IOWA
FARM
SCIENCE
wa State University of Science and Technology/Ames, Iowa
With below-normal temperatures putting a damper on blossoms, it seemed that there might be no "spring" cover photo this year. Here you are, however — apple blossoms in the orchard right here at Iowa State.

**Looking Ahead...**

This issue closes another volume of Iowa Farm Science. The July issue will be the beginning of Volume 16. We have a few changes in mind to be introduced during the coming year — with the hope, of course, of making Farm Science more useful to you. The changes won't be made all at once, but more gradually so that both you and we may "try 'em on."

The first change that you may notice is an informal section "For Homemakers" that will make its first appearance in the July issue. It will appear monthly under the guidance of Candace Hurley, assistant extension editor for home economics. It will be on an experimental basis, so please let us know if you like it.

A less apparent change will be in the new summaries of current farm and home research as they begin to appear in the "For Your Interest" sections. Generally you'll find the items "shorter" but more varied than in the past. But brevity isn't always an advantage if it results in omitting details in which you're genuinely interested. Again, let us know.

While not among the possible changes, you may be interested to know that the final two articles of the "Your Estate" series will appear in the issues immediately ahead. Also of potential interest is a forthcoming article on the prospects and possibilities for bargaining power in agriculture.

---

**In this Issue**

**Dough Stage Best for Oat Silage**  3
Four years of research at the Experiment Station show that these dough stage is the best time to harvest oats for silage. Oats cut them produced more tons of silage, had a good aroma, and the cows liked it best.

F. P. Gardner and R. S. Allen

**Farm Co-ops: How "Special" a Status?**  5
How far may farm co-ops go to gain more market power? Are they, as some believe, totally exempt from antitrust prosecution? Apparently not, and court decisions are beginning to outline the boundaries for co-op action.

L. J. Fletcher

**Land Values Increased, Why Not Farm Incomes?**  8
Many factors played a part in this situation during the 1950's. They ranged from overproduction, mechanization and technology to what, with the circumstances existing, was an excess of farm labor and management or farm operators.

Geoffrey Shepherd

**"Almanac Weather" — How Accurate?**  11
You can check up on the weather forecasting skill of your almanac or, for that matter, your own skill and that of any other long-range forecaster.

R. H. Shaw

**Your Extension Service Reports**  13
In the form of an interview with Associate Director Marvin A. Anderson, this annual section reports on the statewide educational activities and accomplishments of your Cooperative Extension Service in Agriculture and Home Economics.

**How Often Do Households Use Pork?**  21
This article reports a supplementary study to others made of consumer preferences for and uses of pork. This one deals, not with amounts or quality, but with the frequency of pork use among a sample of urban households.

Artid McMechan

**Farm Outlook**  23

Francis A. Kutish

June Iowa Farm Science Reprints
(available about mid-month)

FS-916 Dough Stage Best for Oat Silage
FS-917 Farm Co-ops: How "Special" a Status?
FS-918 Land Values Increased, Why Not Farm Incomes?
FS-919 "Almanac Weather" — How Accurate?
FS-920 How Often Do Households Use Pork?
Dough Stage Best for Oat Silage

Four years of research at the Experiment Station show that the dough stage is the best time to harvest oats for silage. Oats cut then produced more tons of silage, had a good aroma, and the cows liked it best.

by F. P. Gardner and R. S. Allen

OATS ARE a popular companion crop for establishing forages. The annual 4-million-acre oat crop in Iowa attests to their popularity. As a grain crop, however, oats are less popular and less profitable.

Recently, there's been an upsurge of interest among farm operators in finding ways to use their oats crop more profitably. Some have suggested oat silage. By storing the entire oat plant as silage you can more than double the nutrient return per acre compared with harvesting the crop as grain. Another advantage of making oats into silage is that early removal of the crop stimulates growth of the legumes and grasses seeded in the oats. Also, in moist years, you can plant a second crop, such as an early soybean or sorghum, after diskimg the oat stubble when the crop has been removed early as silage.

With those advantages of oat silage in mind, we started a 4-year study to find efficient ways to make good silage from oats. We believed that a high-yielding crop of oats was needed. But, in addition, we needed answers to such questions as: When should you harvest oats for high-quality silage? What effect does the oats variety have on silage yield and quality?

To answer those questions, we harvested test plots of oats at five stages of maturity to determine silage yield and the percent of moisture and protein. Oat forage was harvested at boot, heading, milk, early dough and late dough stages of maturity and packed in upright silos. Later, the silage was chemically analyzed and fed to dairy cows. We observed the cows' choice of silage and measured their milk production.

Let's look at the results of those tests.

Silage Yield...

The tons of silage produced increased sharply as the oats advanced in maturity (see chart 1). Oats cut in the early or late dough stages usually made twice as much silage as oats cut in the boot or heading stages.

Silage made from oats cut in the dough stage contained 25-33 percent grain. Silage made from oats cut at the earlier stages contained only leaves and stalk, thus it was lower in carbohydrates and energy.

In good years, the experimental plots yielded more than 12 tons of silage per acre when harvested in the dough stage. Such high yields were made possible by using fertilizer and other management practices to produce 75-100 bushels of grain an acre and by harvesting and weighing all forage above a 1-inch stubble.

You probably wouldn't expect as high yields on your farm because of higher stubble, greater loss with large machinery and perhaps less favorable growing conditions. By applying manure or commercial fertilizer and seeding early at a slightly heavier rate than normal, you can expect a yield of 8-9 tons of oat silage an

F. P. GARDNER is associate professor of agronomy, and R. S. ALLEN is professor and chairman of biochemistry and biophysics.
acre from a mid- or late-season variety that is cut in the dough stage.

Which Variety? The variety of oats to plant is an important consideration. At most of the stages of harvest, Garry, a late variety, produced the most forage in our tests except for 1 year when Newton was best. Garry wasn’t superior, however, when harvested before the milk stage or in the late dough stage.

In most years, late varieties such as Garry and Portage will be subject to lodging, disease and heat damage and, thus, their heads may not fill well. But even when late varieties produce less silage, they may have a place in an oat-silage program. By planting a midseason oat such as Clintland or Newton and a late variety such as Portage or Garry, for example, you can harvest over a longer period and still cut at the best stage for making silage.

The optimum dough stage of maturity for harvest may last for only 4-7 days. So, if you plant a large acreage for silage, you may need two or three varieties that differ in maturity to stretch the harvest over a longer period. In that case, you could plant Minhafer or Cherokee as early varieties, Clintland or Newton as mid-season varieties and Portage or Garry as late varieties.

Moisture Content . . .

A moisture content of 60-70 percent is considered best for ensiling most crops. The moisture usually will be within that range if oats are cut with a field chopper at the dough stage of maturity and put directly in the silo. Seepage and foul-smelling silage may result if the moisture content is higher than 70 percent. On the other hand, silage may mold if the moisture content is less than 60 percent and if care isn’t taken to assure good packing.

Chart 2 shows that the moisture content was as high as 88 percent at the boot stage in 1957. The 4-year average moisture percentage at the boot, heading, milk, early dough and late dough stages was 85, 82, 75, 71 and 61 percent, respectively. In other words, the best range for making silage lay between the early dough and late dough stages.

Protein Content . . .

With oats, like other forages, the percentage of protein decreases as the plants mature. Crude protein of the oat plants in our tests was as high as 22 percent at the boot stage but was only 11 percent at the late dough stage (see chart 3). The differences between the crude protein contents before and after ensiling were greater for forages cut at the early stages (boot, heading and milk). The losses were due primarily to seepage. There was essentially no loss of crude protein from the oat forage ensiled at the
dough stage. After ensiling, silage cut at more mature stages contained more true protein than silage cut at immature stages.

The protein of silage made from oats cut in the boot and heading stages deteriorated in the silo. The protein degraded and formed ammonia and other undesirable nitrogen compounds which contributed to an objectionable odor of the silage. With the silage made from oats cut at the dough stage, however, a more desirable fermentation resulted in formation of lactic acid which helped preserve the silage. Also, not as much protein changed to ammonia, and this silage had a good aroma.

