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ECONOMICS AND
SOCIOLOGY READING

FARM SCIENCE

Iowa State University of Science and Technology / Ames, Iowa



chat with the editors

THE OUTLOOK FOR 1961 . . .

In contrast to a year ago, snow was not yet in evidence in central Iowa as this issue went to press in mid-December. When Steve Perrin took this photo north of Ames last year, however, the situation was quite different.



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What are the prospects for the year ahead as you make your farm business and family living plans for 1961? The Farm and Home Outlook section, beginning on page 16 of this issue, may be helpful to you in this regard.

The authors of the section are Francis A. Kutish, extension economist, and Mrs. Helen T. Sorensen, extension specialist in home management. They've attempted to summarize the outlook for the areas that they believe will be of the most interest or importance to you in making plans for your farm business and for your spending for family living for the rest of the year.

In the broadest sense, the over-all farm and home outlook situation for 1961 might be said to be "about the same as last year." But this can be deceptive. Actually, the outlook points to a number of differences between this year and last for specific areas of the farm business and family living. Taken all together, the differences do tend to offset one another in terms of the general outlook situation.

But the key for effective planning in the year ahead lies in taking note of the prospects or changes for each of the areas covered in the outlook. We suggest, therefore, that you check over the entire farm and home outlook section with this in mind.

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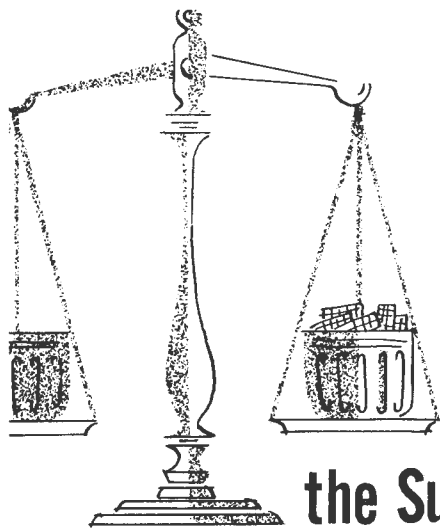
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Can “Payments-in-Kind” Solve the Surplus Problem?

by Arnold Paulsen and Earl O. Heady

FARM PRODUCTION has outpaced demand for some time. As a result, we've accumulated extensive surpluses under government loan and storage. These surplus stocks and their costs are the symptoms of an important national problem. The public is becoming more and more concerned about the size of the stocks and the cost of carrying them. Pressure is increasing to do something about both.

Some people believe that the stocks themselves are depressing farm prices and are the heart of the farm problem. In other words, why not get rid of the stocks and solve the problem?

“Payments-in-kind” are being discussed as one method of doing this. Generally payments-in-kind refer to paying farmers in bushels of corn or wheat, rather than money, for taking land out of production or for complying with other possible government farm programs. “Use the surplus to eliminate the surplus,” or, “Pay the farmers in unneeded grain instead of cash.”

What Purpose? Why are payments-in-kind so appealing? Probably because they appear to offer a way to accomplish several goals that might be attained with a change in farm programs. (1) Stop building up surpluses. (2)

Reduce stocks by using them for something. (3) Maintain farm prices at a “satisfactory” level. (4) Maintain food prices at a “satisfactory” level. (5) Accomplish these goals at a minimum treasury cost.

There are other goals, too—conservation of resources, economic growth, freedom for farmers, justice, equity and many others. It isn't possible to say what goals the public deems most important or how much of one the public is willing to give up to accomplish another.

Still, the attractiveness of the payments-in-kind approach probably has its base in the possibility of being able to accomplish several goals at the same time. To more accurately gauge the effectiveness of such an approach, let's consider first the surplus stocks and then how a payments-in-kind program might work.

About the Stocks: The stocks themselves have done very little to depress farm prices. From another study at Iowa State, Geoffrey Shepherd concluded, “For feed grains as a whole, the effect of withholding CCC stocks appears to be as great as if the CCC stocks were removed from the market.” The stocks are of little concern to the daily market so long as they aren't fed back into the market.

If we got rid of all surplus stocks and only all current production were to flow onto the market, price improvement wouldn't come about. The government

stocks—withdrawn and immobilized from the market—aren't the major depressing force on prices. The depressing force is the supply that's *still* free on the market. Even with the stocks gone, annual production can still give a market supply greater than the amount that has been free on the market in recent years.

Reduce Supply? Under some circumstances, payments-in-kind could *increase* the supply on the market and thus act to further depress market prices. That is, they could cut down surplus stocks *without depressing* market prices *only* if the supply-management or production-control parts of the program were effective enough to “make room” for the additional supply. There would be “room” for the additional supply at present market prices only if current production were cut as much as the amount released from storage in “grain payments” *plus* the amount that has recently been going *into* storage. Payments-in-kind could cut down surplus stocks and *improve* market prices only if production were cut *more* than the amount released from storage and *more* than the amount that has recently been going *into* storage.

Let's look at some examples. Say that normal-weather grain production expected for next year is 200 million tons with no production control. A payments-in-kind program might release 10 million tons of stored grain. If the counteracting production control were not successful and 200 million tons still were produced, then the net effect would be the same as if we produced 210 million tons and put them on the market. If current production were cut 5, 7 or even 9 million tons, the situation still would be similar.

Prices would be lower than with no controls, no supports and constant stocks whenever production wasn't reduced enough to counteract the amount released as payments-in-kind. Full average-weather production would clear the market *only* at prices below present levels. And with no production control but payments-in-kind, prices would be still lower.

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Say the control program reduced over-all production the full 10 million tons. Then 10 million tons could be released from storage without depressing market prices below the "no supports-no controls" level with constant stocks. Thus, payments-in-kind on a bushel-for-bushel basis—giving a farmer 1 bushel for each bushel he cut production below normal—would reduce stocks. But it would have no effect in *improving* prices above the "no supports-no controls" level.

Say the control program reduced *over-all* production more than 10 million tons. Then prices would be higher than the "no supports-no controls" level. How effective would the control programs have had to be to maintain the prices which existed in 1959 and 1960? An output-management program using 10 million tons of payments-in-kind would have had to reduce over-all grain production an average of 26 million tons each year in 1958 and 1959 to maintain 1959-60 grain and livestock prices.

Probably, no supply-control program would be designed to get less than 1 bushel of control for each bushel paid in kind. Could it be designed and administered to get as much as 26 bushels of production control for each 10 bushels paid in kind? Perhaps, but supply-control programs often fall short of their goals. While corn production, for instance, is being reduced, grain sorghum may be increasing. Or, production may drop in one state and increase in another. One farmer may cut his output while his neighbor increases. Acreage may be reduced, but yield per acre may increase. Favorable weather may result in production exceeding normal expectations. Any of these would mean no room on the market for grain released as payments-in-kind without depressing prices beyond goals.

How Effective? How much theoretical production control might a bushel of grain buy? Theoretically it might buy more than a bushel. It shouldn't be necessary to pay a producer the full anticipated value of his crop to

induce him not to grow it. This is because growing the crop involves direct out-of-pocket costs.

If the crop isn't grown, these costs can be saved. Most farmers would be induced to cut production if the payment for not growing a crop were equal to normal yield times price, less out-of-pocket costs.

It might be possible on this basis, say, for 1 bushel of payment-in-kind to buy 10 bushels of production control. This might be the case on marginal land, if hired help and custom machinery were used. There the expected value of the crop would be low and uncertain, and almost all costs could be saved if the crop weren't grown. On a typical family farm in the Corn Belt, on the other hand, direct out-of-pocket costs are a small proportion of the total value of the crop. If we consider investment, machinery and family labor as fixed costs, few savings could be made even if the crop weren't grown. In this case, 1 bushel of payment-in-kind might "buy" something nearer 1¼-2 bushels of expected production.

How efficient is grain, compared with cash, as a way of paying for voluntary participation in a supply-control program? Probably not as efficient. Given a choice between a check and an amount of grain of the same value, most people would choose cash. Then they wouldn't have to convert part or all of the grain to cash to buy the things they need. Offered an amount of grain of more value than the check, they might more readily accept the grain and take the trouble of converting it into cash. But it could certainly require at least as much, if not more, value in grain as cash to buy a given volume of production control.

We can't ignore the fact that grain is more expensive to transport and deliver than a check if the grain is to be delivered as a check would be. And the volume of grain, presumably, would have to be measured exactly. A certificate might be given—perhaps redeemable in cash or grain. This would be a form of check but would introduce another means of exchange and more bookkeeping.

So payments-in-kind might not be the least-cost way of liquidating government stocks. It might be cheaper for the government to sell the stocks on the market and use the proceeds to make money payments to farmers.

Stabilize Prices? It was possible to stabilize grain prices from years of small crops to years of large crops by varying the rate at which stocks were built up. Releasing stocks at a variable rate in an optional payments-in-kind program could be used to stabilize prices under a supply-control program. That is, the rate at which stocks were released could be varied to offset variations in production or demand and thus stabilize prices.

