divided particles of partially decomposed organic materials which once constituted the tissues of plants and animals. There are several reasons why humus is so desirable in soils: (1) A soil without humus is not a true soil but is merely an accumulation of mineral particles derived from rock material. (2) Humus gives the soil a good tilth, making it open, porous, and sponge-like in character so that plant roots can easily penetrate it. (3) Humus increases the availability of water and plant nutrients. (4) Humus furnishes food for desir-

able soil microorganisms. (5) A soil well supplied with humus is easier to cultivate than a soil poorly supplied with humus.

There are three broadly different sources of humus for most farm soils: (1) crop residues, (2) farm manures, (3) green manures. Crop residues are of great value in maintaining soil humus, but in most cases they are inadequate. Where an adequate supply of farm manure is available to supplement crop residues, soils are usually maintained at a high humus content. Where such a condition does not exist, green manure crops may prove valuable in building soil fertility.

Where alfalfa is grown frequently in a crop rotation so that it occupies the land one-third to one-half the time and the hay produced is fed on the farm and returned to the soil as manure, a high level of humus is maintained. On specialized farms devoted largely to fruit and vegetable production, however, alfalfa is seldom grown and the supply of farm manure is limited. For such farms green manure crops may prove valuable in building soil fertility.

What Are Green Manure Crops?

A green manure crop is a crop grown to be plowed under for soil improvement. Such crops are for the purpose of adding organic matter to soil and thereby increasing the humus content. In addition, leguminous green manure crops may add nitrogen to the soil. And, under some conditions, green manure crops may have added value in protecting soil from erosion or even leaching.

Desirable Characteristics of Green Manure Crops

The success of a green manure crop program depends largely on the selection of a crop well adapted to individual farm conditions. In general, the following characteristics are desirable: (1) inexpensive seed, (2) ability to grow well on poor soils, (3) ability to make a rapid, succulent growth, (4) the crop should be hardy and able to survive adverse conditions, (5) a legume crop is preferred.

Among the leguminous crops adaptable for green manures in Utah are sweet clover, alfalfa, hairy vetch, field peas, and soybeans. Non-leguminous crops that are occasionally employed include principally annual weeds and small grains. Although seed for legumes is usually more expensive than for small grains, the legumes are to be preferred because of their ability to take nitrogen from the air and add it to soil.

A number of green manure crops are being investigated by the Utah Agricultural Experiment Station. Although these studies are incomplete, some observations and suggestions may prove helpful.

Green Manure Crops for Utah

Alfalfa. Alfalfa is an excellent soil builder under general farm conditions. It is commonly grown for hay in a rotation, but as such is not a green manure crop. A good growth of alfalfa turned under when the crop is plowed up, however, will help to build up poor soils. It is usually not advantageous to grow alfalfa for soil improvement alone. The seed is expensive and the early

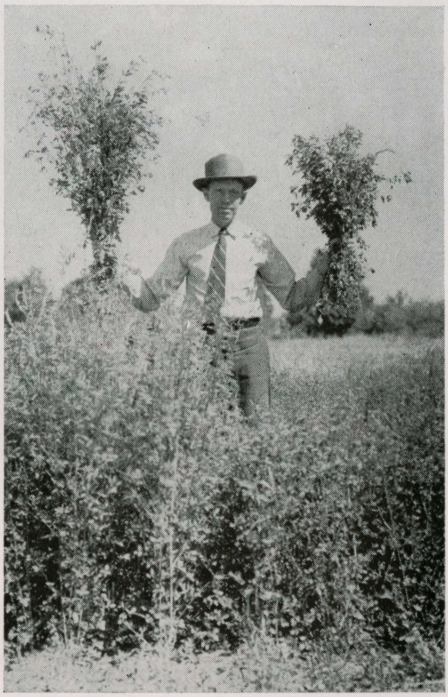
growth is slow. Clover is preferable for soil improvement where a hay crop is not important.

Alfalfa is used to some extent as a green manure crop in orchards, but its high water requirement and long growing season limit its usefulness under such conditions. It usually competes with trees for water and nutrients throughout the entire growing season. Competition for nutrients is partially compensated for by leaving all top growth on the land as a mulch which can be gradually worked into the soil. But because of its high water requirements, it seems inadvisable to plant alfalfa in orchards on gravelly soils.

Sweet Clover. Sweet clover is an excellent crop for building soil humus. The seed is relatively inexpensive; the plants grow rapidly on nearly all soils; a large amount of nitrogen is fixed in the soil; and the crop works well into a short rotation program.

For the small truck farm where cash crops are grown nearly every year, sweet clover builds up the soil while requiring that the land be out of paying crops a minimum of time. Biennial sweet clover can be planted in the latter part of August or early September. In a normal year a good growth should be obtained by the latter part of May. This can then be plowed under and late crops such as potatoes planted about two weeks later.

For spring planting, annual, or Hubam clover can be used. It can be planted with a small grain or pea crop. After the grain or peas are cut the clover should make a good growth to be turned under in the fall. When planted at the same time, Hubam clover makes a more rapid growth than common white sweet clover.

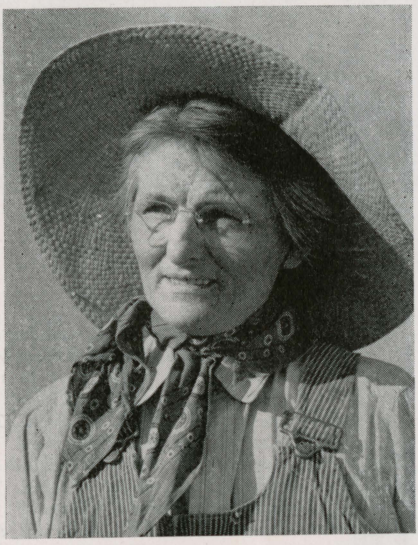


Hubam (left) and common white sweet clover (right) planted on the same date in the spring for green manure crop.