Which Did Cows Like?

Our clipping experiments and chemical analyses suggested that the dough stage was optimum for making oats into silage. But we weren't sure that cows would "agree." To find out, we conducted a feeding test with dairy cows to study their acceptance of silage made from oats cut at various stages.

Silage made from oats cut at each of the five stages was placed in adjacent feed bunks and offered to the cows free choice. Within a few minutes, they had rejected the silage made from oats cut at the immature stages and had gathered around the bunks of silage made from oats cut in the early and late dough stages and ate all of it. After 12 hours a good share of the silage made from immature oats remained in the bunks. Apparently, the presence of ammonia and other objectionable compounds, such as butyric acid, in the early-cut silages made them unpalatable to the dairy cows.

A preliminary test indicated that cows gave more milk when fed silage made from oats cut at the mid-dough stage than did cows fed silage made from oats harvested at heading.

In Summary . . .

Our tests indicate that the dough stage is the best time to harvest oats for silage for these reasons:

1. Yield is greater.
2. Moisture percentage is at the optimum of 60-70 percent.
3. Aroma and preservation of the silage is better.
4. Dairy cows prefer silage made from oats harvested in the dough stage and apparently give more milk from it.

Farm Co-ops: How "Special" a Status?

How far may farm co-ops go to gain more market power? Are they, as some believe, totally exempt from antitrust prosecution? Apparently not, and court decisions are beginning to outline the boundaries for co-op action.

by L. B. Fletcher

TO HELP relieve long-standing farm price and income problems, the possibilities of farm producers acting jointly to manage their output and marketings are attracting increased interest. Some of the thinking is this: If all producers—or large groups of them acting together—could control the amount and quality of a product going to market, perhaps they could bargain for more favorable prices or incomes.

Marketing cooperatives often are suggested as devices for wielding market power for farmers. One reason is that many marketing co-ops already exist and represent groups of farmers acting in unison to improve their economic position. Another reason given is that they have a "special" status under antitrust laws. What about those reasons?

The first reason is sound. The second needs a caution sign. Legislative measures have led some people to assume that farm cooperatives are completely exempt from prosecution for antitrust violations. This, however, isn't so. Court decisions haven't yet marked all of the boundaries for cooperatives under antitrust legislation. But the emerging pattern of decisions is showing that legislation has given co-ops only a limited exemption from antitrust actions.

Thus, let's look at the background leading to co-ops' "special" status, some pertinent court
Co-ops Are Growing . . .

Agricultural marketing cooperatives have developed in the United States largely since 1900. Then, they were of minor importance in the market. Today, there are more than 6,100 marketing associations; total membership exceeds 3.8 million. The gross business of marketing co-ops has grown from about 304 million dollars in 1913 until it now exceeds 10 billion dollars a year.

Between one-fifth and one-fourth of all farm products sold in 1954 were handled by cooperatives at one or more stages in the marketing channels. Co-ops handle substantial percentages of the total output of some commodities. For example, co-op elevators move at least a third of all cash grain; co-op plants manufacture close to 45 percent of all butter produced; co-ops process nearly three-fourths of the cranberries and one-third of the citrus products.

Historically, co-ops have had more effect in balancing market prices under unrestricted production than in raising prices by restricting output or by price-fixing agreements. In the past, entry of cooperatives into markets often has increased competition.

Modern marketing associations, however, may sufficiently influence the market in which they operate to affect the prices their members receive. Some associations have obtained larger total returns for annual crop production by withholding or diverting certain products from the market. Such products include fluid milk, lemons, oranges, almonds, avocados, walnuts and cranberries.

This brings us to the question of how co-ops received whatever antitrust exemption they have.

How "Exempt"?

The Sherman Act of 1890 first expressed the policy that antitrust legislation was meant to promote free competition in open markets. Later, doubt arose as to the status of cooperatives under the act. Farm groups feared that the law might be interpreted so that producers organized into marketing co-ops could be held in violation as combinations in restraint of trade.

The Clayton Act attempted to resolve this fear in 1914 by exempting nonprofit, nonstock farmer cooperatives from prosecution under the Sherman Act. In 1922 the Capper-Volstead Act extended the exemption to co-ops with capital stock. Agricultural producers were authorized to act together to process, prepare for market, handle and market their products. Necessary contracts and agreements to carry out those activities were legalized for associations which either restrict each member to one vote or limit dividends to 8 percent.

In addition to these basic legislative provisions, the Cooperative Marketing Act of 1926 provided that agricultural producers and their associations may legally acquire and exchange "past, present and prospective" production, marketing and price data. Finally, the Robinson-Patman Act legalized patronage dividends to members in proportion to their sales through an association.

Judicial interpretations haven't marked all boundaries of cooperatives under antitrust legislation. But some cases have set up precedents indicating the circumstances under which co-ops are and are not exempt.

When "Exempt": The courts recognized that many widely spread producers of a product may need some type of centrally controlled national cooperative or federation of local organizations for effective marketing. So, administrative ruling has placed centrally controlled co-ops, federated co-ops and the use of joint marketing agencies within the authorization of the Capper-Volstead Act, though they weren't expressly included in the statute.

This ruling was upheld in 1956 when a district court acquitted two co-ops charged with unlawful combination and conspiracy to fix prices in violation of the Sherman Act. The court interpreted the Clayton Act as applicable to producers whether they joined into a single co-op or into several associations acting jointly.

When Not "Exempt": One way that an organization which controls the disposition of a commodity can increase its total revenue is to sell to some buyers at higher prices than others. But, generally the Robinson-Patman Act prohibits discriminatory prices. Cooperatives are subject to these prohibitions with the exception of the approval for payment of patronage dividends and discrimination among uses under market order programs.

Two cases stress the importance of the price-discriminating ruling. In one case the Federal Trade Commission ordered a citrus co-op to refrain from discriminating among its customers on prices of canned citrus juice. On another occasion, a district court prohibited several dairy co-ops from joining together to distribute milk at lower prices in one area than in others to retaliate against a dealer who refused to increase his buying price.

Several cases also suggest that cooperatives exceed legal limits when they act jointly with non-cooperatives for purposes which may not be illegal if sought separately. For example, a court ruled it illegal for a co-op to conspire with milk distributors and labor union to fix prices and control the milk supply in Chicago.

What About Market Power?

Can a co-op acquire and exercise monopoly power to increase prices received by its farmer-members?

Recent events have forced the Supreme Court for the first time to interpret the nature of exemptions granted to restrain trade or to achieve a monopoly and to specify the extent to which they immunize co-ops from antitrust actions for advancing their own interests.

The first judicial interpretation in this area was in 1916 when a district court ruled that a potato growers association couldn't "blacklist" dealers who were delinquent in payments or who refused to buy from members of the association. The same court recognized the legality of cooperative...
organization among competitive producers.

In two other cases, involving cranberry co-ops, the courts ruled that co-ops aren't immune to antitrust prosecution for purely predatory practices such as seeking a dominant share of the market, or for using otherwise legitimate methods in bad faith. These courts also recognized the right of co-ops to acquire a large, even 100-percent, position in a market if done solely through steps involving co-op selling.

Hence, the methods used to achieve and maintain market power may expose a co-op to antitrust attack even though it's not a violation for the organization to lawfully acquire even a "complete" monopoly or 100-percent control of the market.

New Decisions . . .

Recent Supreme Court rulings on co-op status were issued in 1960. The results provide the best basis yet for judging how far cooperatives may legally go.

The rulings involved a co-op that supplied about 85 percent of the fluid milk consumed in the Washington, D. C., metropolitan area. Attempting to strengthen its market position, the co-op bought the assets of the market's largest distributor, which hadn't regularly obtained raw milk from the association.

The transaction gave the co-op 95-percent control of raw milk supplies and 91-percent control of the milk supply for resale to the government. The acquisition also diverted to the co-op the market outlet of 120 producers who had supplied the distributor.