The government currently releases some grain from stocks each year. In the last 8 years, however, this has been more than offset by additions to stocks. The amount released each year is converted into money in the market. Payments-in-kind would use the grain directly for payments rather than use cash for distributing the value to farmers. But the effect on the supply and the price of grain would be the same whether the grain is converted to money in the market and the money sent to farmers or the grain distributed to farmers directly.

Summing up: We could *dispose* of all our surpluses with payments-in-kind. Optional payments-in-kind could be used to *stabilize* prices under a supply-management program. However, liquidation of the stocks wouldn't necessarily *raise* prices.

To *improve* market prices, any payments-in-kind programs must be coupled with an output-management program effective enough to accomplish at least three things: (1) a sufficient reduction in current output to offset the stocks released by payments-in-kind, (2) an additional reduction in current output the size of the past annual additions to stocks, (3) still another cut in current output which would reduce the total supply per person below what it has been in the last few years.

Subsoiling Doesn't Pay in the Midwest

Interest in subsoiling comes and goes. But studies in three midwestern states show that deep tillage and deep fertilization seldom pay as compared with good fertility and management practices at usual plow depths.

by W. E. Larson, W. G. Lovely and V. C. Jamison

THERE ARE few benefits gained from deep tillage or deep fertilizer placement in the Midwest. There sometimes is a yield increase with deep treatment, but the value of any yield increase must be looked at *in terms of the increased cost*. And the cost of a soil treatment increases greatly with the depth of the treatment.

In other areas of the United States with different soil and weather conditions, subsoiling occasionally has given large crop increases. Under extreme conditions, subsoil treatments in these areas can make the difference between a good crop and a failure. But it's doubtful if expensive sub-surface treatments can give economic returns for crops in the north-central states as compared with good fertility and management practices for the normal or surface plow layer.

Interest in deep tillage, however, comes and goes. A favorable report from some locality stimulates interest over a wide area. When test results show little or no advantage over normal

methods, interest dies out—at least for a few years. Then, another favorable report of results under certain soil and weather conditions revives interest.

Subsoil Tillage . . .

The conditions that favor tillage below the normal plow depth of 6-8 inches are limited to certain soil and cropping situations and, often, specific weather conditions. For example, very compact layers tend to develop under machinery traffic on some of the medium-textured soils in the Mississippi and Louisiana delta land. When this "pressure pan" is broken by deep tillage in the fall, moisture storage from winter rainfall may be improved, and yields of the following crop may be increased. But the expensive treatments must be repeated often because the effects are only temporary. And soil moisture and weather conditions must be favorable for effective results.

In the Midwest, where soils freeze regularly to depths of 3-5 feet or where drouth may cause shrinkage and subsoil cracking, research shows little benefit from deep tillage. Natural forces may often change the subsoil structure more than can be done by a deep tillage.

Research Results . . .

Research on subsoil tillage alone or in combination with deep lime or fertilizer placement has been conducted in Iowa, Illinois and Missouri. The results tend to confirm also that expensive subsoil fertilizing generally isn't justified when compared with good fertility and management practices for the surface plow layer.

Here's a brief review of the experiments in the three states.

Iowa Findings: Sites for the Iowa study were chosen in areas



Repeated studies have shown few benefits from subsoiling in the Midwest, and costs of deep treatments increase greatly with depth of the subsoil treatments.

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where there was considerable local interest and were selected to include a wide range of major soil types. The treatments compared different depths of tillage with and without applications of fertilizer in the tilled zone. The soils tested were Ida, Marshall, Galva, Edina and Grundy silt loam and Webster-Glencoe silty clay loam. Fields were subsoiled at 40-inch intervals, and corn rows were planted right over the subsoiled channels. Subsoiling was done in the fall on all but the Ida soil (which was subsoiled in early spring). The equipment used is shown in the photo.

While there was much local interest in the tests, earlier research indicated that few benefits should have been expected. The soils studied have no severely compacted layers in the root zone within reach of the subsoiling tools. As expected, subsoiling alone resulted in no meaningful changes in corn production in most cases. Subsoiling at 24-inch depths decreased the yield on Edina silt loam by 9.7 bushels per acre in 1956 and by 6.4 bushels per acre on Grundy silt loam in 1957.

For the deep fertilizer tests, the fertilizer was distributed in a band in the bottom of the slot in Ida soil and from the bottom to 4 inches above the bottom of the slot for the Webster-Glencoe soil. The result: Yields were better when the fertilizer was merely plowed down than when deep placed. In one case, yield decreases from deep placement as compared with plow-depth fertilization still were apparent 3 years after application.

Illinois Results: Subsoiling trials were made on several soils in Will and Kankakee counties. Chiseling 10-12 and 16-18 inches deep was compared with ordinary plowing. An implement similar to the one used in the Iowa tests was used at 40-inch intervals.

In experiments at eight different locations, 12-inch subsoiling resulted in 5 increases and 3 decreases in yield, and 18-inch subsoiling resulted in 7 increases and 1 decrease in yield in the first year after subsoiling. Statistical analy-

sis, however, indicates that only at one of the locations was there a good chance that the increase was actually due to subsoiling and not to other possible differences. The second year after treatment there were 2 yield increases and 4 decreases from 12-inch subsoiling and 3 increases and 3 decreases from 18-inch subsoiling, but only one of the increases was statistically valid. The average increase for all treatments at all locations was 3.6 bushels per acre during the first year. During the second year the average yield from the subsoiling and no subsoiling treatments was the same.

Consequently, even for the same soil type, benefits from subsoiling can be expected only part of the time and at a few locations. These probably will occur where there are severely compacted or cemented layers in the root zone within reach of the subsoiler.

Deep lime and fertilizer experiments also were started in Illinois—on a claypan soil near Carbondale in southwestern Illinois. Phosphate and potash fertilizer were used according to soil tests and also at several times the requirements indicated for the upper 3 feet of soil. The lime and fertilizer were mixed in the soil to depths of 9, 18, 27 and 36 inches.

Preliminary results showed that, even though corn rooting was influenced, yields weren't affected by depth of mixing. Lime and fertilizer increased yields regardless of the depth of mixing, and mixing the fertilizer in the topsoil was as effective as mixing in the subsoil layer. Higher rates of fertilization above minimum requirements didn't make much difference either—except in the surface where they tended to lower yields. It's still too early for a report of any residual effects of these treatments.

Missouri Tests: Subsoiling alone appeared to be detrimental in these studies conducted on a claypan Mexico silt loam near McCredie in central Missouri. This is probably because subsoiling caused some of the acid subsoil to be mixed with the fertile topsoil. Only when lime and phos-

phate fertilizer were mixed with the subsoil or placed in subsoil slots was there any evidence of benefit. This method improved the rooting and growth of sweet-clover and resulted in a small increase in corn and soybean yields. But it didn't increase the yields of small grains.

After a second treatment, the plots were seeded to alfalfa to study the residual effects on hay yields from subsoil shattering and deep placement of lime and fertilizer. Though small, the yield increases over the next 3 years were consistent enough to indicate that deep treatment of acid subsoils may have some benefit for deep-rooting legumes.

Four methods of placing or mixing lime alone and lime plus concentrated superphosphate were tested, starting in 1954. Lime was applied at 8 tons per acre alone or in combination with 400 pounds of 45-percent phosphate. Corn was grown on one set of plots; alfalfa on another.

Placing lime on the plowsole gave little benefit to corn. Small yield increases resulted from placement in the subsoil slots and from a double plowing method. But the increases were too small to be of practical value. The concentrated superphosphate had little effect or tended to lower yields when placed with the lime.

In the tests with alfalfa, lime alone placed in the subsoil by these methods had little benefit. In combination with superphosphate, placement in the more closely spaced slots (21-inch intervals) gave a small (0.09 ton per acre per cutting) hay yield increase.

In Total . . .

The results of these and other studies indicate that the benefits, when they occur, from deep tillage and deep fertilization are variable and relatively small in the Midwest. Considering the expense of the treatments, it's doubtful whether subsoiling treatments can be justified in this area—particularly as compared with the use of good fertility and management practices in the usual plow layer.

On Vocational-Technical Education

by I. W. Arthur

THE NEED and opportunities for technically trained and qualified personnel is growing on both the national and international levels. And vocational-technical education is receiving increased attention in a number of states in the nation. There are several reasons. The main one is the current speed of technical change.

To meet the growing opportunities and needs for technically trained personnel, considerable attention is focusing on vocational-technical training of less than college grade.

First, what is this vocational-technical training we're talking about? It's necessary to make a distinction, here, between training in a craft or trade and the training of a technician. A technician needs to know "why" as well as "how." Technicians are called upon to use basic knowledge in science, mathematics and theory in addition to any necessary mechanical and manual skills. Much of the training in many crafts and trades, for example, is spent in gaining mechanical and manual skills. An electronics technician, on the other hand, spends most of his training period studying electrical theory, mathematics, science and circuits.