Grow Your Own Nitrogen

In the past, farmers whose soils needed nitrogen could choose between purchasing commercial nitrates or grow legumes. This choice is no longer possible as commercial nitrates are out for the duration and farmers must now grow their own nitrogen.

Local Citizens Perform Patriotic Service In Saving Beet Crop



Mrs. Emma Doutit, pastry cook in Congressional cafeteria, Washington, D. C., tops and loads beets in Marsing, Idaho, for a "vacation."

We have just completed the harvest of the largest crop of sugar beets ever grown for the company.

Nearly one million tons of beets have been produced from 60,000 acres for an average yield of more than 16 tons per acre. The national average for this year's crop is expected to be only 12.2 tons.

Despite many difficulties which made the job look discouraging at times, practically no beets were lost this fall through inability of growers to get labor. This achievement was due partly to the good weather which prevailed throughout most of the harvest period, and to the wholehearted cooperation of thousands of "volunteer workers" who labored tirelessly and patriotically to harvest the crop. Without this help a substantial portion of the crop might have been lost to our farmers and to the nation.

To mention all who have assisted with this year's crop would be a big task. From the beginning of thinning last spring until the last beets were topped and hauled this fall, these volunteers from almost every walk of life performed valuable services.

Many women workers who thinned beets in the spring came back in the fall to top and load or to drive beet lifters and trucks, thereby releasing men for other harvest work. In one district, for example, a group of six women of one neighborhood assisted and cooperated with a first-year grower, his

Nampa high school teachers drive beet truck, left to right: Miss Eloise Kennedy and Rosa Smith.

(1) *A group of Nampa faculty and students harvesting sugar beets on Carl Chase farm. Left to right — Charles Imberg, employed on the farm; Students Welson Thomas, Dales Johnson, Bernard Foster, Catherine Norquist, Elaine Helt, Irene John, High School Teacher Evelyn Hagelin, Horace Maffit, Principal C. C. Cowin, and Bill DeVore.*

(2) *Four members of Nampa family work together to harvest the beets on the farm of Harvard Lawles and Charles Cotner. Left to right — Fiffie Wynia, Samuel F.*

Wynia and Mrs. Wynia. A second son was not present for the picture.

(3) *Another group of volunteer workers in Idaho beet field.*

(4) *Albion Normal College students assist in beet harvest.*

(5) *Eulalie Howell tops beets on father's farm near Meridian, Idaho.*

(6) *Rupert girls help thin beets.*

wife, son, daughter, and hired man to top and haul the beets from the fifty-three acres. Many similar cases could also be cited. The work of these women has demonstrated beyond question that the so-called "weaker sex" can be definitely counted on to assist in producing food for victory as long as the war lasts. We observed also that many women who had never before done farm work did it this year, not principally for the pay they received, but for the service they were rendering . . . and liked it.

Many older men who had been inactive for years returned for farm service the past season. A number of men of seventy, or older, could be seen most any day driving trucks or beet pullers, while a few even topped and loaded beets in the fields.

White collar workers from stores, shops and offices also helped in the beets both with thinning and harvesting. In the spring scores of local business institutions closed shop to permit their employees to work in the beet fields. Many of the same firms and individuals performed similar service in the fall by staggered shifts and by providing one-day-a-week work holidays.

Invaluable assistance and advice was given by government officials and agencies, headed by the Governors of Utah, Idaho, and Oregon, agricultural commissioners, and by numerous public officials and private citizens; also regional, state, and local commissions, boards, and agencies. Among those who deserve special mention are the United States Employment Service, the War Relocation Authority, State and County War Boards, Civilian Defense Committees, Agricultural Adjustment Administration, State Ex-

Loading beets on the McCoy beet field are Eulalie and Orvidean Howell and Stanley and Blair Cole.

tension Service and County Agents, the United States Reclamation Bureau, Farm Security Administration, State, County, and City Boards of Education, State Attorney General's office, Farm Bureaus, and the Grange organizations of Oregon and Idaho and by local peace officers. Many of these not only gave assistance in the line of duty but went far beyond their usual responsibilities to assist in the production of sugar beets and other victory foods.

As we look forward to next year, we anticipate continuing problems for farmers in general regardless of the crops grown, but none which cannot be solved by the same unselfish community cooperation which we have witnessed this year. In addition to all the aids which we had in 1942, a number of new factors will be present in 1943 to encourage another record beet sugar production. For example, we have already received assurances from the federal government that "essential farm workers" who are still on farms will be given draft deferment if they request it, and that essential farm workers may no longer transfer to other work and expect derferment without permission of local draft boards. The government has also announced that greater emphasis will be put next year on the production of "concentrated" "essential" foods having high food values, such as sugar beets, and less emphasis on certain less essential bulky vegetable crops that must be shipped to distant markets. With such a policy and with western sugar now supplying all the needs of thirty states and large parts of the needs of six more, we have confidence that ways will be found in 1943 to enable beet growers of the west to produce another record crop, perhaps even exceeding the unprecedented harvest of 1942.