Complaints against the action in federal district court charged violation of the antimerger provisions of the Clayton Act. The complaints also listed alleged predatory practices in violation of the Sherman Act. The court considered the association exempt from monopolization charges under the Capper-Volstead Act, but tried the co-op on the acquisition charge—and ordered the co-op to dispose of the acquired dairy.

Both the government and the co-op appealed to the Supreme Court—the government sought reinstatement of the monopolization charge; the co-op sought reversal of its merger conviction in the district court.

The Supreme Court agreed with the district court that the purchase contract wasn't made merely to advance the co-op's own processing and marketing business. Rather, the court said that the co-op had entered the contract as a weapon to suppress competition. The court ruled that even lawful contracts and business activities may help to form a pattern of conduct that's unlawful under the Sherman Act.

In addition to supporting the district court's decision on the acquisition charge, the Supreme Court viewed the monopolization charges as anticompetitive activity so far outside the "legitimate objectives" of a cooperative that—if clearly proved—violated the Sherman Act.

Turning to the question of how far exemptions from antitrust laws extend for co-ops, the court completely discarded the idea that Congress intended to grant complete antitrust immunity. It defined the intent of Congress to be simply that individual farm operators should be given, through agricultural cooperatives, the same unified competitive advantage and responsibility available to businessmen acting through corporations.

It further declared that the exemption statutes don't allow co-ops to monopolize or to restrain trade and suppress competition. Also, the court said that the privilege that the Capper-Volstead Act grants producers to conduct their affairs collectively doesn't include a privilege to use a monopoly position as a lever to force membership from independent producers and/or suppress competition among independent processors.

A consent decree was entered as a supplement to the Supreme Court decision. The decree prohibits the co-op from distributing fluid milk in the Washington, D. C., area for 5 years, except to sell milk on government contracts. The decree also ordered the association to dispose of two other dairies which the association had acquired.

The co-op was admonished against interfering with dealers' supply sources, against forcing dealers to buy milk from the association and was enjoined from reprisals against dealers who buy milk elsewhere or who do business with the co-op or its customers.

The co-op was prohibited from using contracts that can't be terminated annually at members' options. It was required to release membership contracts, upon request, of producers who had supplied the independent dairy before it was acquired by the association.

Summing Up . . .

It seems that recent court decisions imply that the use of market power by co-ops is likely to be restricted to a point which largely invalidates their exemption for monopoly control over supplies and marketings.

Complete control of the production and disposal of a product is theoretically open to cooperatives under present statutes as long as it is acquired by "lawful means of attracting voluntary membership." On the other hand, if co-ops with complete or lesser control are held accountable for all market conduct deemed "unreasonable," then their exemption for monopoly structure seems largely nullified. Indeed, no legislative exemption is necessary for market behavior which is "reasonable." While antitrust actions don't seem to be directed against power arising solely from large-scale organization, actions by co-ops against buyers and competing producers that "substantially lessen competition" are probably illegal.

It appears that producers don't have "special" status in their attempts to achieve market power through cooperatives. Marketing cooperatives, therefore, may be forced to confine their activities to "usual marketing functions" and to participate in supply-control and price-fixing activities only under specific legislative authorization such as federal or state market order programs.
Land Values Increased, Why Not Farm Incomes?

by Geoffrey Shepherd

Net farm income per person has remained practically constant since 1950. Land values, however, rose 68 percent over the same period.

Why didn't net farm incomes rise? Many factors played a part. Among others, these include the effects of new technology, mechanization, rising costs, over-production, storage-support operations and, under the circumstances, an excess supply of farm labor and management, or farm operators.

The net farm income situation per person since 1950 is shown in Table 1 and Chart 1. Notice that net farm income per person from farm sources has been practically constant since 1950. The inclusion of farm income from non-farm sources causes only a relatively small rise.

These farm income figures include the return on farmers' own capital invested in their machinery, buildings and land. USDA data for commercial, owner-operated farms show that, for all but two of the 32 chief types of farming areas in the United States, a substantial decline took place from 1947-49 to 1959 in the net return to operator and family labor and management after deduction of a charge for owner-operator capital used. The same sort of thing is shown in a study by two Purdue University economists, Ruttan and Stout. They estimate that the share of gross farm income going to labor and management on farms declined from about 44 percent in 1947-49 to about 24 percent in 1957.

From 1947-49 to 1959, however, the value of farm land and buildings per acre (which is based chiefly on the return to land) rose 68 percent (see chart 2 and chart 3).

Why did net farm income per person remain practically constant, while the value of farm land per acre rose 68 percent? If nonfarm per capita incomes also had remained about constant, that would indicate that some general factor had held down all incomes. But per capita nonfarm income rose 47 percent during the period.

Why did land values rise? Land values are determined by many factors—desire for protection against inflation, for prestige, for security, etc. But the chief factor usually is the return that a buyer expects to get from the land. These returns have been affected by the use of new technology and the operation of the price support, acreage allotment and Soil Bank programs. These have had several kinds of effects.

Advances in technology contributed to a rapid expansion in farm output. With output growing faster than demand, this has depressed both farm income and commodity prices. This depressing effect has been retarded to some extent by the price-support and storage programs, but the over-all effect has still tended to reduce the returns to land.

The use of new technology and mechanization also made it profitable for farmers to operate larger farms than before. Pressure to enlarge existing farms frequently has been cited as a major force in raising or maintaining land values in recent years. In the year ending March 1, 1960, for example, 45 percent of all sales of farms or tracts of land were for adding to existing farms. In 1950, the figure was only 21 percent.

Acreage allotments rationed the right to plant acres to certain crops. The value of these allotments often was capitalized into land values. One study estimated that, in Pittsylvania County, Va., an acre of tobacco allotment accounted for $962 of the selling price of a farm in 1954; $1,673 of the selling price in 1957. The average sale price of the 203 farms studied was $10,242; an estimated $5,650, or 55 percent of the total value, was paid for the right to grow tobacco on a specified number of the acres purchased. For $5,650, in other

Geoffrey Shepherd is professor of agricultural economics and a member of the staff of the Center for Agricultural and Economic Adjustment.
words, the buyer received nothing tangible—only a franchise to grow tobacco. Similar evidence was found in Greene, Wilson and Pitt counties, N. C. Also, a study of land values in Kansas yielded similar information on the value of wheat allotments. According to the study there, the right to grow wheat added $53 to the value of an acre of wheat land in the Anderson area and $58 in the Logan-Wichita area in 1956.

The prices of farm products were high after World War II. But farmers could remember the drastic price decline that followed World War I and at first, couldn’t be sure that price supports would be continued above short-run, free-market levels. Chart 3 shows how land prices rose much less and much more slowly than farm incomes after World War II. Some of the increase in land values since 1950 has reflected the lag between land returns and land prices. After the Korean conflict, the continuation of price supports seemed more certain, and land prices rose to about the same relative levels as farm income.

Finally, a part of the rise in land values during the 1950’s may be attributed to fear of inflation. During 1960, this fear eased to some extent, and this may have been partly responsible for the decline in land values that took place then.

Why didn’t per capita farm incomes rise? There are two chief reasons for per capita net farm incomes changing so little in the 1950’s.

1. Continued overproduction of farm products relative to the demand for them is one reason. This kept total national farm income low.

This overproduction didn’t result from any increase in acreage. Crop acreage has remained virtually unchanged at about 350 million crop acres since 1920, and the decline in the demand for feed for horses and mules had pretty well run its course by 1950. The overproduction resulted mainly from rapid advances in technology and the addition and substitution of capital resources—machinery, fertilizer, agricultural chemicals, etc. These were both added to and substituted for labor and land. This permitted (1) yields per acre to increase and (2) one man to handle more acres.

Production expenses changed, too. The use of more efficient production techniques has a tendency to lower some costs. But the greater use of commercial materials or resources such as fertilizer and the general inflationary trend tended to raise costs. The over-all effect was to decrease national net farm income. A corresponding decline in the number of farmers held per capita net farm income about constant.