The purpose of this article—a situation report—is to present a broad outline and some examples of what's happening in vocational-technical education in different states.

Several types of programs are common in most of the states but aren't necessarily carried on at state expense.

The apprenticeship and training system supervised by the United States Department of Labor is available in all states. Not all states, however, are equally prepared or equipped to provide training in the "related subjects" that are considered an essential part of the program.

Technical high schools are located in most of the big cities of the United States. These aren't, however, a part of the general educational systems of the states. They're set up to serve only a portion of the students in a particular city's school district. Iowa, for instance, has only one technical high school, located in Des Moines.

Vocational training programs are offered in some of the high schools in all of the states. These include, among others, programs in agriculture, home economics, trade, industry and practical nursing. Some state and federal aid is available to a part of the high schools in each state for this training. Secretarial and office-procedure training is offered in most of the larger high schools. Industrial arts courses are also offered in secondary schools, but as general instruction rather than vocational.

Informal on-the-job training, of course, goes forward independently of public education. There are private trade schools and correspondence institutions available, too. Some of these private organizations do excellent jobs; some do not. But, in this article, we're reporting mainly on schools operated within or by the general educational systems of the various states.

Let's turn now to some of our immediately neighboring states to see what they're doing—in addition to the kinds of programs already mentioned—to provide trade and industrial training within their educational systems.

Nebraska operates the state-financed Nebraska Vocational Technical School at Milford. Young men are admitted from all over the state and a few from out

of the state. Eleven trades are taught by 32 instructors; there were 142 graduates in 1960. The courses generally last 2 years.

South Dakota has a division of its Southern Teachers College at Springfield which teaches eight trades.

Minnesota passed legislation in 1945 to permit and assist cooperating local school districts in developing area vocational schools serving more than one district. Eight cities and towns have since established such schools. These are Mankato (1947), Winona and St. Cloud (1948), Thief River Falls (1949), Duluth (1950), Austin (1951), St. Paul (1952) and Minneapolis (1955). State and federal funds and regulations are provided to assist these area schools with partial reimbursements for staff salaries.

All Minnesota residents between 16 and 21 years of age are eligible for training with no tuition charge. Nonresidents and persons over 21 must pay tuition. Area schools are established only after study of the need for them and local ability to provide buildings and equipment, and approval of the state board of education is required. Thirty-six trades and occupations are taught, including several for women. Evening classes are available for adults who want to upgrade themselves. Each area school has a supervisor who is responsible to the superintendent of schools in the district in which it's located.

Wisconsin was one of the early states to become active in vocational-technical training in local schools. A state board of industrial education was established in 1911 which required all cities of 5,000 or more to levy a ½-mill tax to support vocational training in high schools. Modifications were made in 1913 and again in 1917 to gain advantage of the Smith-Hughes Act. Requirements were that a local board be established to foster and maintain vocational schools for instruction in trade and industry, commerce, agriculture and household arts in part-time and full-time day and evening classes.

Of the 44 vocational schools operating day programs, 26 are

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presently offering post-high-school training in one or more fields. Some of these schools are relatively weak and poorly equipped, attended and financed, while others are very good. The Milwaukee vocational school, for example, reports an attendance of more than 700 and a comprehensive vocational-technical program carried on in 58 shops.

Early promoters of vocational education in Wisconsin insisted on a separate board for vocational and adult education. There has been competition and friction involving this board and the boards for the state colleges and the university. Some consolidation has taken place in the latter two groups. Wisconsin also maintains the Wisconsin Institute of Technology at Platteville and Stout State College at Menominee in addition to the eight state colleges.

Legislation was passed in 1957 providing for area vocational schools in areas with a population of 20,000 or more and a property valuation of at least 60 million dollars. Following a favorable local vote, such schools can be established by counties or municipalities in cooperation with and subject to the approval of the state board for vocational and adult education.

Illinois maintains a Vocational-Technical Institute at Southern Illinois University, Carbondale. This is the only state owned and operated institution of this type in Illinois, though there's a state aeronautical school at the University of Illinois at Urbana. Many cities in the state, however, maintain vocational-technical schools, and there are many private trade schools in the state. The school at Carbondale has experienced rapid growth. It's located in a depressed area of surplus population and has an enrollment of about 700 in 14 programs.

Missouri has no state owned and operated vocational-technical schools of less than college level. The Lead Belt Technical School, Bon Terre, and the St. Louis County Vocational School each are operated as a part of one school district. But adjacent school districts contract with these schools to send tuition students

for trade and technical training.

Iowa hasn't had a separate, noncollegiate vocational-technical school. The State University of Iowa at Iowa City provides non-collegiate training for practical nurses, for medical and dental technicians, and for linotype operators and pressmen. Iowa State University at Ames has provided certain noncollegiate training in agriculture and engineering for a number of years. A 2-year Technical Institute was established at Iowa State in the fall of 1960 to provide training for technicians in the fields of civil, mechanical and electrical engineering. Initial enrollment was 72, though expansion is possible depending on the demand for such training and available funds.

Vocational-technical training, thus, is being provided in a variety of forms even when our view is confined to the states immediately surrounding Iowa. Looking around to other parts of the country, we find still different plans and programs by which other states are providing non-collegiate vocational-technical training.

California has 63 junior colleges receiving state support. Most offer the first 2 years of general college work. Formal education may stop here, or the credits earned may be transferred to another college or university. Many of the junior colleges also offer vocational-technical courses geared to needs of local business and industry. In southern California, for example, a number of these junior colleges place heavy emphasis on the techniques and skills needed in the aircraft industry. A 4-percent sales tax is used to support the public educational programs in the state.

Texas and *New York* make extensive use of junior and community colleges to provide vocational-technical training as well as general education.

In the industrial northeast: *Connecticut* has spent more than 40 million dollars since World War II to establish vocational-technical schools. *Massachusetts* has long provided such training.

Pennsylvania State University has 16 branch schools operated

by its state extension division. *Pennsylvania* also has a state law permitting several towns to combine their school boards and districts to set up appropriate schools, including a vocational school, to serve the whole group. *Indiana* has five branch schools operated by the Purdue University Extension Service that offer junior college and vocational-technical courses.

Florida and several other states have school districts organized on a county-wide basis. The county may then offer vocational work in the general high school or set up separate facilities. Essex County, N. J., for example, has a vocational-technical high school for women located in Newark.

Oklahoma has a technicians' school operated by Oklahoma State University, Stillwater, and a separate trade school operated in an old army camp at Okmulgee. Technicians are given math and science courses at Stillwater. The trade school is located in the eastern part of the state where there is the greatest surplus of manpower.

Labor surpluses and the demand for vocational-technical training have increased in the South as cotton acreage has declined. *Louisiana* established 26 trade schools throughout the state—perhaps too many to finance satisfactorily. *Kentucky* has 13 vocational schools; three are state owned and operated, and 10 are operated by cooperating school districts. *Alabama* has six state-operated trade schools. *Georgia* has four. *North Carolina* has had three for some years and, in 1958, passed legislation authorizing 25 million dollars to establish a system of 18 trade and technical schools to serve most of the state.

Industrial expansion in many parts of the South has been rapid in recent years. Widespread support for trade and industrial schools has followed.

Though the pattern is by no means uniform, there is progress in the area of vocational-technical training. In a later article, we'll outline more specifically the facilities available—and the gaps that exist—for vocational-technical education in Iowa.

You Can Simplify

Oat-Legume-Grass Seeding



by T. W. Casselman and J. M. Scholl

ABOUT 15 percent of Iowa's cultivated acreage is planted to forages each year. A recent survey indicates that about 77 percent of the state's farm operators use endgate or centrifugal seeders and that about 23 percent use drills in establishing their forage stands.

The same survey also indicates that the most common method used to establish a forage stand is (1) broadcasting oats on disked cornstalk land, (2) disking again for seed coverage, (3) distributing grass and legume seed on the surface and (4) rolling or harrowing for seed coverage. This method, in use for some time, involves several trips over the field to do the forage-seeding job.

Single Operation . . .

As a means of reducing forage seeding costs, interest has been growing in the possibility of seeding oat-grass-legume mixtures in a single, once-over operation. There has been some hesitation in accepting this practice for two reasons. (1) It seems logical that

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the smaller, heavier seeds might sift down through larger or lighter seeds—resulting in a change in the ratio of small, heavy seeds such as legumes to the lighter, larger seeds such as oats as the hopper progressed from full to empty. (2) There is a belief that larger seeds should be placed at a greater depth than smaller seeds.

Agricultural engineers and agronomists have been looking into these problems for several years. Dale O. Hull and Maurice Clark reported in the August 1953 issue of *Iowa Farm Science* on trials with a single-hopper seeder. They concluded that, ". . . grass-legume seed mixtures—particularly those containing fluffy seeds like brome—will not separate in the hopper and can be seeded as a mixture." More recent tests with other mixtures have supported this conclusion.