Sugar Beets Have Been the Way Out for Thousands of Japanese Evacuees

More than seven thousand Japanese from the west's War Relocation Centers volunteered during the past year to work in the sugar beet fields of the nation, thereby assisting materially in the production of an essential weapon of war . . . quick energy food.

To a large percentage of these recruits the experience was a new one. Many of them were mere youngsters; some were city bred Japanese who had come from fine homes on the Pacific Coast but had been forced into reception centers, then relocation centers by the circumstances of war. Some were women and girls who responded to agriculture's call for "man power" by joining the army of harvesters.

While the number of recruits was small compared to the needs of the industry and compared also with the potential number

(1) *Two Japanese girls from Eden camp help to harvest beets on farm of Herbert Tiegs.*
(2) *Japanese girls from Hunt Relocation Center pause for a pose. Left to right—Mary Fujita, Rosie Nakamura, Mary Yotsunye, Kinko Watanabe, Bessie Nakamura.*
(3) *Some more Hunt girls, left to right—Shizuyi Takato, Emi Takato, Keyo Kimura, Kimi Niiya.*

(4) *A truck load of Japanese beet workers arrive at Caldwell from Tulelake. Thom Yego standing middle right foreground in charge.*
(5) *A beet crew working for Sircin Brothers in Nampa district. Standing left to right—Hiroshi Masada and Ben Karnikawa; sitting—Frank Hirose and Hideo Tokimoto.*
(6) *These Japanese girls also worked in Idaho beets.*

(7) *The cook house and dining room at Caldwell F. S. A. camp where many Japanese workers lived and ate.*

(8) *Individual housing units at Caldwell F. S. A. camps.*

(9) *M. Ikami and Toshio Hirotsu take in a picture show at Caldwell.*

(10) *Mrs. Greenfield, truck driver, and boys harvest beets in Nampa district, left to right—Henry Insaka, Henry Rodana, Mrs. Greenfield, Henry Yamada, Tonaka, Frank Hirshara.*

(11) *Also in Nampa district, left to right—Standing (back row) Arima, Hironska, Ichikana, Sugiyama, Hanamoto. Front row—Kaneko, Takata.*

(12) *Tom Yego and group of boys near Caldwell.*

that might have responded, the beet growers who were fortunate enough to receive their quota of these workers greatly appreciate the help that was given.

Recruiting of Japanese laborers from relocation centers followed a plan approved by the War Relocation Authority. For every evacuee taking outside employment there was a specific offer of employment from an individual farmer. This offer specified housing accommodations, the terms of employment, and other details. The wage scale prevailing in the region for this type of work to be done was also guaranteed under the regulations.

Recruiting of evacuees was done largely by the sugar company, and at its own expense, in behalf of the beet grower . . . and the job cost a war chest of money . . . and a lot of man power besides.

Best recruiting results were obtained from the temporary reception centers, before the removal of evacuees to their permanent relocation bases, although many were recruited from the relocation centers themselves.

The industry had a wide variety of results from its recruiting efforts. From the Eden camp in Idaho, for example, nearly two thousand Japanese were recruited from a total population of eight thousand. From Topaz, Utah, on the other hand, with approximately the same population, barely one-tenth that number were recruited. From Tule-

Japanese and Caucasian girls work together in Nampa beet harvest:
Front row left to right—Valeta Hershberger, Sylvia Smith, Tomiyo Asaki, Yoneko Miziehata.
Second row left to right—Francis Yonemura, Hisa Asaki, Ramona Williams, Lois Patrick, Molly Kiyomura, Lsiuja Murakami, Pat Mori.
Third row left to right—Jeanne Miller, Marjorie Anketell, Roberta Myers, Bonnie Feeler, Janice Jones.

lake, in Northern California, with fifteen thousand inhabitants, only eight hundred volunteered for outside farm work, though this camp's own agricultural project utilized many additional men and boys. These differences are also partly accounted for by the fact that the Topaz and Tulelake camps had higher percentages of evacuees without previous agricultural experience.

The Amalgamated Sugar Company was among the very first to ask the Government's permission to recruit Japanese evacuee labor for the harvesting of agricultural crops. The first of these recruits came out of the Portland reception center last spring for work in Eastern Oregon.

Tomiyo Asaki from Eden Relocation Center and Sylvia Smith, daughter of Del Smith, agricultural superintendent in the Nampa district, top and load beets for Herbert Tiegs near Nampa.

Because of uncertainty as to the attitude of communities toward the evacuees and the fear of unpleasant incidents, local and state officials were at first reluctant to support the program. But as the need or help became acute and the attitude of the evacuees and local communities became mutually adjusted to the situation, acceptance of the Japanese has become general throughout Amalgamated territory.

The employing farmer has shown uniform consideration for the evacuee worker, as attested by the voluntary praise for "the boss" expressed by many a well-trusted Japanese employee. Almost invariably the conditions of employment were lived up to by both parties to the contract, and short terms of service were expanded into longer ones; sometimes into permanent jobs.

Howard Imazeki, writing in Daily Tulean Dispatch, published by the evacuees in the Tulelake camp, says:

> "The majority of the white farmers are astonishingly good to the evacuee workers. I have yet to hear any serious complaints against them. They don't seem to take advantage of the workers' plight . . . They are friendly and have a knack of learning the first names of their workers. Most of them come to the camp in the morning and pick up their boys and bring them back in the evening. A lot of them lend their

own passenger cars to the Japanese crew hands to transport workers. Several beautiful cars are seen parked along the camp road nightly."

Many evacuees who accepted "trial contracts" of thirty days, or more, later sent for their families to join them for the duration, or plan to return to the same communities with their families next spring.