The average yield of feed grains, for example, rose more than 33 percent from 1947-49 to 1957. Total farm output increased 21 percent, while population increased only 19 percent. Total production increased more rapidly than demand. In agriculture, even a small increase in supply causes a large decrease in the prices for farm products and almost as large a decrease in gross farm income.

Consumer income per person also increased. Some of this increase was merely inflationary. But relatively little of the real increase in consumer incomes went for food. Total food consumption tends to rise only as population increases, with consumption per person remaining remarkably steady. With national consumer incomes now at relatively high levels, further increases in income increase the demand for some
farm products but decrease it for others. This doesn't have much effect, then, on per capita food consumption.

Continued overproduction in relation to demand, thus, is the first reason that farm incomes didn't rise during the 50's. This kept national gross farm income low.

2. Another kind of imbalance is the second reason that per capita farm incomes didn't rise. Considering the circumstances that existed in terms of the number of farmers who could earn incomes comparable to those for similar ability in other occupations, this amounted to an oversupply of labor and management in agriculture. Along with the oversupply of farm products, this kept incomes per farmer low.

The large supply of farm operators relative to the demand for them, resulted from two things: (1) the high farm birthrate and difficulties that impeded movement off farms — this kept the supply of farm operators high; and (2) the decline in the demand for farm labor, largely as a result of rapid technological advance and mechanization — this reduced the demand for farm operators and farm labor.

The farm population declined along with the decline in the number of farms. But it didn't decline fast enough to permit per capita farm incomes to rise in the 1950's. This relative oversupply of farmers meant dividing up the total farm income pie into relatively small pieces and bidding up the rent and price of land. This kept net income per farmer low. Considering the amount of total farm income to be shared, an oversupply of farmers depresses farm incomes per farmer just as surplus farm products depress farm product prices per bushel, bale, etc.

The farm birthrate alone is high enough to result in a continuous increase in the number of farmers if all boys born on farms stay in farming. Farm births exceeded farm deaths by about 400,000 per year. In 1950 the number of farm children was 68 percent higher than the number needed to maintain a stationary farm population.

The demand for numbers of farmers is declining, and farm practices have become much more labor saving. Increased mechanization and machinery size have increased the size of farm that a family can handle. The average size of farm in the United States increased from 174 acres in 1940 to 215 in 1950 to 302 in 1959. The number of commercial farms dropped 21 percent from 1947-49 to 1955-57.

Why didn't the loan and storage programs work? These programs simply couldn't deal with the basic overproduction problem. They did temporarily bolster farm income and provide a place to put some of the surplus. But they also acted to encourage further overproduction. They did withhold some of the excess from the market, and some of this excess was disposed of abroad with various effects. To the extent that the rest is eventually returned to the domestic market, however, it will depress prices about as much as withholding it raised prices in the first place.

Programs to reduce farm production more nearly in line with current demand come closer to grips with the real problem. These are receiving increasing interest and attention, particularly those of the land-retirement type.

But production control alone can solve only half of the problem. It can raise total national farm income. It can't deal effectively with the other part of the problem resulting from the excess supply of farm operators (farm labor and management) that keeps income per farmer low. This problem calls for a reduction in the number of farmers, and this is more difficult to handle.

The farm population in the United States has declined, but the decline hasn't been rapid enough to keep pace with the decline in the demand for farmers in terms of the incomes they can achieve. The problem for many families no longer is, "How to keep 'em down on the farm," but, "How to help them get off."

While farm incomes are low, urban incomes have been increasing. There are a large number of good urban jobs for people with the necessary training to handle them. One of the big reasons that farm boys don't take these jobs is a lack of training for them. Farm boys—if they have the training, however—can compete for these jobs as well as urban boys.

Farm boys would be in a better position to compete if they knew about these jobs and the training needed to qualify for them while they were young—before they've trained themselves as farmers and put a good share of their capital and lives into farming. An established farm family finds it most difficult to wrench away from farming. Also, the established farm operator can't expect to get one of the higher-paying urban jobs when he hasn't had the training for it.

One way to deal with this problem would be to work more intensively with farm boys and girls while they're still in high school. This could show them what percentage can expect to find places in farming, help them compare farm and nonfarm incomes and help those who decide on nonfarm jobs to take training for them.

This would call for a big change in our vocational-agricultural training program—with agricultural training concentrated on the fewer number of farm boys who'll actually become farmers. A greater number will need training and help to get nonfarm jobs.

A number of states now have area vocational schools, and Iowans are becoming more interested in this type of training (see "Situation Report on Vocational-Technical Training" in the January issue or reprint FS-893). Until the surplus farm population problem is solved, it's unlikely that incomes per farmer will increase much. Reducing farm production simply by taking acres of land out of production isn't likely to solve the farm-income-per-person problem. This is because land isn't the factor that's in greatest oversupply. Rather, it's the excess supply of farm labor and management in relation to the acres that can be handled and the amount that can now be produced per person.
"Almanac Weather"
How Accurate?

You can check up on the weather forecasting skill of your almanac or, for that matter, your own skill and that of any other long-range forecaster.

by R. H. Shaw

Your Almanac said that it would rain, and it did. Did whoever wrote the almanac know what he was talking about? Not necessarily. Chances are that he knew little, if anything, about forecasting the weather. But he probably had some past weather records available — and, from them, he probably knew something about the chances for rain in any given month.

A professional weather forecaster, too, has past weather records available. He has, in addition, a lot of information on the present weather situation. And we assume that he has some forecasting skill whenever he makes a prediction. Any person who can reason logically and who has some past weather data can make some correct forecasts, but does he have any forecasting skill?

A forecast made by using only past temperature and precipitation data and no present weather data is a forecast based on chance, not skill. We can call this a no-skill or zero-skill forecast.

To have any skill, a forecaster must be right more often than he or you or I could be in forecasting by chance alone.

How accurate is your almanac in its long-range forecasts? You can check up on its "skill"—or, for that matter, on your own skill or that of any other long-range forecaster. In this article, we'll consider only long-range forecasts that give a day-by-day forecast further than 5 days ahead, such as your almanac. Similar schemes, however, could be developed for checking on any type of long-range forecast. For simplicity, we'll consider mainly precipitation, as rain or snow.

Rain and Snow . . .

The first information we need is the average number of days with measurable precipitation each month. For Des Moines (and these figures will work quite well for most of Iowa), long-time records show the average number of precipitation days per month as listed in the table. Also shown in the table are the average number of these days with 1 inch or more of snow.

Assume first that each day's weather is independent of another's. This isn't true; there's a certain persistency about the weather. But this procedure makes our first step simpler.

Summer Weather: Let's use July as an example. Notice from the table that, on the average, July has 9 days with 0.01 inch or more of precipitation. Since July has 31 days, take 31 slips of paper. Write "rain" on 9 slips, "no rain" on 22 and put them into an empty fishbowl or hat. Mix well and, without looking, draw one slip from the bowl or hat. This is your chance forecast for July 1; the next slips are for July 2, July 3, etc.

Winter Weather: The procedure is a bit more complicated for months when snow may fall. You must decide whether it's going to rain, snow or both. Let's try January as an example.

The table shows that January has a long-time average of 7 days with 0.01 inch or more of precipitation; probably most are snow, but some may be rain. There are 2 of the 7 days when more than 1 inch of snow can be expected. We'll ignore trace amounts of snow.

Label 7 of 31 slips of paper as "precipitation" days. You'll have to decide which are to be rain or snow. For this example, let's call them all "snow" days. Most of our winter precipitation is snow. April and October have had a few days with snow, and May and September have had snow on very rare occasions. If your almanac doesn't list days with 1 inch or more of precipitation.

Average number of precipitation days and days with heavy snow at Des Moines.