Seeding Results . . .

In one test in 1957 we tried a grain drill and a broadcast spreader for ability to seed mixtures without seed sorting or stratification. The mixture used included 50 pounds of oats, 5 pounds of brome grass, 3 pounds of orchardgrass and 8 pounds of legume seed. Seed was thoroughly mixed before being placed in the hopper, and each machine was given a

severe shaking by driving over a rough field.

Samples of the seed mixture were taken at the hopper outlet before shaking and at several stages of seed depth in the hopper while the machines were operating (see table 1).

You'll notice some changes in the seed ratios at different stages, but none of the variations are important from a practical standpoint. Any of the samples would have given you an adequate seed ratio for a good forage stand.

Uniform Distribution?

Uniform distribution on the ground of the seed mixture from the hopper, however, is a different matter. There's no problem if you use a drill. The hopper mixture is fed down the seed tubes and placed precisely where you want it. This isn't so with the endgate or centrifugal seeder. You've probably seen strips of brome left by a centrifugal seeder in an alfalfa-brome forage seeding. This is because the light and fluffy brome seeds have more air resistance and don't fly out as far as the smaller legume seeds.

We checked the distribution pattern of the centrifugal seeder used in our tests. The oats and legume seeds covered about a 20-foot swath, while the brome grass and orchardgrass covered about a 10-foot swath. So, sown in the normal manner, the mixture will result in strips of the two grasses in the forage stand. And, to get a uniform distribution of the grass or grasses would require operating the centrifugal seeder to give

TABLE 1. Mixture of grass and legume seed as placed in hopper and as drawn from hopper as seeding progressed.

Stage	Percent of mixture by weight			
	Oats	Brome-grass	Orchard-grass	Legume
As mixed	75.8	7.6	4.5	12.1
Grain drill				
Before shaking	71.0	7.4	6.2	15.4
After shaking				
Hopper full	70.5	7.7	5.6	16.0
Hopper empty	65.2	10.0	6.5	18.3
Broadcast spreader				
Before shaking	72.1	8.5	6.0	13.4
After shaking				
Hopper full	78.8	8.1	4.7	8.4
Hopper empty	75.0	6.4	5.9	12.7

an overlap of roughly 50 percent. This, in turn, would give you a double stand of oats and legumes since you would, in effect, be seeding the wider swath of the oats and legumes twice.

You can counteract this, however, when using a centrifugal seeder for sowing mixtures by cutting the proportion of oat and legume seeds in the mixture by half. Instead of using a mixture of 50 pounds of oats, 5 pounds of brome, 3 pounds of orchardgrass and 8 pounds of legume, use the same amounts of brome and orchardgrass but only 25 pounds of oats and 4 pounds of legume. If your mixture is different from the one we used, simply use half of the oats and legume seed you normally use in your mixture. Then, the 50-percent overlap pattern will automatically give you the proper oats and legume stand.

Seed Depth . . .

We looked into the depth-of-seed placement problems in 1958 and 1959. Using plots on the Agricultural Engineering Farm at Ames, we planted seeds separately and as a mixture (the same as used previously) at various depths to find out what happened under different conditions. Following germination, we counted plants in a given area to determine stand. We also harvested the oats at maturity to determine yield. Table

2 summarizes the results. Planting methods are briefly described at the left and the forage stand and oat yields resulting are shown at the right.

The number of oat plants and grain yield were affected by planting depth in both years. Stands were generally satisfactory when the seeds were planted at least $\frac{1}{2}$ inch deep. Rolling surface-planted seeds with a corrugated roller improved oat stands over the unrolled plots, but results weren't as good as when seeds were planted at a depth of $\frac{1}{4}$ inch or more.

In 1958 the oat stand and grain yield were reduced substantially when the seed was planted less than 1 inch deep. But this was most likely due to the dry spring of 1958. The grass stands in 1958 were better when the seed was placed $\frac{3}{4}$ -1 inch deep than when sown on the surface and covered by rolling. Rolling aided in improving grass seedling stands, but seeding with a drill was superior to surface seeding. Many seeds on or near the surface sprouted in 1958 but then died because of insufficient moisture.

Moisture conditions in 1959 were more favorable for forage seeding establishment. The best stands in 1959 were obtained when seed was placed at shallow depths and covered by the drill or rolling. Placement depths of legume seeds weren't critical within

the range used in these tests. Legume seedlings emerged well at all depths used except for unrolled surface plantings. From an overall standpoint, it appears that at least shallow coverage of $\frac{1}{2}$ inch or more is important and that leaving seed on the surface is inferior to covering with a roller.

In Summary . . .

Separation of oat-legume-grass seed in the hopper isn't a problem. Uniform distribution of the seed when sowing isn't a problem when drilling and can be achieved with an endgate or centrifugal seeder by using the overlap procedure suggested. This leaves the problem of planting depth.

We can say generally that oats will emerge and develop satisfactorily when covered to a depth of $\frac{1}{4}$ -1 $\frac{1}{2}$ inches. Legumes will emerge from a depth of 1 inch. Orchardgrass and brome grass both do best when covered to a depth of $\frac{1}{4}$ - $\frac{1}{2}$ inch. Since all of these depths overlap at about $\frac{1}{2}$ inch, it does seem feasible to plant forage seeding mixtures from a single-hopper machine in one operation.

To successfully seed an oat-grass-legume mixture in one trip over the field with a single-hopper machine, remember these points:

- Mix seed thoroughly before putting it in the hopper; scooping 6-8 times from one pile to another will do this.

- Don't plant too deeply; plant at about $\frac{1}{4}$ - $\frac{1}{2}$ inch for the small grass seeds and don't worry about the oats and legumes being too shallow.

- If you use a grain drill, "float" the openers to produce a furrow only $\frac{1}{2}$ - $\frac{3}{4}$ inch deep; covering chains should be suitable for leaving the seeds in a satisfactory location for germination.

- If you use an endgate or centrifugal seeder, overlap the pattern enough for uniform seed distribution; don't forget to adjust your seed mixture as suggested for this practice. Avoid disking for coverage of the legume and grass seed; it will place some of the smaller seeds at too great a depth. A harrow pulled behind the seeder should give adequate coverage to protect it against birds and drying.

- On dry or light soils, firm the soil over the seeds with a roller.

TABLE 2. Effect of method of seeding on number of plants and oat yield.

Treatment ^a	Year	No. of plants emerging (plants per sq. ft.)				Oat yield (Bu./A.)
		Brome- grass	Orchard- grass	Legume	Oats	
A. (Check) Oats 1-1 $\frac{1}{2}$ " deep from grain box. Grasses on surface from fertilizer box. Legume on surface from legume box. Rolled.	1958	0.8	1.6	11.9	14.5	61.2
	1959	4.7	9.3	18.2	12.0	78.2
B. Same as A, but oats and grasses sowed $\frac{3}{4}$ -1" deep.	1958	2.4	4.1	8.7	6.5	31.0
	1959	2.8	4.2	22.1	12.8	71.2
C. Same as A, but drill "floated" to seed oat and legume seed $\frac{1}{4}$ -1" deep.	1958	—	—	—	—	—
	1959	5.5	10.0	18.4	9.1	65.9
D. All seeds mixed and sowed 1" deep from grain box. Rolled.	1958	—	—	—	—	—
	1959	1.6	2.9	15.5	12.5	87.1
E. Same as D, but all seeds placed at $\frac{1}{2}$ " depth. Rolled.	1958	—	—	—	—	—
	1959	2.5	2.9	17.9	12.1	86.0
F. Same as D, but all seeds placed on surface. Rolled.	1958	1.0	2.8	12.5	4.3	11.7
	1959	2.9	5.8	17.9	9.3	51.6
G. Same as F, but no rolling.	1958	0.7	1.0	6.0	1.9	2.1
	1959	1.8	4.5	7.2	6.1	26.3

^aIn 1958 a Gandy distributor was used for treatments F and G and to broadcast seed in treatment A. In 1959 all seeding was done with a grain drill. Red clover was seeded in 1958; alfalfa in 1959. Seedings were made April 8, 1958, and April 9, 1959. Seeding rate in pounds per acre: oats, 50; legume, 8; brome grass, 5; orchardgrass, 3. Soil: Clarion-Webster; cornstalks disked twice before planting. Fertilizer in pounds per acre: nitrogen, 15; phosphoric acid, 67 $\frac{1}{2}$.

How Estates



Are Settled

This is the first of a series of articles about the procedures necessary or available in settling an estate, in transferring property before or after death and about the different purposes and needs for these procedures.

by John C. O'Byrne and John F. Timmons

THE LEGAL PROCEDURES for settling an estate are similar whether there is or isn't a will. This article deals with these basic procedures. But how property in the estate will be distributed, as we'll show in other articles in this series, depends a lot on the arrangements a person makes—or doesn't make—during life.