The job of thinning, cultivating, and harvesting the largest crop of sugar beets in the nation's history has not been an easy one for either the grower or the processor. Sometimes the job seemed almost impossible. Some beets were lost, though the percentage of loss, on the whole, was extremely small. Neither was the job an easy one for the inexperienced Japanese farm worker. And not enough Japanese volunteered to replace the regular farm workers who have left the farm for military service or to earn higher wages in defense industries.

In 1943 the nation faces another shortage of sugar . . . a shortage that is likely to become more critical than the present one. So the beet sugar industry must again stretch itself to produce a bumper crop . . . bigger, we hope, than the crop of 1942. To do this we must get even more help than last year from the Government through draft deferment of farm workers, cooperation of students, white-collar workers, women, and over-aged workers from neighboring communities. Besides, we must have even more help from the Japanese evacuees than he has given this year . . . much more!

Here is an opportunity for every Japanese, alien or citizen, to show his loyalty to America.

The challenge is now laid down to all able-bodied Japanese who love to breathe free air and earn their own living. The sugar beet industry has done more than all other private agencies combined to provide work for evacuees, opening to thousands of them the door of opportunity to get out and look around for work of their own choosing, as well as to perform patriotic service on the food-production front. Meanwhile many of these beet workers have accumulated hundreds of dollars as a nest egg for the earliest possible resumption of educational or industrial activities on a normal pre-war basis.

But even more important than all this, work on the farm-front is one of the best possible ways for evacuees to rebuild goodwill with the American public which was so unfortunately lost for them at Pearl Harbor, no matter how unjust such a judgment may seem to countless loyal Americans of Japanese ancestry, who love our free institutions and our democratic way of life as dearly as any native citizen of any race. It is more than flag-waving, more than economic expediency which moves us to say that only through "all-out" service on the production front can Japanese hope to re-establish themselves in peace and prosperity, in the full confidence of the American public, for the duration of the war and for the more pleasant years to follow.

Results of Segmented Seed Trials

Every industry is continuously on the look out for improved methods that will increase production, and reduce costs. This is true of sugar beet production, particularly now in view of the limited and high priced labor.

While shearing of the sugar beet seed balls to get a large per cent of single planting units is comparatively a new idea, it has received the popular approval of the industry more than any other undertaking since resistant seed became a reality.

Approximately 10,000 acres were planted in 1942 throughout the beet producing areas, mostly in an experimental way and results were uniformly satisfactory. Labor saving in thinning was about 10 man-hours per acre. 1943 plantings will be large with estimates exceeding 300,000 acres total.

During the past season the writer conducted test plots to learn methods of planting; time saving in thinning, methods of cross blocking and the affect of the new method upon the ultimate yield.

The plot of land used was a 5.6 acre tract of uniform light sandy loam soil. The land had been out of alfalfa for four years and had grown four consecutive crops of beans. No fertilizer had been applied in the four years, which made the fertility level rather low but uniform. One hundred pounds of treble super phosphate was applied per acre at the time of planting. The land was not plowed, but thoroughly worked with a spring tooth harrow before working down to a firm seed bed.

The plots were planted with a John Deere drill, using regular plates for the whole seeds and the 72 hole plates for the segmented seed.

The first 16 rows were planted with regular seed and not used in the test. Following this 16 rows of regular seed were planted, followed by 48 rows of segmented seed. This was repeated three times for the plots and the remainder planted to segmented seed but not used in the test. The 48 rows of segmented seed were divided into three plots, two of which were cross-blocked with the Colorado type cross blockers which was gangs of three inch duckfeet with two inch spacings.

Thinning Treatment

Plot number one of regular seed, regularly planted was thinned in the conventional way, with short handled hoes. Plot number two, segmented seed but not cross blocked was thinned in the conventional way with short handled hoes. Plot number three cross blocked was thinned to singles and extra close blocks taken out by short handled hoes.

Yields

Yields were as follow on an acre basis:

Regular seed, regularly thinned	21.01 Tons
Segmented seed, regularly thinned	21.60 Tons
Segmented seed, Cross blocked, short hoe	21.31 Tons
Segmented seed, Cross blocked, long hoe	21.11 Tons

Plot number four cross blocked was thinned only by long handled hoes, extra close blocks chopped out and what doubles could be taken with the hoe. During the weedings no effort was made to remove any more doubles. This proceedure was followed through the remaining eight plots which gave three sections of like treatment.

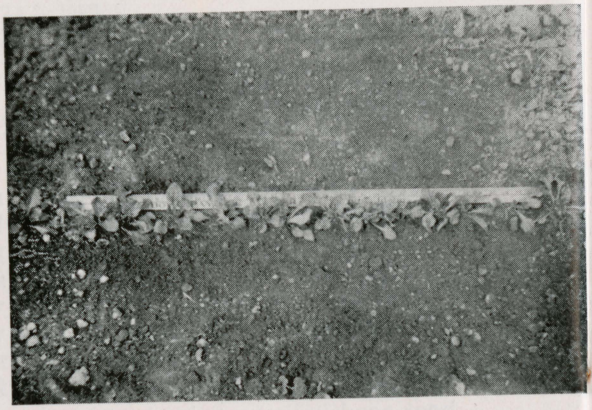
Stand Count

Before thinning the regular seed was practically continuous down the row while the segmented seed plots had some long skips due to a heavy frost which took many of the single seedlings, just as they were coming through the surface. After thinning and cross blocking, there was an average of 98 beets per 100 feet of row space where regular seed regularly thinned was growing; 90 beets where segmented seed was hand thinned; 77 beets where cross blocked and hand thinned; and 76 beets where cross blocked and long handled hoe used in thinning.