<table>
<thead>
<tr>
<th>Month</th>
<th>Rain¹</th>
<th>Snow²</th>
</tr>
</thead>
<tbody>
<tr>
<td>January</td>
<td>7</td>
<td>2</td>
</tr>
<tr>
<td>February</td>
<td>7</td>
<td>0</td>
</tr>
<tr>
<td>March</td>
<td>9</td>
<td>2</td>
</tr>
<tr>
<td>April</td>
<td>10</td>
<td>½</td>
</tr>
<tr>
<td>May</td>
<td>12</td>
<td>0</td>
</tr>
<tr>
<td>June</td>
<td>11</td>
<td>0</td>
</tr>
<tr>
<td>July</td>
<td>9</td>
<td>0</td>
</tr>
<tr>
<td>August</td>
<td>9</td>
<td>0</td>
</tr>
<tr>
<td>September</td>
<td>9</td>
<td>0</td>
</tr>
<tr>
<td>October</td>
<td>8</td>
<td>0</td>
</tr>
<tr>
<td>November</td>
<td>7</td>
<td>1</td>
</tr>
<tr>
<td>December</td>
<td>8</td>
<td>2</td>
</tr>
</tbody>
</table>

¹A precipitation day is one with 0.01 inch or more precipitation (rain, or water equivalent of precipitation).
²Days with snow or sleet of 1 inch or more.

R. H. SHAW is professor of agricultural climatology, Department of Agronomy.
or other long-range forecast says nothing about the amount of precipitation, you needn’t either. If it does, however, then you should also. In this case, label 2 of the 7 “snow” slips as “heavy snow,” meaning 1 inch or more. Then make your “chance-draw” forecast as in the summer example.

**Modified Method:** Since weather does tend to be persistent from one day to the next, you can, if you wish, take this into account in your chance-draw forecasts. July again, as an example, averages 9 days with rain. Rather than to forecast 9 rainy days to occur at random, you might use only 3 “rain” slips (each representing 3 consecutive rainy days) instead of 9 individual slips; or you might use one 3-day slip, a couple of 2-day slips and two 1-day slips, etc. (Most long-range forecasters do predict rain on 2-3 consecutive days.)

**Checking Up . . .**

To get a true comparison, verify your chance-draw forecast in the same way you check your almanac or other long-range forecast. Most long-range forecasts aren’t made for a specific farm or community. They may cover an area of one or more states. Thus, it isn’t quite fair to check the forecast by only your own specific location—even though this is the only place that it may mean much to you. If the forecast covers a larger area, however, then it’s only fair to verify it that way rather than by a smaller area. But, obviously, the larger the area covered by the forecast, the more difficulty you’ll have in getting the information needed to check it and the more difficulty you’ll have in verifying it. This is because of the wide range of weather which may occur at the same time over a large area.

To verify a forecast against the actual weather at your location, you can make your own direct observations. (But bear in mind that even the daily forecasts don’t always jibe with the weather at your specific location; predicted showers may occur but still miss your location.) So to be fair, follow newspaper, radio and television weather reports to verify the forecasts by a broader area, say your county.

**Right or Wrong?** Particularly if you use the modified method that recognizes weather persistency, you’ll have to be firm and consistent in rules for right or wrong. If a forecast is for a 3-day period of rain, you might say that it’s “right” if it rains during that period. If it doesn’t, the forecast is “wrong”; likewise, it’s wrong if it rains outside of the forecasted rainy period. But what if it rains just a day or two early or a day or two late? You could say, “The forecast came close, so it’s really correct.” But this is hedging.

Hedging can lead to all sorts of trouble in verifying a forecast. Say that for April, instead of forecasting 10 rainy days at random for your chance-draw forecast, you used the modified method and forecasted two 3-day and two 2-day periods of rain as circled on the miniature calendar. Now, if you hedge 2 days early and 2 days late, then the 4 underlined days on each side of the circled days would be counted correct. Thus, a rainy day occurring during any of the extended periods could result in a “correct” forecast.

But, with this kind of hedging, the forecast can hardly miss if you consider both the circled and underlined days! Likewise, a forecast hedged in this manner doesn’t do much forecasting other than to say, “We’re going to have some weather.” Your verification, hedged in the same manner, will say mainly, “Yes, we had some weather.”

You can see the difficulties in hedging. The important thing is to use the same method of verifying your forecasts and the almanac or other long-range forecast. If you hedge on one, hedge on the other. If you count an almost-right forecast as correct for one, it’s also correct for the other. Remember, too, that if there’s enough precipitation to verify a rain or snow forecast, it’s also enough to miss a “no precipitation” forecast.

Compare your forecasts with the almanac or other forecasts for several months. If the other forecasts are consistently more accurate than yours, it’s a measure of the skill of the other forecasters. If the other forecasts aren’t more accurate than yours, the forecasters’ guesses, or luck, are no better than yours. And, by our definition, they have no more skill than yours.

**Temperature:** Just a word on forecasting temperature. You can also make long-range forecasts for temperature. The problem of verifying a temperature forecast is in knowing what the forecaster or almanac means. What is a warm, cold or hot day in relation to normal? That is, how many degrees above normal is a “hot” day. Unless you know this you can’t verify such a forecast. You also must understand the terms you use in your own forecasts. If you want to make a temperature forecast, remember that ordinarily several warm days or cold days occur in a row. Consider this in your forecast.

<table>
<thead>
<tr>
<th>1961</th>
<th>4th MONTH</th>
<th>APRIL</th>
<th>30 DAYS</th>
<th>1961</th>
</tr>
</thead>
<tbody>
<tr>
<td>SUN</td>
<td>MON</td>
<td>TUE</td>
<td>WED</td>
<td>THU</td>
</tr>
<tr>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>9</td>
<td>10</td>
<td>11</td>
<td>12</td>
<td>13</td>
</tr>
<tr>
<td>16</td>
<td>17</td>
<td>18</td>
<td>19</td>
<td>20</td>
</tr>
<tr>
<td>23</td>
<td>24</td>
<td>25</td>
<td>26</td>
<td>27</td>
</tr>
</tbody>
</table>
Iowans know that many changes are taking place in the state. What is the extent of these changes, Director Anderson, and what do they mean for the state as a whole?

We have a better idea now of the degree of the changes in Iowa and how many people are affected by them. This is because of the results of the recent agricultural census and the regular 10-year population census now completed.

The results show that there has been no letup—in fact, some increase—in the trends that have been underway in Iowa throughout this century. Iowa is becoming more urbanized; some sections, such as east-central Iowa, show this quite distinctly. Populations have grown in our largest cities and towns, while many of the more rural counties have had declining populations. Farms are becoming larger, and fewer persons are operating them.

What are some of the figures on these trends?

Let's take farm size first. In late 1959, the average for Iowa farms was 194 acres—17 acres larger than in 1954, 25 acres larger than in 1950. The total amount of land in farms has changed little. So larger farms mean fewer farms. At the end of 1959, there were about 175,000 farms in the state—18,000 fewer than in 1954, 28,000 fewer than in 1949. Because of a number of factors, a farm family today can manage and operate a larger acreage. While there are fewer and larger farms, the typical Iowa farm still is very much a family farm both in organization and operation.

In terms of population, the 1960 census showed that our urban population increased 16 percent over 1950, while the rural population declined 5 percent. Now, 53 percent of our people live in cities and towns of over 2,500 population. In terms of people, it seems to me that the facts say two particularly significant things: (1) Iowa is becoming more urban on the basis of where people live. (2) Fewer persons are earning their incomes directly from farming.

Do you mean that farming isn't as important in Iowa as it once was?

No, absolutely not. The growing population of the nation means that an abundant food supply is becoming increasingly important. What we see in these figures is simply that fewer people are producing more food. At present, one farmer is producing food for 25 nonfarmers. Iowa remains the synonym for farming throughout the nation. Farmers of the state bear an increasing responsibility to the people of the rest of the country.

Within Iowa there has been no decline in the importance of farming to the state's economy. Iowa farmers earn about 800 million dollars annually in personal incomes. At least a fourth of the state's people are engaged directly in farming. A great amount of Iowa's nonfarm industry is directly related to agriculture. This includes those industries which provide services to farmers and those engaged in processing and manufacturing which use the produce of Iowa farms as raw material.