At a person's death, he leaves an estate—all of his property, debts owed to him and debts and obligations due others. This is using "estate" in a broad sense to include the sum total of assets and liabilities. The person who manages and settles the estate is the "personal representative."

If there is a will, the personal representative is called the *executor* or *executrix*, if a woman. If there is no will, the personal representative is called the *administrator* or *administratrix*.

When a person dies, his personal property passes to the personal representative to be used to pay debts and expenses. His real prop-

erty passes to his spouse and heirs or to the beneficiaries under a will. But the real property can be reclaimed by the personal representative if needed to pay debts.

The estate is *probated* in the district court of the county in which the deceased person was a resident. Probate comes from the Latin word meaning "proof." Originally probate referred only to wills, but now it has come to mean the process of settling an estate. When the district court handles these matters, it's called the *probate court*. The function of the court is to determine that the person is dead, to establish the will if there is one, to see that debts and taxes are paid and to distribute the remaining property of the estate to the beneficiaries.

It's important that the rights of these people be established once and for all—so that no later questions arise concerning their claims to the property. The court proceeding is designed to fix these rights and to settle claims, not only among the heirs or takers under a will, but generally against everybody. The procedure provides opportunity for persons hav-

ing claims against the decedent "to come forward and be paid." The procedure determines the just debts and taxes that are due and finally establishes how much is left for distribution.

If there is a will, the court determines if the will was properly made and executed. Potential beneficiaries have opportunity to object to the will if it's thought to be invalid. If the court finds the will valid, the words of the will determine who receives the decedent's property. If there is no will, the court will distribute the property in accordance with the provisions of the Iowa law of descent and distribution.

Why Probate a Will?

The beneficiaries cannot establish their rights without probate. The will itself is established only in the probate proceedings. A probated will can be shown in any court as the basis of rights to property. An unprobated will has *no* legal standing. A person who is to receive personal property cannot assert his right until after probate. Title doesn't pass to him except under a probated will.

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Even in the case of exempt property, which is set aside for the spouse, the proceeding provides the necessary inventory and appraisal. Likewise, one entitled to real property under a will cannot prove his right to the land except by probating the will. Until a will is probated, the title to real property technically is considered to be in the heirs-at-law of the decedent, not in the persons named in the will.

In the absence of a will, probate or some form of administration of the estate still is desirable and generally necessary. In a few instances, administration can be avoided. The law establishes the administration procedure to insure the rights of creditors and proper distribution to spouse and heirs. If a decedent leaves no will, his personal property passes to a court-appointed administrator who pays debts and taxes and distributes the remaining property to the proper persons. Real property passes to the spouse and heirs directly. But it can be claimed by the administrator, if necessary, to pay the decedent's debts.

Sometimes, if it's clear who the spouse and heirs are, if the property left is money or tangible personal property and if there are no creditors, an informal distribution can be made. Ordinarily, it's necessary to have a formal record showing that these persons are the known spouse and heirs entitled to share in the estate, that claims of creditors have been paid, and that no taxes are owed. Otherwise, a buyer of the property couldn't be sure that the title was clear. Further, a person who owes money to the decedent usually is unwilling to pay the heirs without administration because he runs the risk of a creditor of the decedent opening the estate and compelling him to pay again. Failure to administer an estate seriously affects the title to real property, at least for several years, and a careful buyer will regard the title as unmarketable.

Sometimes a joint tenancy is used in an effort to avoid probate or administration. Whether this can be accomplished depends on the nature and size of the estate involved. Where real property is involved, for example, a prospective buyer from the surviving joint tenant will demand, among other things, proof of death of the other tenant and assurance that no inheritance tax is due to Iowa or estate tax due to the United States. These are the things that probate reveals anyhow. Subterfuges such as the "secret box" and the "hidden deed" are unsound. They frequently lead to lawsuits and fail to accomplish their purpose.

Procedure . . .

Now let's look at the actual procedures involved in settling an estate in Iowa: *If there is a will*, someone must start the proceedings by offering the will for probate. Usually this will be the executor named in the will to take charge of the estate, but any other interested person may start the proceedings. This is done by filing a written petition in the court. The person who has custody of the will is responsible for filing it with the clerk of the court after the death of the decedent, and there are penalties for failure to file.

The court sets a day at which time the will is to be "proved." A notice is published so that all may know that the proving of the will is to take place. Since wills are witnessed by at least two persons, the usual way of proving a will is to call in the witnesses. If the witnesses are dead or absent, however, there are other ways to prove a will. Objections to the validity of the will may be made at this time, and a trial may be held to determine if the will is valid. After the will is proved, it's recorded in the clerk's office, and an official copy is given to the executor.

The executor is officially ap-

pointed when the will is admitted to probate. The decedent nominates the executor in the will, and the court usually appoints him. If no one is nominated in the will or if the person named refuses the job or isn't qualified, the court will appoint a person. This person is called an "administrator with the will annexed." Almost anyone can be chosen as executor so long as he or she is of sound mind and at least 18 years of age.

The executor files a bond to guarantee the faithful performance of his duties in handling the estate and takes an oath to faithfully carry out his duties. By saying so in his will, the testator can relieve the executor of the duty of filing a bond. After the executor is sworn and bonded, he receives a document called "letters testamentary" from the court authorizing him to act for the estate.

Often a person will nominate a bank or trust company as executor. These institutions handle many estates and become skilled executors. They're frequently called "corporate executors."

If there is no will, the decedent is said to die intestate, but the *procedure* still is quite similar. The surviving spouse, the next-of-kin, creditors or certain other persons may apply to the court for the appointment of an administrator to take charge of the decedent's property. Like the executor, the administrator must take an oath and give a bond for the faithful performance of his duty as the personal representative or custodian of the estate. He receives "letters of administration" from the court authorizing him to act for the estate.

Settling the Estate . . .

After the appointment of the executor or administrator, the procedure is about the same whether there is a will or no will. A notice of appointment is published to inform all persons interested that there is an administrator or ex-

ecutor to deal with. The executor or administrator collects and takes possession of all personal property owned by or belonging to the decedent at the time of his death, and he may sue to recover money or property due the estate.

Inventory: The first important job is to file with the court a complete and detailed inventory of all property owned by the decedent at his death and a report naming the surviving spouse, heirs and any beneficiaries under a will. The inventory includes all of the decedent's real estate, all of his personal property which might be used to pay his creditors and all of his personal property which cannot be reached by creditors (exempt property). The personal property includes notes, mortgages, stocks, bonds, accounts receivable, machinery, livestock, jewelry, household goods and everything else that the decedent owned other than land. An appraisal is made to establish a dollar value for each item of property. Should the court think that there is someone who has additional property of the decedent, such a person can be called into court and questioned under oath.

Though some property can't be used to pay debts, it's included in the inventory. This includes property exempt from execution under the law, certain insurance proceeds and, in some cases, damages received in connection with the decedent's death. Property held in joint tenancy and certain property transferred before death also are included in the inventory for inheritance tax purposes.

Estate Manager: The executor or administrator is the manager of the estate until it's settled. He "stands in the shoes" of the decedent. But he also represents the creditors of the decedent and the persons who will receive the decedent's property, and he has certain responsibilities to them. His job is to pay off all debts and taxes and to preserve as much of

the property as is possible for the spouse and heirs or beneficiaries. If the court believes it advisable and advantageous, it can authorize the executor or administrator to operate the decedent's business or farm for awhile to wind up affairs with greater advantage.

Debts, Expenses, Taxes: The primary job of the executor or administrator is to collect and preserve all of the personal property of the decedent. After setting apart exempt property to the widow, he pays the expenses of the last illness, funeral expenses, taxes and any allowance made by the court to the widow and minor children during the settlement of the estate. Then he's ready to pay off the general debts of the decedent.

One of the reasons for the notice and publicity of probate is to inform all creditors to come and present their claims. These are presented to the clerk of the court, and the executor or administrator has opportunity to allow the claim or to object to it. If there's a dispute, a court hearing is held to settle it, or it can be submitted to a jury. If claims aren't filed within 6 months after the notice is given, they may be barred and not be collectible.

The executor or administrator pays these obligations first from money collected and then from money obtained by selling personal property. If the personal property isn't sufficient, the court will order real property sold to pay debts under a special statutory procedure.

Distribution of the Estate: When all debts, claims and taxes have been paid, the executor or administrator may then distribute the property to the spouse and heirs or beneficiaries. Earlier distributions may be made if the creditors of the estate are protected.

If there is no will, the administrator distributes the remaining property in accordance with the

provisions of the law. If there is a will, the executor distributes the property to the persons named in the will. Generally the actual property is distributed if this is possible; otherwise, it is sold, and the money received is distributed.

Final Report and Discharge: The executor or administrator makes regular reports to the court on the progress of settling the estate. The first report is due within 7 months after his appointment. When ready for the final distribution, the executor or administrator makes a final report to the court. The report shows what property came into his hands and what he did with it, including payments of debts and taxes. Any interested person may object to the final settlement of his accounts at this time. If the report is approved, distribution is made, the estate is closed, and the executor or administrator is released from his responsibilities.