Conclusions

From this one year of tests and from observations of many other like tests it can be concluded that:

1. The use of segmented seed is practical and a definite labor saving measure.
2. Seed beds must be well prepared—better than average.
3. Seeds should be planted shallow or enough will not push through. If natural moisture is not sufficient, preparation should be made to irrigate the crop up.



Section of row of seedlings from segmented seed, averaging approximately one seedling per two inches of row.

After first cultivation before cross blocking; one of the segmented seed plots directly in the foreground.

The same section as photo No. 2 after the plot had been cross blocked, thinned with long hoe, weeded and irrigated. Photo taken July 13, 1942.

4. Heavy soil that has a tendency to crust is likely to germinate a poor stand unless the crust can be broken.

5. Improved methods are needed for cross blocking. Most types now in use have a tendency to mulch the surface and cover too many small seedlings. Some sort of guard to slide over the beets being left would undoubtedly be a help.

6. Cross blocking should not be attempted unless the stand is exceptionally good, nor when there is any trash that will drag.

7. Thinning with long handled hoes is satisfactory, will greatly increase the speed of the average workman, and increase the number who can work at thinning beets.

8. A larger per cent of the seedlings are left undisturbed when thinning which usually produces a stronger more sturdy plant.

9. Some force feed drills can be made to work satisfactorily,—almost as well as the John Deere plate drill that can be especially equipped to plant segmented seed.

10. That sufficient machinery for segmenting the seed and for planting may be the bottleneck in a large expansion of this type of planting this next season.

Make the Poultry Flock Lay and Pay

By Byron Alder, Poultry Department U. S. A. C.

Poultry and egg production on the farms of America will aid materially in making up for the shortage of other meats in the farm and city homes during the emergency. Whether these important protein foods will entirely fill in this gap will depend largely on how the many farm and commercial flocks are managed.

The labor problem is undoubtedly just as acute on the poultry farms as in any other phase of production. If the labor available in the homes where poultry is produced is fully utilized and if certain time consuming practices in the care of the birds are eliminated, there should be little if any difficulty in keeping up poultry production and even increasing it many flocks.

Egg production during the late fall and early winter period is obtained largely from the pullet flocks, and it is during this period that eggs are in greatest demand and, therefore, higher in price. Good egg production at this time and also a high yearly average are obtained largely

A part of the Utah Agricultural Experiment Station poultry yards.

as a result of good management, first, in the kind of birds kept in the laying pens; second, the housing conditions; and third, the feed and method of feeding.

The yearling and older hens may not produce as many eggs at this season as the pullets; but if carefully selected, all culls are taken out and if well housed and well fed, they should now be producing at a profitable rate and gradually increasing.

Good housing means plenty of room for the birds, 3½ to 4½ square feet of floor space per bird is best; plenty of fresh air without draft with openings adjusted frequently during the winter period to avoid as much as possible sudden and extreme changes in temperature and a good, deep, dry straw litter on the floor. Good feeding means an abundance of feed each day supplying all the necessary vitamins, minerals, proteins, and other nutrients.

Where the labor shortage is acute, considerable time can be saved without a serious reduction in eggs or rate of growth by abandoning certain time consuming practices such as the regular feeding of moist mash, soaked or other wet feeds; frequent feeding of grain or dry

mash; carrying all feed at each feeding from a distant granary or feed room.

The Poultry Department of the Pennsylvania Agricultural Experiment Station in their recent bulletin No. 425 shows that free choice, hopper feeding of grain and mash permits more efficient use of available labor since feeding may be done when most convenient and with satisfactory returns as measured by annual egg production, egg weight, layer weight, flock mortality and hatchability. "Both Leghorn and Barred Rock pullets consumed more grain than mash and that a high protein (31.5 per cent) mash gave results neither superior nor inferior to results secured with a standard mash (18.5 per cent) fed with similar grain mixtures similarly provided."

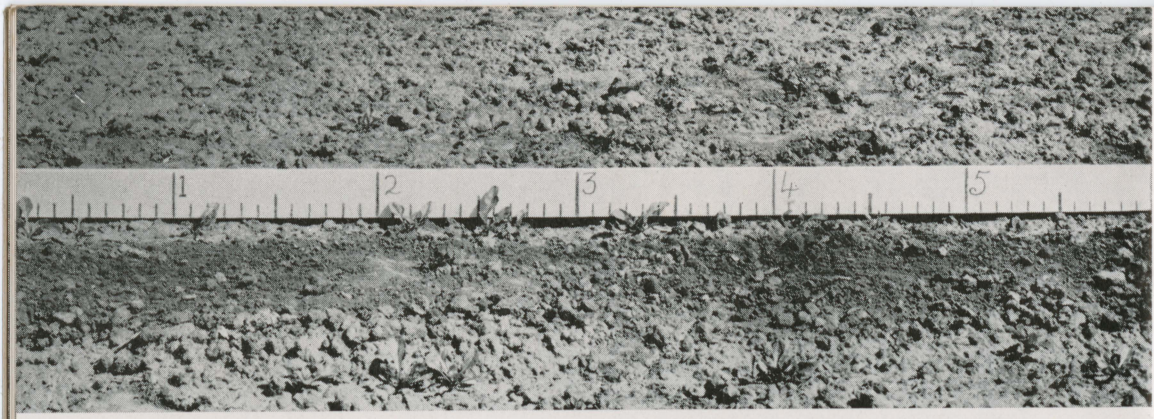
"It was also found that feeding wet mash and condensed buttermilk did not improve biological performances but did increase labor expended and that feeding at least part of the grain in the litter helps to keep the litter in better condition than feeding all of the grain in feed troughs."