You've said that Iowa is changing rapidly in both social and economic aspects. What does this mean with respect to an educational service such as the Extension Service?

Let me start an answer this way. The County Agricultural Extension Law, under which Iowa cooperates with the United States Department of Agriculture in conducting extension work, makes this
declaration of policy: "It is hereby declared to be the policy of the (Iowa) legislature to provide for aid in disseminating among the people of Iowa useful and practical information on subjects relating to agriculture, home economics and rural and community life, and to encourage the application of same in the several counties of the state.""

There are two particularly important phrases in that statement, it seems to me. One is that the "people of Iowa"—broadly—is the audience that we serve. The second is in the area of service—"useful and practical information." The trends that we see in Iowa suggest that we must define and constantly redefine what is truly useful and practical to the people of Iowa.

Agriculture and farming are of immense importance to all Iowans. Whatever affects agriculture affects the entire state. And those things which strengthen the economic and social vitality of agriculture are really "useful and practical information," for the people of the state.

Could you say more specifically what you mean by that?

I'm referring to understanding the broad changes that are affecting agriculture—understanding them well enough to adjust to them in practice and to deal wisely with them in terms of public policies. Among these are continuously modernizing technology—not in the sense of increasing output but in the sense of increasing efficiency to allow the steady decline in the proportion of our national income that must go for food to continue. I mean finding effective ways to use the greater ability of farmers to efficiently produce food and fiber; altering when necessary and stepping up the efficiency of the marketing and distribution system; understanding the nature of changes in agriculture as an industry and the changes between it and the nonagricultural segments of our economy.

During the past year, the Extension Service completed and published its report of a 2-year study, "The Iowa Cooperative Extension Service Today: Its Scope and Responsibility." This study was carried out by more than 150 members of the Extension Service staff. It identified different kinds of educational needs of the people of Iowa for which the Extension Service already has competence and edu-

cational experience. It identified, in other words, the areas in which we believe the Extension Service can provide help to Iowans who are adjusting to the pressures surrounding them.

Could you report on some of the year's extension activities in terms of some of these areas?

Efficiency in Farm Production . . .

The area of efficiency in production has been a traditional focus of the Extension Service. And it's no less important to Iowa's farm families today. Our changing emphasis centers on the changing needs of the farm operator and his family. We're seeing the appearance of a new kind of farmer in Iowa. He's a professionally oriented man who sees his farm as a business, rather than solely "as a way of life," and he sees himself as the manager.

This "new" farmer operates a highly capitalized business. He's increasingly in the cash market, buying production items—fertilizer, feed additives, machinery, etc. His income is from sales on the market, and the family buys rather than raises the goods used in family living.

In such a situation, a farm's efficiency of production depends on cost-price relationships within and among all of the enterprises that make up the business. Thus, today's farm operator needs both specific and general knowledge.

How is the Extension Service trying to serve these dual needs?

In several ways. Let's consider education on the technical aspects of farming first. In the field of agronomy, we've concentrated on "short courses" for farmers particularly interested in the principles of scientific agriculture. About 1,000 farmers in 19 counties took part in the past program year. Meetings were in county groups, 1 day each week for 3 weeks. The course was taught by extension agronomists and the content covered fundamental principles of crops and soils. These included the physical and chemical properties of soils, erosion control, how plants grow and take up nutrients, and the principles involved in fitting management practices to production.

That sounds like pretty stiff subject matter for a concentrated short course. What did the farm operators who took part think of it?

When we asked each one, "Would you like to participate in more meetings of this kind?" almost 100 percent said yes.

Similar approaches are now being used in teaching the principles of animal nutrition. Other subjects will be handled in this way, too.

You mentioned earlier that past extension programs concentrated on specific problems of farming and farm practices. Don't these same kinds of problems still exist?

Yes, of course. The spring of 1960, for example, was late, wet and cold, and corn and soybean plantings were delayed past the usual time. Extension specialists were able to respond quickly to help in overcoming the problems that come with such a sea-
son. They advised on tillage systems to save time in seedbed preparation and furnished recommendations on shorter-season varieties, on pre-emergence weed-control chemicals to counteract what could have been severe weed problems, and on soil insecticide applications to limit damage by these pests which thrive under such conditions.

Extension specialists used mass media to spread this assistance throughout the state. In the span of a few days, an all-out effort was readied with newspapers and with radio and television stations who gave outstanding cooperation.

Are there other examples?

Far too many to mention here, but let me mention just two. Dairy has long been a leading farm industry in Iowa. New developments in feeding, housing, mechanization and transportation have spurred increasing efficiency on the dairy farm. Production testing has become more and more important as a means of efficient production.

The steady increase in dairy cows on production testing has now reached 11 percent of all cows. Directly supporting this need, extension specialists trained 33 persons as testers and advisers to dairymen in testing associations. The newest development in dairy testing employs modern computing machines. These process data and provide information to a producer that would require much more time and expense if hand-calculated. Iowa State is providing direction in this developing service and is currently processing data from herds in six states. In 1959-60, the number of Iowa herds using this method jumped from just over 700 to almost 1,150.

Another area of specific help is farmstead engineering. This is a relatively new field of interest among Iowa farmers. As they’ve increased their production efficiency, it has meant new equipment and buildings as well as labor-saving methods. Many want to plan ahead—so that units or equipment added now or planned will be adapted for present handling methods but have flexibility for whatever innovations are waiting in the future.

This interest has been expressed in requests for assistance from the Extension Service. This is a specialized kind of help. Agricultural engineers have established many demonstrations of planning, and they’ve helped county extension staffs gain the planning competence needed. During the last year, 60 members of county staffs were trained to give this kind of service to farmers in their counties.

What other kinds of services are involved in the area of efficiency of farm production?

The kind of work illustrated by the two examples just mentioned represents the bulk of our service in this area. But I do want to mention another important kind of service that we attempt to provide. This deals with efficiency questions that are broader than a single farm—individual farms are certainly affected, but the problems can’t be solved unless most farmers take action.

An example from the 1959-60 year is the work which extension veterinarians and county staff members spearheaded on area control of brucellosis.

Most of us are familiar with the cost of brucellosis in terms of herd infections and of the public health hazard of the human form, undulant fever. Iowa hasn’t had a law for compulsory cattle testing, though voters may petition to make testing compulsory for all herds in an area. Working with state and federal veterinarians, extension specialists and county staff members have undertaken the responsibility for a sizable educational program that goes with petitioning and testing.

The educational efforts—including both meetings and mass media information—help the people in an area to understand the testing program, the hazards of the disease and the practicability of control programs. By last fall, 73 Iowa counties had petitioned for compulsory testing; 54 had tests under way, and 4 were certified as brucellosis free.

Marketing . . .

Another area of extension work concerns the marketing, distribution and use of farm products. What does this mean in terms of what the Extension Service does?

The “Scope Report” that I mentioned earlier lists three goals for the Extension Service in this area: (1) serve individuals who produce farm products, (2) contribute to effective operation of the marketing firms and (3) serve the interests of society as a whole.

What are some examples of what the Extension Service is doing along these lines?

First, let’s consider producers of farm products. During the last year, county extension staffs asked for specialist help in fitting marketing information into the management of a swine enterprise. This kind of “wedding” between what have been regarded as separate areas of subject matter is becoming more and more common.

A marketing-management clinic in Buchanan County illustrates the approach. On the management side, presentations covered feed returns for hogs as compared with other livestock, labor needs, production costs with different systems of manage-
ment, and feeder pigs. Covered next were the marketing considerations which can affect management decisions — seasonal marketing patterns, quality, methods of selling, price and marketing margins, etc. There was emphasis on the kinds of market information available, the sources and on how to use this information in making decisions.

Work with marketing firms is an important and growing area. We've reported in the past on how extension specialists have helped small creameries analyze their operational alternatives as competition has quickened. This work continues. But let me mention a different, more general, effort carried out last year with grain marketing firms.