Problems . . .

This outline of the probate law illustrates the general procedure that must be followed in settling an estate. It's much more complicated in actual practice because the precise details of the law must be carefully observed. Serious problems regularly arise in connection with finding all of the property, in valuing the property, in determining the titles to property, in interpreting provisions in wills, in locating the heirs, in handling tax returns, in keeping correct accounts, etc. Anyone who has served as an executor or administrator or who has worked closely with an estate knows firsthand that the job of the personal representative can be difficult and time consuming.

The duty of the executor or administrator is vitally important to the estate, and he undertakes great responsibility. Since he really acts for the decedent, great care should be taken in his selection and in the selection of the attorney with whom he must work.

For Your Interest

farm business and management

Low-Quality Eggs Take More Time to Grade

IT TAKES more time for a candler to determine the grade of a low-quality egg than of a high-quality egg. About 25 percent more time is needed for a grade B egg than for a grade A egg, and about 90 percent more time is required for a grade C egg than a grade A egg. Important? Not greatly all by itself, but more so when coupled with other factors observed in the efficiencies and costs of operations of egg-cartoning plants in an economic-industrial engineering study.

Taken all together, many such "small" findings point up the opportunities for egg processors and distributors to improve their efficiencies at different points and to lower processing costs, say George W. Ladd and Keith McRoberts who have been conducting the study.

Beef, Pork Margins Change with Prices, Affect Each Other

A DECREASE IN the wholesale price of beef is accompanied by a rise in the wholesale-to-retail margin for beef *and* a fall in the wholesale-retail margin for pork. Likewise, a decrease in the wholesale price of pork results in a rise in the wholesale-retail pork margin *and* a fall in the wholesale-retail beef margin.

These changes were confirmed as a part of a larger study of the

long- and short-run demands for farm products. The researchers also noted that there seems to be a lag in the response of beef margins to price changes but no lag in the response of pork margins to price changes.

George W. Ladd, Wilbur Maki, Richard Phillips, Wayne Fuller and Lawrence Peterson are responsible for the over-all study.

soils

Investigate Effect of Soil Surface Thickness On Yields of Iowa Corn

SOIL SURFACE thickness and its effect on corn yields is being studied by Experiment Station researchers under the direction of W. D. Shrader.

In a 2-year study, plots in the Marshall-Monona transition soil area in southwestern Iowa were fertilized with five levels of nitrogen. When no nitrogen was applied, corn yields were lower on eroded than on uneroded sites. In one year, when nitrogen was applied at the rate of 100 pounds per acre, there was no difference in corn yields on the eroded and uneroded sites.

In the other year, corn yields were lower on the eroded than on the uneroded sites regardless of the amount of nitrogen used. When nitrogen fertilizer was used on artificially desurfaced soil at the rate of 200 pounds per acre, corn yields were as high as on plots which were not artificially desurfaced.

Crop Residue Mulches May Retard Corn Growth

KEEPING A MULCH of crop residue on the surface of the soil as an erosion-control measure may cause poor growth of corn. Deficiency of nitrogen has long been considered a cause of this poor growth, but recent studies reported by D. T. Parker and W. E. Larson of the Experiment Station and the USDA showed that plants grown where residue was on the soil surface often contained a higher percentage of nitrogen than plants grown where residue was plowed down.

Adding nitrogen generally increased growth, but the response to nitrogen was no greater with surface than with buried residue. Extremely heavy nitrogen applications have not been used, however, and the researchers plan to see whether poor growth can be corrected at levels of nitrogen fertilization sufficiently high that no further response in growth to nitrogen is obtained.

Also, lack of manganese may be a factor in retarded plant growth where residue is on the soil surface, since less manganese was found in plants from mulched soil than in those from bare soil. Further studies will be made to see whether manganese fertilization will help plants growing on soil with surface residue. The researchers also hope to find out how much manganese is available in soil where the residue is on the surface and what effects manganese has on plant growth.

horticulture

Hardy Perennials For Iowa Gardens

THE IOWA STATE UNIVERSITY flower garden, in addition to being an official test garden for the All-America Rose Selections Trials, is also used to test the suitability of other flowers for Iowa conditions.

The latest tests showed a number of hardy new perennials which have merit for Iowa gardens. They are: the Saskatchewan Lily

hybrids Rosalind, White Princess, Jasper and Rose Queen; *Thalictrum Rothenbrunianum*, *Sedum telephium* Indian Chief, *Sedum atropurpureum magnificum*, *Helianthus multiflorus florepleno* and *Penstemon cobaea*.

Several new varieties of standard garden annuals also were planted—most of which are not sufficiently distinct to merit recognition. Of more than general interest are Marigold Climax, Petunia Satellite, Snapdragon Rocket hybrids and Rudbeckia Gloriosa Daisy.

These trials are conducted under the direction of Griffith J. Buck of the Experiment Station.

Get More Watermelons With Smaller Spacing

ONE YEAR'S results of watermelon plant spacing tests showed a yield increase of 4.5 tons per acre when a 4x7-foot spacing was used instead of a 12x7-foot spacing. These tests are designed to show the effect of different spacings on yield and fruit size.

Three spacings—4x7, 8x7 and 12x7—were tested, while adequate moisture and nutrient needs were provided for the plants at each spacing. The yield increase at the 4x7 spacing was accomplished with relatively little sacrifice in fruit size compared with the 12x7 foot spacing. Lewis Peterson, who is conducting the test, reports that 400 pounds of 10-10-10 fertilizer seemed to be adequate for each of the spacings. These results, however, are based on just 1 year's testing and not on a long-time study, cautions Peterson.

Eleven Apple Varieties Found Suitable in Iowa

MOST OF THE bearing varieties tested in the southwestern Iowa experimental apple orchard have proven to be acceptable either for home production or for commercial production where the market could use a new variety for the particular season. In the order of ripening, these varieties are: Lodi, Patricia, Red Gravenstein, Minnesota 724, Lakeland, Redgold, Red Sharon, Delcon, Jonadel, Idared and A603. Only the latter

three varieties — Jonadel, Idared and A603—are late fall or winter apples.

New High Nitrogen Fertilizer for Lawns

A NEW SLOW-RELEASE nitrogen fertilizer has been developed and evaluated for use on lawns. The material — ureaform — is available either as a 38-percent nitrogen fertilizer or as a nitrogen source in mixed fertilizers.

Since lawn turf requires a constant supply of small amounts of nitrogen throughout the growing season, the slowly available natural organic and synthetic organic nitrogen carriers are of special value. The use of these fertilizer materials makes possible a more constant feeding of the turf with fewer applications during the season.

Experimental work on seedbed fertilization indicates that ureaform nitrogen may be applied at rates as high as 53 pounds per 1,000 square feet. This is equiv-

alent to 20 pounds of actual nitrogen per 1,000 square feet. When this amount of nitrogen is worked well into the top 4 inches of a soil, a seedling turf may be established at this high rate of fertilization without injury to the grass. By so doing, a slow-release nitrogen fertilizer equivalent in nitrogen content to a 5-year supply is mixed in the soil within the root zone.

Studies are being carried out under the direction of Eliot C. Roberts to learn if this theoretical 5-year supply will actually meet the needs of the turf for such an extended period or if, under varying soil conditions, this nitrogen will break down and be released in a shorter length of time. The quality of seedling turf obtained from the 20 pounds actual nitrogen from ureaform has been equivalent to that obtained from 2 pounds actual nitrogen from inorganic sources. Phosphorus and potassium fertilization in the seedbeds have been kept constant in all cases.



In tests so far, relatively high rates of slow-release nitrogen fertilizer have been successful, with no apparent grass injury, and the quality of seedling turf from using 20 pounds of actual nitrogen from ureaform has been equal to that from 2 pounds from inorganic sources.

FARM and HOME outlook for 1961



FARM

Demand for the kinds of products produced by Iowa farmers is expected to be well maintained in 1961. We had a downward dip in the national economy last fall. But consumer incomes have held up relatively well. Short-run changes in consumer incomes usually don't materially influence the domestic demand for farm products. In fact, there actually may have been a little strengthening in the demand for certain foods last fall as people spent less money for some of the other consumer products.

Consumer incomes are expected to total somewhat higher for 1961 as a whole, even though some slackness has developed in the national economy. On balance, the total economy's output of goods and services for some months ahead isn't expected to vary much either up or down from current levels. Declines in some parts of the economy are expected to be largely offset by strengthening in other parts. And some renewal of expansion is likely as the year progresses. Despite some present concern, 1961 is likely to

end on a higher level of business than it began.

A prospective increase in government spending—centered in increased defense expenditures and more state and local government spending—is one of the strengthening factors in the 1961 outlook. A continued, though moderate, increase in consumer buying seems in the offing and possibly some pickup in residential construction. These developments should offset any weakness that may develop in business investment and in the inventory demand.