Feeding both grain and mash in troughs "does not compensate for deficiencies in quality of mash and grain supplied nor of failure to carry out proper management in such details as flock culling, egg collection, or maintenance of sanitary housing quarters."

One of the chief advantages in hopper feeding both grain and mash in addition to saving labor or time in feeding is that the birds can have all they can eat each day. There is a positive relationship in every flock for a given period between the amount of feed consumed and rate of egg production or rate of gain in weight in the growing flock. When grain or mash is fed in limited amounts there may be times when the flock is not producing at a maximum because of a shortage of feed.

Where grains or mash are hopper fed, there should be plenty of feeding space to hold an abundant supply of the feed until the next feeding and without waste of feed. Filling the feed troughs too full or using a poor type of trough are the most common causes of waste of feed. Each flock should have enough of the open type feed troughs so that when filled not over one-third full to prevent waste of feed, there will be plenty of feed available to last until the next time of feeding.

The only time a flock of laying hens or growing pullets are overfed is when part of the feed is wasted. Rate of egg production or rate of growth is in direct proportion to feed consumed. The difference in feed consumption in a flock of hens with an average egg production of 100 eggs per hen per year and another flock with an average egg production of 200 eggs per year should not be more than 10 pounds of feed per hen for the full year. In other words it requires about 62 to 65 pounds of feed per bird per year for body maintenance and when other conditions are favorable, there should be approximately one dozen eggs produced for each pound of feed consumed above this amount.



This field planted with segmented seed at rate of 4½ lbs. per acre.

Segmented Beet Seed Reduces Thinning Labor

W. W. OWENS, U. S. A. C.

The use of segmented seed promises to revolutionize beet thinning. What is this segmented seed which is also known as sheared seed or cracked seed? It is the ordinary beet seed cut down in size by a machine. Why is it cut to a smaller size? The piece of the seed ball remaining after going through the machine contains fewer seed germs than the original seed. How many seed germs does each beet seed contain? In ordinary beet seed about one-fourth of the seed balls contain one seed germ each; the other three-fourths contain two, three, four or five seed germs per seed ball. In the segmented seed about three-fourths of the seed balls contain only one seed germ, the other fourth is made up largely of seed balls containing but two seed germs each.

This, then, is the secret of segmented seed. Through mechanical means a high percentage of the seed balls is reduced to one germ. Plant breeders have worked for this goal but as yet they have not succeeded. It is easy to see the difference in the thinning problem when three-fourths of the seed balls scattered out in the row produce single plants as compared with three-fourths of them producing two or more plants per seed ball. The ordinary seed produces many clumps of beets; three and four plants growing closely together because they all come out of the same seed ball. Careful hand labor is necessary to thin such a stand. Even then, the one beet left from this clump is damaged to some extent by removal of the other beets. The single beet of the same size which is not disturbed has a better chance of survival.

Advantages of segmented seed may look good on paper, but how about them in actual practice. The writer has observed fields planted with such seed over a wide territory in three different sugar company areas during the past spring and summer. He has talked with farmers who planted it and with sugar company field men who were watching it closely. The

reaction of all of them may be summed up in the statement of an agricultural superintendent when he was asked if farmers who had tried segmented seed and their neighbors who had observed it would not demand such seed next year. His reply was "We will have to use a shotgun to get them to take anything else."

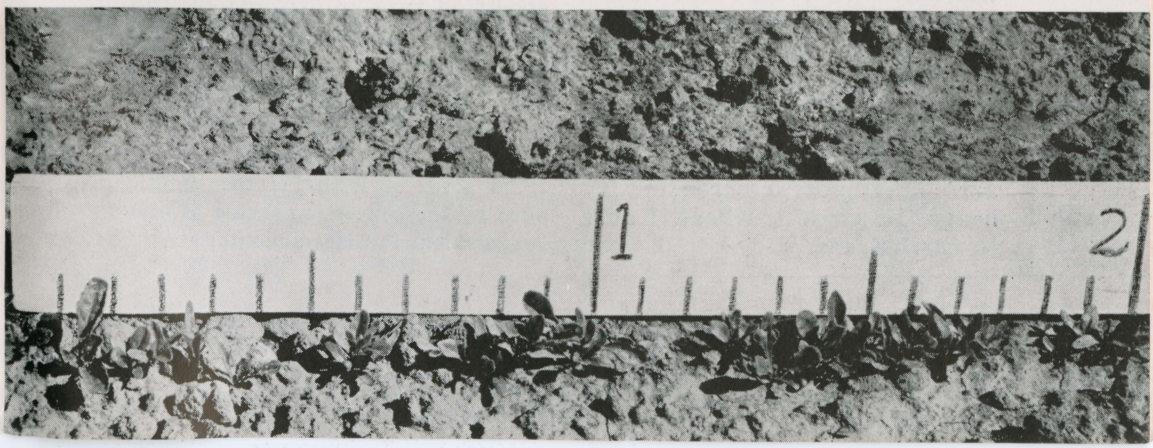
In the planting of segmented seed a few things are essential in order to secure the maximum benefits. A better than average seed bed must be prepared with the moisture as near the surface as possible to assure good germination; depth of planting must be controlled to avoid planting too deeply, and seeding rates should be higher for early planting than for late planting.