Extension specialists conducted a 2-day workshop for 76 Iowa elevator managers, emphasizing business management and concentrating on the efficiency of personnel employed by an elevator company. This kind of educational work, we believe, improves the efficiency of the firms in the marketing system, benefiting both producers and consumers.

It's true, isn't it, that both state and federal programs provide market information for both marketers and buyers?

Yes, the Extension Service attempts to work with both groups. On one hand, we work with the private and government groups which serve the marketing system — market reporters, product developers, equipment manufacturers and others. Using Iowa State's radio station, WOI, the Extension Service presents almost 2 hours of marketing information every marketing day.

The Agricultural Marketing Service, USDA, has active research projects all over the country. For the findings to be useful to producers and marketing firms, they must reach the persons who can use them. We have extension specialists in livestock, poultry, grain and dairy marketing who concentrate on this job.

Consumers are interested in marketing, too. We emphasized two approaches in serving these interests last year. One was the weekly preparation and distribution of the "Iowa Consumer's Guide" to keep county extension staffs informed on a wide range of price, supply, outlook, quality, storage and other information related to consumer buying. The county staffs, in turn, were able to make the information available to many others. A second approach was made through mass media. Iowans served by 12 radio stations could hear weekly reports on supply and price facts about commodities.

Consumers also are interested in things other than food. Last year, extension specialists carried out educational programs on consumer buying of clothing, furniture and furnishings, home appliances and other products. Interest is growing in consumer buying as a part of the job of managing a home.

Conservation . . .

How does the Iowa Extension Service come to grips with an area as broad as the conservation and use of natural resources?

In studying our responsibility in this area, we identified what seemed to be the five leading natural resources of the state—land, water, woodlands, wildlife and natural beauty. The past year brought shifts in emphasis and activity for each of these.

What happened in the area of soil conservation?

The Extension Service has been vitally interested in soil conservation for a long time. We were again active in education related to watershed development and cooperated in preparing a guide to improved land use in the state. This was a technical publication, "Estimated Crop Yields on Iowa Soils." The word, conservation, doesn't appear in the title, but the information in the bulletin is basic to sound conservation and land use. Prepared for technical specialists, the bulletin compares the yield potentials of major Iowa soils when corn, soybeans, oats or hay are grown. The erosion hazard is identified along with several other characteristics important in conservation.

Management . . .

What is the purpose in this area, "Management," and what is management education?

There are two kinds of educational help that the Extension Service offers. One deals with the management process as a technique. The other is an attempt to deal with specific information in what we call a "management framework." By this, I mean that we recognize that there's no one answer to a certain kind of problem. The "right" answer depends on many things that are special or unique to the farm or person concerned.

Consider cattle feeding. The nutrients that cattle need can come from a whole list of combinations of different feeds. The rates and costs of gain may vary with different combinations. Our animal husbandry specialists and county staffs took a new approach last year on education related to cattle rations. They compounded many rations for each of several different feeding situations. Any of the rations could be used efficiently by a cattle feeder. But his best choice might be the one that uses the feeds that are most available and cheapest for him and which give the kind of gain he wants.

That is what we mean by presenting information in a management framework. We're providing the technical information that a cattle feeder can use to plan what is—for his resources, investment and program—the best ration for his cattle.
Facts and Figures

Cooperative Extension Service - 1960

IN IOWA COUNTIES,

11,821 persons assisted extension agents in organizing and planning programs for adult and youth educational activities, supporting them with local funds;
64,159 voluntary leaders and approximately 5,000 organized groups and agencies assisted the 280 professional county extension agents in carrying out the county educational programs. The county staffs are employed jointly by local county extension councils and

IOWA STATE UNIVERSITY, where

42 supervisors, service personnel and administrators supported and coordinated activities between county, state and federal levels, using state and federally appropriated funds;
83 extension specialists prepared educational materials and assisted in training agents and leaders for county programs; drawing information from research at Iowa State and from the

U.S. DEPARTMENT OF AGRICULTURE, where the

Federal Extension Service brought together, for the use of all states, information from programs from all of the land-grant colleges and universities, allocated federal appropriations to the states and provided technical assistance.

Among many other activities,

MEMBERS OF THE COUNTY EXTENSION STAFF:

Participated in 49,042 meetings attended by 2,744,066 people
Made 79,244 farm and home visits
Had 282,384 office callers seeking information
Received 277,032 telephone calls
Devoted 45,758 days to adult work; 32,112 days to youth activities
Distributed 1,210,963 publications
Wrote 42,014 news stories
Made 3,097 radio broadcasts and 436 telecasts.

MEMBERS OF THE STATE EXTENSION STAFF:

Attended 7,583 educational meetings
Wrote 49,548 letters in response to individual requests
Prepared 3,109 press articles
Participated in 2,218 radio broadcasts and 1,373 telecasts
Prepared 1,319 different publications, with a total of 3,642,743 copies

4-H MEMBERSHIP INCREASED

Enrollment increased from 54,090 to 54,286

- 4-H girls enrolled: 27,826
- 4-H boys enrolled: 26,460
- 10 years and under: 8,466
- 11 years: 9,141
- 12 years: 9,625
- 13 years: 8,025
- 14 years: 5,947
- 15 years: 5,076
- 16 years: 4,044
- 17-20 years: 3,962

MORE RURAL-NONFARM AND URBAN YOUNGSTERS IN 4-H

- 1959: 44,425
- 1960: 43,637

Form: 44,425
Rural nonfarm: 4,866
Urban: 4,799
You mentioned teaching management as a process. What do you mean by this?

This is a relatively new area of emphasis. We've been working at it with the Farm and Home Development Program for younger farm families since 1954. This program, incidentally, expanded again last year, with more than 2,100 families now taking part. But we've just begun to assume responsibility for meeting the management needs of more persons and groups.

In a sense, 1959-60 was a “tooling-up” year. Management teaching is a complicated process. Training in management was a major effort within our entire field staff last year. We conducted four 1-day sessions as part of our regular conferences of field staff workers. Specialists in management from Iowa State conducted these “classes” in management. We believe that our staff is now prepared to make management training—both in formal and informal situations—widely available in the state in the years and months ahead.

Are you concentrating only on farm and home management?

We won't limit ourselves to these, though they'll probably be among the most important areas. But management is a “competence” that can be applied in many kinds of activities—from decision-making in a family or firm to the business of organizing and managing the resources of a community by the citizens who live there.

Family Living . . .

You've been emphasizing, Director Anderson, that changing situations are demanding changes in educational methods and programs. Are the forces affecting Iowa families bringing changes in family living education?

There's no doubt that the problems facing families are changing, and our extension programs for the family are changing with them. One of the first significant changes has been what we call an “integrated plan of work.” Subject matter specialists, county extension home economists and the family living program committees in the counties now look at family education needs in family-centered terms, rather than in terms of certain subjects.

For instance, the major disciplines or fields of subject matter represented in our home economics staff are foods and nutrition, textiles and clothing, home furnishings, applied art, housing, household equipment, child development and family life, and home management. Each of these is a specialized field, and we formerly developed our educational programs pretty much according to these areas.

In our 1959-60 program of work, however, the main areas were human relationships, management, consumer education, optimum physical and mental well being, and community affairs. Each of these, I believe, is family centered. These are the kinds of problems that families face.

Could you give some examples from what was done last year?

Let me mention just a few. Have you ever considered foods as a part of family relationships? Think of the great growth of popularity of picnics and backyard cooking. This encourages a kind of satisfying family recreation, and it offers a means of expressing a family's hospitality to friends. Twenty-one counties offered education on outdoor cookery in their educational programs last year.

Teenager-parent relationships are of vital concern to many Iowans. The Extension Service conducted programs on this subject in 63 high schools last year—involving 4,500 parents and nearly 18,000 youngsters. A related series of five television programs was presented in the Cedar Rapids area.

One area that you mentioned was management. All subjects must fit in that.