Farm exports this year will equal or exceed last year's record high level. The supply side of the outlook, however, continues to dominate the agricultural situation. Heavy supplies will continue to be the main feature of the farm situation this year. As a result, prices received by farmers and farm family incomes in 1961 will remain at about the levels of the past 2 years.

Rising livestock production is expected this year. Cattle numbers now are in their third year of increase and will probably rise further. And we're now at the stage where marketings are increasing, too. Hog production—which was down sharply in 1960—appears about ready to turn upward. The main question is how soon? Marketings will re-

main below those of last year, however, until the latter part of 1961.

More chicks will be hatched this year — encouraged by the favorable egg prices and higher broiler prices of 1960. Egg output will run below that of 1960 into the summer of 1961 but probably will rise above the 1960 fall production levels since the 1961 spring hatch of chicks for laying-flock replacements will be up. Milk production, up a shade last year, will rise further this year. Turkey production probably will top the 1960 records.

Record corn production in 1960 assures large marketings of corn well into 1961. And, if the weather is average or better this year, crop production will be large again.



Feed Grains

Corn is our most important crop. About two-thirds of it is fed to livestock on the farms where the corn is produced. Along with grain sorghums, barley and oats, our corn supplies are related to the level of the production of

livestock and livestock products.

Despite the fact that the amount of feed grains fed per animal has increased in every year since 1955, the combined carryover of these four feed grains also has increased in every year since 1955. Carryover increased from 68 million tons on Oct. 1, 1959, to 75 million tons on Oct. 1, 1960. And it's expected to increase to 82 million tons by next Oct. 1—to a level of about half of a year's normal feed-grain crop.

Though the 1960 corn crop got off to a late start, favorable weather through the summer and fall resulted in another bumper crop. Total disappearance of corn has increased sharply in recent years. But we're still producing more than we're feeding. One of the reasons that corn production out-runs use is found in the increase in the production of grain sorghum, a competitive feed grain. Grain sorghum production topped 500 million bushels for the fourth year in 1960, and last year's crop of a little over 600 million bushels again will help contribute to the constantly growing stocks of feed grains.

The steady drop in oat acreage since 1955 brought oat production below current requirements in 1959, and the carryover of oats was reduced. But the 1960 crop was up about 10 percent from the

short crop of 1959—giving us a total supply about equal to use last year. Thus, little change in oat carryover is in prospect.

Turning to the demand side of the picture, smaller pig crops in 1960 and fewer hens in prospect this winter are resulting in somewhat fewer livestock and poultry to consume the feed grains. Feed-grain prices were a little lower last fall than a year earlier and will probably continue to average a little lower throughout the current feeding year. The big crops, a slight reduction in livestock on farms and lower supports for 1960 corn are the important factors now influencing prices of feed grains.

The generally lower feed prices have been accompanied by higher prices for most livestock and livestock products. Livestock-feed price ratios have been more favorable for hogs and poultry producers than a year ago. This is expected to result in an increase in livestock production in 1961 and 1962, with an accompanying increase in the demand for feed.

The quantity of high-protein feeds available to feed livestock and poultry is expected to be a little larger in 1961 than a year ago—mainly because of smaller exports and continued large production. Prices of high-protein feeds probably will average a little

lower than last year—with the lowest prices coming in late fall and early winter. This would be in contrast with last year's price trend when soybean meal prices reached a peak level in January and then declined until August. Last year's pattern was counter to the normal seasonal pattern for protein feed prices.



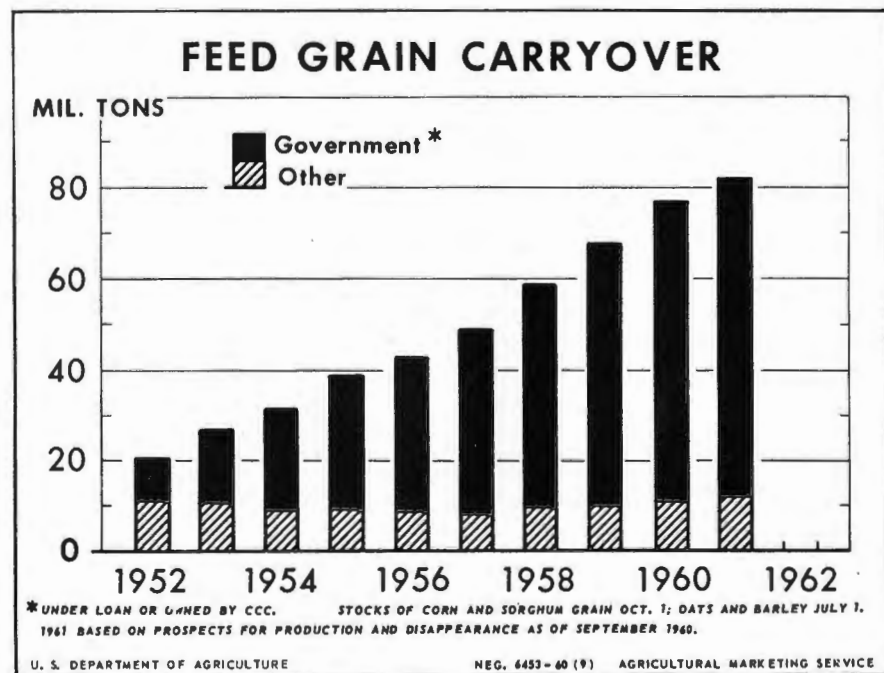
Meat Animals

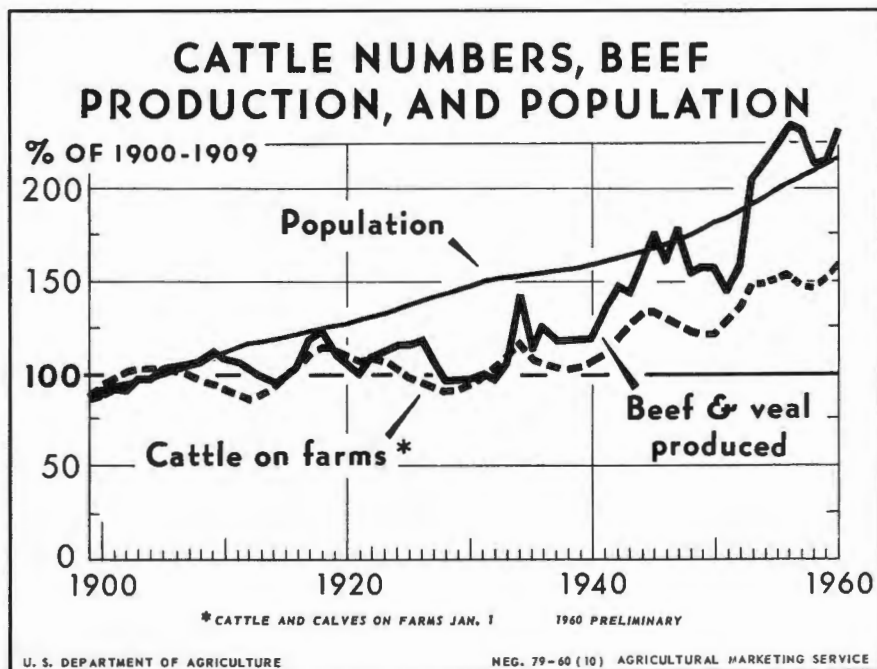
Both livestock production and slaughter in 1961 will show modest gains over 1960. Further increases in cattle and calf slaughter seem assured, though the increases aren't expected to be as great as seemed likely earlier. This is because of the downward revision of the numbers of cattle and calves estimated to be on farms. Early returns from the census indicate that the estimate of the total number of cattle and calves on farms will be revised downward by a couple of million head.

But we'll still have a large number of cattle and calves, and there are more on farms now than there were a year ago, even though the total number isn't as large as seemed to be the case earlier. The main result: The increase in slaughter in the next year or two—barring liquidation—won't be as great as previously expected.

Hog production probably will turn upward in 1961. But because fewer pigs were raised in 1960, the number of hogs available for slaughter in the first half of 1961 won't be as large as in the first half of 1960.

It's possible that there may be enough delay in the movement of hogs to market this winter (because of the favorable hog-corn feeding ratios) to put the peak slaughter for the current season into this month and next. But even in this period, not as many hogs will be available to come to market as there were a year ago. This traces back to the 16-percent reduction in last year's spring pig crop.





The difference from last year's levels of slaughter may be small by the coming summer. Prices by mid-year are expected to be close to those of last year. But they're expected to stay well ahead of those of a year ago through most of the first half of the year. The peak in hog prices for 1961 is likely to come earlier in the summer than a year ago when prices peaked out in late July and early August.

A severe cyclical break in cattle prices doesn't appear likely during 1961. Under the pressure of increased marketings, however, cattle and calf prices probably will average a little lower over the current year than in 1960. And the peak in prices may come earlier this year than it did in 1960 because of the lateness with which cattle moved into feedlots last fall.