Two points stand out in favor of universal use of segmented seed: First, thinning labor is greatly reduced, Second, the thinning period can be lengthened out. Thinners of all kinds; men women, boys, girls, experienced or inexperienced showed a decided preference for fields planted with segmented seed. In fact, inexperienced thinners did good work because they had but little stooping. Many fields were thinned with a long handle hoe. Experienced company field men say good thinning can be done with a long handled hoe. Some fields that were not thinned at all gave promise of a fair yield. Thinning may be extended much farther into the summer without reducing yields. This is a distinct advantage to the farmer who has a small labor crew or to the district where one crew must cover a large acreage.

The sugar factories have given segmented seed fair tests under field conditions. They will prepare the seed for planting. Less than half as many pounds of seed need be planted per acre. It will be smaller but more uniform in size. The farmer should prepare a better seed bed for smaller seed which should be planted shallower. He should have moisture available near the surface of the soil as this seed germinates quicker than regular seed.

A patriotic appeal will be made to farmers to maintain their beet acreage in 1943. Their big problem will be labor. If they can get by the thinning period the next big labor demand comes at harvest time. Our country would not permit a much needed sugar crop to go to waste when ready to harvest.

This field planted with regular seed at rate of 10 lbs. per acre.



Crop Units to Guide Farm Deferment

A new Selective Service release to local boards, defining essential farm products and establishing "factors" to determine what workers are essential, and hence to be classified in 2-C and 3-C, the new agricultural classifications, was made public December 5.

16 Units Will Be Standard

Production of 16 "war units" will be required under the definitions set up by the Agriculture Department, and approved by the War Manpower Commission, for classification of a farm worker as essential. The production that counts is to be that attributable to the worker's own effort, whether on one or several farms. According to the order the 16-unit standard is to be only a guide for local boards, which may decide to defer a man because they think he could increase his production to that level in six months, or may decide to adopt higher standards because of local conditions. The order states: "A war unit is a measure of production of essential farm products. In the attached table essential farm products are given a relative value in terms of war units. The following, for example, are each equivalent to one war unit: 1 milk cow, 20 feedlot cattle, 1 acre in apples, 5 acres in dry beans, 15 acres in wheat, 1 acre in carrots, etc."

"Conversion Factor" Helps Calculation

An example of a farm worker's "score":

	Animal units or acres x conversion factor	War unit
45 acres corn	45 x 0.20	9.00
30 acres pasture		
25 acres oats	25 x .07	1.75
30 acres wheat	30 x .07	2.10
15 acres timber		
5 milk cows	5 x 1.00	5.00
12 hogs	12 x .05	.60
100 hens	1 x 1.30	1.30
Total war units		19.75

The "conversion factor" by which calculations may be made of the war units credited to a given farm worker, is "the percentage that a given product, whether it be a single animal or a single acre of special type production, bears to a war unit, for example:

"1 acre of wheat is 0.07 of a war unit.

"1 acre of cabbage is 1.00 of a war unit.

"1 hog is 0.05 of a war unit; etc."

"The number of acres given to a certain type of production or the number of animals of a specified type multiplied by the conversion factor results in the war unit value, for example:

"3 hogs multiplied by the conversion factor of 0.05 results in 0.15 war units.

"19 acres of Irish Potatoes multiplied by the conversion factor of 0.50 is equivalent to 9.50 war units; etc.

TABLE OF PRODUCTS AND CONVERSION FACTORS

	Number of Animals or acres to equal 1 war unit	Conversion factor
1. Livestock and livestock products:		
(a) Beef cattle:		
(1) Farm herds	12	0.08
(2) Feedlot	20	.05
(3) Range	15	.07
(4) Stocker (bought and run on grass)	75	.01
(b) Chickens:		
(1) Broilers	600	†.17
(2) Egg production	75	†1.30
(3) Flock replacement	300	†.33
(c) Hogs	20	.05
(d) Milk and its products	1	1.00
(e) Sheep and wool:		
(1) Farm flocks	30	.03
(2) Lambs in feedlot	160	†.62
(3) Range	45	.02
(f) Turkeys	40	†2.50
2. Fiber and oil crops and potatoes:		
(a) American-Egyptian cotton	2.5	.40
(b) Castor beans	3.0	.35
(c) Flaxseed and soybeans	12.0	.08
(d) Hemp	5.0	.20
(e) Peanuts, Irish potatoes, and sweetpotatoes	2.0	.50
3. Field crops:		
(a) Barley, wheat, grain sorghums, oats, rye, dry field peas, cover crop seeds, hay and hay crop seeds	15.0	.07
(b) Corn, dry edible beans, rice, broomcorn, green peas, and sweet corn	5.0	.20
4. Fruits, tree	1.0	1.00
5. Medicinal and insecticide plants: Aconite, belladonna, digitalis, henbane, and pyrethrum	0.4	2.50
6. Small fruits and berries: Blackberries, cranberries, dewberries, raspberries, strawberries, blueberries (tame), currants, gooseberries and quinces	0.7	1.50
7. Truck and canning crops: Broccoli, Brussels sprouts, collards, endive, kale, tomatoes, carrots, chard, escarole, mustard greens, spinach, turnip greens, onions, snap beans, green leafy lettuce, lima beans, green peppers, turnips, asparagus (from present plantings), cauliflower, cabbage (other than Wakefield)	1.0	1.00
8. Other food and special crops:		
(a) Cotton, Upland, 1-inch and over	2.0	.50
(b) Nuts (from present plantings)	5.0	.20
(c) Sugar beets	2.0	.50
(d) Sugar cane	1.0	1.00

Nonessential farm products for which no war unit credits are given, were listed as follows:

1. Special crops:
   - (a) Cantaloupes.
   - (b) Cotton, Upland, under 1 inch.
   - (c) Hops.
   - (d) Popcorn.
   - (e) Watermelons.
2. Vegetables:
   - (a) Artichokes, celery (bleached), eggplant, and lettuce (Iceberg).
   - (b) Kohlrabi, cucumbers, horseradish, okra, radishes, and rhubarb.
   - (c) Garlic and leeks.
   - (d) Pimentoes, squash, and pumpkins.

8. Other crops not listed.

†Per 100 head.

"My Experience With Segmented Beet Seed"

W. F. Stimpson, Dietrich, Idaho

A year ago I became interested in planting some segmented seed with the purpose of reducing my labor cost. I made a rather thorough investigation and finally decided that if it were possible I would be willing to plant my entire crop with segmented seed.

It so happened that my beet field remained wet so late last spring, that it was impossible for me to plant before the 3rd of May at which time practically all plantings of beets in the various territories were completed. By this time the sugar company had some excess segmented seed; so I took a chance on an idea that to me looked sensible and reasonable.

My entire crop of 52.7 acres of beets was planted with segmented seed, May the 3rd to the 9th, at a depth of not to exceed ¾ of an inch. The planting was done with a John Deere No. 32 beet drill with the special segmented seed attachments, at the rate of 6½ pounds of segmented seed to the acre. The stand before thinning had no skips which would interfere with the final stand, in spite of the fact that several seedlings had died because of blackroot (within practically each foot of row, one to several single plants could be easily left).

Thinning started June 2nd and was completed June 16th. The thinning crew consisted of the Shoshone Highway District crew who were on a week's vacation for beet thinning if they so cared; also a group of local women and some local boys. All of the groups used long handled hoes, except one or two of the boys who kept changing to short handled hoes. After thinning the first day, very seldom did any of them reach down to pull out a double beet; they chopped them down to singles with their long handled hoes. I consider that I got far above an average job, in fact, an excellent job of thinning. The 52.7 acres were hoed but once for which I paid $3.50 per acre. I paid the regular thinning wage of $9.00 per acre. The thinners averaged one-half acre per day. There were a few of the thinning crew who tried to make a living at this job; most of them considered it as just a vacation. The beets that were first thinned were free of weeds, but were extremely small; the last thinned beets were very big and rather weedy, yet a good job of thinning was accomplished in both instances.

Several different yields were harvested. I had a few acres that produced as high as 31 tons to the acre, 12 acres that produced a 25 ton average and an 18 acre field that only produced 12 tons to the acre. I considered that the segmented seed had nothing whatsoever to do with the difference in yields.

I now feel that after one year's experience with segmented seed, that 4 pounds of this seed to the acre will fit the bill. This will give more single seedlings and make thinning easier than was even the case of my particular crop. I also venture to say that if my same crew of thinners were given short handle hoes and required to thin in the regular manner, I would have done well to have had 10 acres of my beets thinned before they quit.

Drills for Sheared Seed

During the past season a considerable acreage of sugar beets was planted with sheared or cracked seed in the beet growing areas of the United States. The reason for the shearing of this seed is to secure as high a percentage of single germ seed balls as possible, and the planting of these single germ seed balls will insure a great number of single beets.

The concensus of opinion from those growers who planted this seed last season is that it will not only reduce costs but will go a long way in solving the beet labor problem next spring.

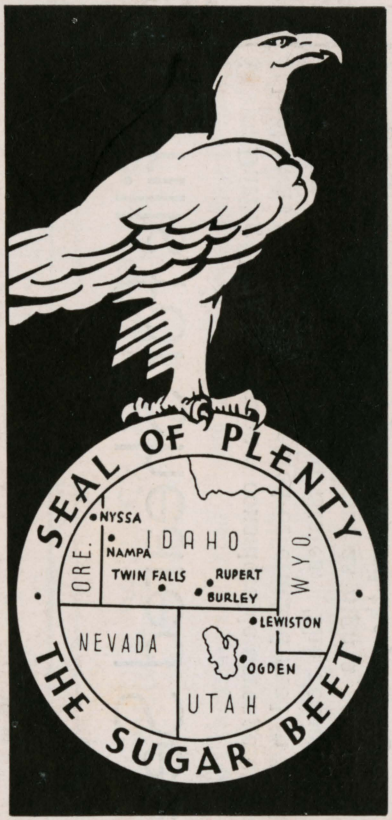
The Amalgamated Sugar Company has the equipment and facilities to shear a big percentage of the seed that will be used in its districts next spring.

Naturally one of the first questions is the beet drills with which to plant this seed. The John Deere plate drills were used almost entirely last season. It was only necessary to change the plate. A few other drills were used including the Planet Junior which requires no additions or alterations. The No. 12 Flute Feed John Deere and the No. 9 Superior were used in some areas and were reported to be satisfactory without any changes other than reducing the rate of seeding.

The Company plans on doing considerable work this winter in determining the possibility of adapting other type drills such as the P & O, and Rassmann for planting this seed.

If there is any question in your mind as to whether your drill will plant sheared seed or can be adapted to do the job, consult your fieldman.

It is the intention of the Company to offer its shop facilities at each factory at cost to the growers to repair and make whatever changes in the drill that may be necessary so that every grower, if possible, may avail himself of the advantages of this kind of seed.



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