Sheep and lamb slaughter has been running ahead of a year ago. It seems possible that the slaughter for 1960 may have been large enough to stop the 3-year upward trend in sheep and lamb numbers. Weather conditions will continue to be an important factor in sheep production this year, but the most likely prospect is for numbers to show little change during 1961.

If slaughter doesn't change much, prices this year are likely to be close to or only a little be-

low those of 1960. The main depressing effect on lamb prices in 1961 would come from any increase in the supply of beef on the market—for lamb prices are closely related to beef prices.



Poultry and Eggs

Egg prices last fall were well above those of a year earlier—the highest, in fact, for several years. The reduction in chicks purchased last spring was so great that it sharply cut back egg production last fall and this winter. Prices, in turn, shot up accordingly.

Even though last fall was part of the kind of year that many people want to see repeated, the favorable egg prices have headed many egg and poultry producers toward expansion. This interest in expansion makes the 1961 egg and poultry outlook less favorable for producers than was the 1960 experience.

Egg prices will remain favorable for producers at least through the first 3 or 4 months of 1961. But this is setting the stage for an increase in chicks produced during the important hatching months of 1961. Meanwhile, with hatch-

ings showing an increase, there'll be a reluctance on the part of egg storers and breakers to take their normal springtime quantities of eggs. This will help to dampen the demand for eggs in later spring.

Early indications point to a record turkey production again in 1961. Heavy turkeys are likely to show the greatest increase. Because of this, turkey profits in 1961 aren't likely to equal those obtained in the year just past.



Dairy

Commercial supplies of milk products will be record high in 1961, though only slightly above the levels of recent years. Commercial demand probably will continue to increase less rapidly than population. Through March, however, the prices of dairy products to farmers and consumers will average above those of a year ago. Thereafter, the level of price supports will be an important factor affecting price levels. The support level could be announced before April 1.

Because of lower feed costs, the net returns to dairymen probably will increase a little in 1961. And, in terms of historical relationships, milk prices during the last several years have been favorable relative to feed costs.

With declining profits from beef, there may be a slowdown in the rate at which dairymen move out of dairy production during the next few years. If so, this will tend to result in a further increase in milk production. This is what happened in the early 1950's during a similar stage of the cattle cycle at that time. Then, milk output in the United States jumped 5 percent from 1952 to 1953. Following this, in contrast, milk production increased only as much in the entire next 4 years as it did in the 1-year period, 1952-53.

Looking farther ahead, the dairy industry may have some additional surplus problems con-

fronting it during the next several-year period. Nevertheless, the short-run outlook for 1961 is for somewhat higher profits than in 1960. This, however, results from the lower feed costs rather than from any basic improvement in the longer-run supply and demand situation.

—Francis A. Kutish.

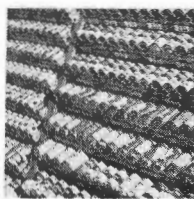


HOME

The end of one year and the beginning of another is a time for looking back and then ahead. Some idea of what's ahead helps provide a basis for planning and decisions. Even the best information available is none too good when these decisions affect the family's future and goals.

As family incomes increase, they have more leeway in their decisions on spending or saving, and their decisions become of increasing concern. How much to save? How much to spend—and on what combination of goods and services of what quality and price level? In 1960, for example, the rate of personal voluntary savings from current income increased during the first 9 months to over 8 percent by Oct. 1—the highest rate in 2 years.

Consumer decisions to continue this trend, to hold the line or to spend may modify the family living outlook for the year ahead. But let's look at the outlook, as things stand now, for various areas of interest to family living as you make your plans for 1961.



Food

Supplies of most foods will be plentiful this year, with the expected increase about the same as the increase in population. With income prospects as good or perhaps a little better, the demand for food will remain strong. Prices

are likely to average close to those of 1960.

We'll probably eat more meat this year. Beef consumption may reach an all-time high, and the retail price of beef may be a bit lower. Pork supplies will be smaller—particularly in the first half of the year. So slightly higher prices can be expected in the first 6 months of 1961. This will counterbalance the downward price trend for beef, making overall retail meat prices about the same as in 1960. The expected smaller supply of eggs, meanwhile, will mean continuing higher egg prices in the first half of 1961.

It's likely that we'll have less fresh and processed fruits through the first half of this year, largely because of last fall's reduced crop of apples and pears. Supplies of citrus fruits will be about the same as last year, though less frozen, concentrated citrus juices are in prospect.



Clothing

Retail clothing prices have recently shown a slight upturn. Since the mid-40's, however, retail prices of apparel generally have shown less price increase than any of the other main areas of family spending. With adequate or even abundant supplies and little evidence that consumers intend to cut apparel purchases, it's probable that there'll be no major changes in this area in 1961.

If you divide your family clothing bill, it's likely that costs of men's and boys' clothing will be up more than women's and girls' in comparison with last year. This is part of a long-time trend, tied closely with the fiber content of the clothing items. In the last 7 years, apparel made of cotton and wool fibers (used primarily for men's and boys' clothing) have gone up in price, while apparel of manmade fibers (used more for women's and girls' clothing) have gone down. The United States Department of Commerce, however, reports that, despite this

price factor, the percentage sales gain for men's and boys' clothing was greater than that for women's and girls' wear in the first 8 months of 1960.

Prices of footwear increased steadily in the 5 years preceding 1960 when the prices leveled off. Footwear has increased the total clothing bill for many families, especially those with young children. But it may not make much of a change in clothing costs in 1961 over that of last year.



Housing

There are indications—both in Iowa and the nation as a whole—that the fast pace of new home building evidenced over the past 10 years has slowed down during the past year. The availability of houses for sale and for rent in urban, small town and rural areas indicates that the great need for expanded housing facilities so evident after the war has now perhaps been more nearly met. A continuing need for upgrading housing quality can be expected to be met by continued interest in remodeling and improving present dwellings.

Many newly married couples are finding it difficult to buy a new home in urban and suburban areas. They often don't have enough money to make the increased down payments and to meet the monthly payments on conventional or FHA mortgages. And a VA mortgage, which frequently calls for a lower cash outlay and a longer repayment time, either isn't available on the house for sale, or the couple doesn't qualify.

The end of 1960 saw some trend toward easing the possibilities of borrowing money to buy or build a house, but construction costs and, often, the prices of houses were higher. The average cost of all building materials was slightly lower at the end of 1960 than a year earlier. But this was much more than offset by a 5-percent increase in average hourly earn-

ings in contract building construction and in increases in the cost of land for building sites.

It's estimated that about a third of the average price rise in houses since the late 40's has resulted from increases in land prices. There's a possibility that these prices may fall in 1961 for a more realistic relationship to the prices of the houses.



Home Furnishings

A slower sales trend in furniture, bedding and floor coverings was reported by department stores in 1960. This was accompanied by a slight increase in price during the past 2 years for the same items. Some decreases in retail prices of home furnishings have been due to competition from other sources for the same types of furnishings. Pricing competition from the rising discount house trade since the mid-50's and the availability of minor furnishings through trading stamps has been noted.

Prices of furnishings this year are likely to remain about the same, with possible slight increases toward the latter half of the year. The construction and establishment of new homes greatly affects this market. But replacements in existing homes can't be disregarded. New developments in styles, designs and materials in furnishings often affect the demand for replacements more than the complete depreciation of the items.



Household Equipment

Sales of most major household appliances dropped from 1959 levels in 1960. This was true also for radios and television sets. The greatest declines were in sales of washing machines and freezers. Sales of some items such as dishwashers and garbage disposers, however, increased.

A long-term trend in lower prices for appliances continued at a slow rate in 1960, with about a 1-percent drop in the past 2 years. Small appliance prices have influenced this average as retail prices of these items have been reduced to compete with discount outlet prices.

An increasing proportion of major household appliances are being bought on credit. Total installment credit outstanding rose to a record high last July. This includes all credit, including that for automobile purchases, but the portion used for major appliances, furnishings and clothing items increased, too.



Services

More and more of the consumer dollar is being channeled to meeting the demand for services. And service rates continued to advance in the year just past. Those rates concerned with medi-

cal care and recreational activities have shown some of the largest increases, and the demand for these services still is high.

Spending for services accounted for about a third of total consumer spending 10 years ago. Last year this had risen to 40 percent. Looking ahead, it seems likely that the general trend will continue in 1961.



Education

As more and more rural and urban families help (or plan to) finance the college education of one or more children, trends in the costs of education have meaning for more families. The available data for average tuition and required fee costs for various types of colleges and universities for the past 20 years indicate that increases in these costs have been greater than the average increases in family incomes. In relation to spending in other areas of family living, the increases in educational costs have become sharper since 1954.

It seems likely that student tuition charges will continue to increase, though probably at different rates for private and public institutions of higher education. There's some speculation that spending for education is competing for dollars in many families with housing and automobiles—with spending on these items deferred until family educational goals are achieved.

—Helen T. Sorensen