They do, and more and more the focus of our educational programs—in home economics as well as agriculture—is on the management approach. Almost every program could be described under this heading. Let me illustrate this with a resume of programs that are distinctly management and in which the family is vitally concerned.

In the 1959-60 program year, 80 counties conducted management education in Farm and Home Development where the young farmer and homemaker studied the management problems of both the farm business and the home; 60 counties offered programs directly dealing with management in some phase of family living such as credit, money management, time and energy, legal affairs, etc.

Another area that you mentioned was consumer education. You included this when you talked about marketing, but doesn't it have additional importance here?

Yes, nearly all subjects in the family living area are concerned with consumer education—buymanship and use of foods, clothing, equipment, furnishings, etc.

One of the most striking examples was carried out in Marshall County. The county home economist and her program committee were impressed by the number of working women in the county. They recognized that appropriate dress was an important factor in morale, safety and economy for these working women. Cooperating with Marshalltown merchants, the home economist and the program committee developed an educational program; a representative from every business that merchandized

Music and other cultural arts programs appeal to many Iowans. Here, directed by Max Exner, a women's festival chorus sings on the steps of Curtiss Hall on the Iowa State campus.
clothes for working women took part in the planning. The program itself included showings of appropriate dress and covered the principles of bursmanship. Both afternoon and evening sessions attracted standing-room-only participants. More than 1,000 women attended.

We've found television well adapted to consumer marketing education. An example last year was a series of telecasts in the Sioux City area. Subjects of the series dealt with buying and care practices for floor coverings, furniture, bedding, curtain, and drapery fabrics, and wallpaper and paint.

What kind of activities are included in the area of physical and mental well-being?

These are the activities in which the Extension Service offers educational programs that help Iowa families protect or improve their physical health and their mental or emotional vitality. This includes many things, but I'll use just one example.

We hear much these days about Americans being overweight. Research at Iowa State has been the basis for some startling estimates of the incidence of overweight among Iowans. Overweight has been identified as a health hazard. Some authorities see some indication that emotional problems are associated with some persons' weight-control problems. During several years of educational work on weight control, the Extension Service has developed well-rounded programs to help Iowans meet the problem. One successful approach has been through organized group study of "Let's Reduce Sensibly."

Youth . . .

The economic trends and social changes in Iowa must be having some impact on young people. What has this meant to the 4-H program?

For many years, 4-H programs emphasized training in the scientific methods of farming and homemaking. Now, it seems that half or more of today's farm boys may not be farmers, though they may have excellent opportunities in agriculturally related work. Perhaps about the same proportion of farm girls will be making homes in towns or cities. As the future for our youngsters changes, we try to change our educational efforts to make them of the most value.

What kinds of changes are taking place?

One basic change is a subtle one. The 4-H member's project—whether livestock, gardening, dressmaking, meal preparation or one of many others—has always been a major focus. This has been unique to 4-H, and it has been and still is a great source of interest and motivation to youngsters.

The change, however, is toward regarding the project as a means to something more basic than simply an end in itself. We emphasize that the project can be a powerful force in advancing the development of a youngster as a person. The point is that our concern is that work with a project helps the youngster. This is the basis of our evaluation, not just how excellent a project the youth developed.

Does this mean that the traditional 4-H shows are on their way out?

Not at all. These offer experience and opportunities for personal development that are as sound as they ever were. It does mean, I think, that the measure of value of the 4-H program is the person; that is, the boy who holds the halter rope and, only indirectly, the ribbon awarded to the calf at the other end.

Some of the other changes in our 4-H activities are more obvious. Accepting the likelihood that many of today's farm youngsters will move, we can ask ourselves what kind of help we're giving them in looking ahead to their futures. Educators use the term, career exploration, to describe this kind of program. During our last program year, seven counties launched the study of career opportunities.

Somewhat different approaches were taken in the counties, but there was a common theme. Basically, the Extension Service acted as an initiator. Many local groups and agencies are interested and concerned in career exploration for the youth of the community. Extension personnel helped community groups get together to consider their needs and to plan programs.

The program in west Pottawattamie County is a good example. With other cooperating groups, the Extension Service held five meetings for young people interested in careers. They probed seven main areas: current situation in farming; self-analysis; opportunities for nonfarm work; job opportunities requiring college training; those requiring less than college training; interviewing for a job; and tours of businesses and industries in Council Bluffs.

Meanwhile, at least 33 counties have started the groundwork for career study by young people.

Community improvement . . .

What is the Extension Service doing in the field of community improvement and resource development?

This area is such a big one and with such a wide range of problems that it's hard to describe. In broadest sense, the Extension Service efforts in 5-year program projection are related to the educational needs within changing communities. These efforts have brought community leaders together to study and identify the main educational needs of the county. The extension programs are being developed to serve those needs.

We see three main educational functions for the
Extension Service in terms of helping the people of a community: first, helping them to discover what constructive steps can be taken to serve their own interests, individually and as members of a community; second, helping them appraise the resources and opportunities available; third, helping them organize themselves and to move in realizing a community's potential.

Public action involves many steps—whether the action is to study, to organize or to actually do something. One crucial step is the emergence of leaders and the development of their ability and understanding of problems. Such persons often turn to the Extension Service for help. Just one example of this kind of service to communities is the Iowa Christian Rural Institute. Changing social and economic conditions have brought many real problems to Iowa churches. The Extension Service conducts this annual institute as a way to provide factual information and study opportunities to clergy and the lay leaders of rural churches.

We hear a lot about industrialization, community improvement projects and the like. Is the Extension Service active in these areas?

On a county-by-county basis, yes. County staffs have long been recognized as sources of help in a variety of community improvement programs. We've helped in landscape planning for parks, playgrounds and public buildings and have been asked for technical assistance on many questions such as land development, zoning, etc.

It's becoming increasingly clear, however, to social and economic observers that community improvement demands more than isolated and occasional projects. They may be quite worthy and important individually, but they don't necessarily hit at the real foundation of community improvement concerns.

What can the Extension Service do about this?

Quite a bit, and we're under way. One of the real competences of our extension staff and the research staff of the College of Agriculture is the ability to gather and to evaluate facts and then to help local persons use them in effective study of problems.

During the past year, we undertook a comprehensive study of the impacts of social and economic change in a 10-county area of southern Iowa. There are clear evidences in that area of the effects of a shrinking economic base and a declining population. Through these studies, analyses have been made that will help future efforts in community improvement and resource development. In developing the essential information on which educational programs in that area may be planned, we've developed methods of study and analysis that will be of help as more communities seek to act for improvement and resource development.

Public Affairs . . .

What is the Extension Service doing in the area of public affairs and what does this kind of activity include?

In describing public affairs as an area, we generally mean problems that are truly public in nature—problems that can't be solved by individuals acting individually and privately. The process is essentially political in which people must harmonize their various interests and viewpoints. We call it a political process, but it doesn't mean that we deal only with questions that will eventually be taken to the ballot box. The Extension Service, of course, doesn't get into partisan politics, but we give strong emphasis—and have since World War II and before—to helping people study and understand issues that are of public concern.

Do you have a good example of this kind of work from what was done last year?

I would cite the training work which increased our extension staff's ability to conduct public affairs education relative to the "farm problem." Sound and objective education in public affairs requires a solid grounding in facts. This is both obvious and essential. Last year we emphasized training for county staffs so that they could competently conduct study and discussion programs.

We offered a series of training schools to county staffs on a voluntary basis. Every county staff was represented by at least one member. The subject matter of the series was both broad and thorough. It dealt with the significant historical events and legislation affecting agriculture, factors affecting the supply and demand for farm products, economic analyses of alternatives in farm policies and the methods and "obstacles" of formulating farm policies. Staff members were trained in these courses and, in turn, held almost 300 meetings on farm policy education. More than 8,000 persons attended these meetings.

Again, a major force in public affairs education was the Center for Agricultural and Economic Adjustment. Most notable, perhaps, was educational work with nationally recognized magazines and newspapers. Conferences with their representatives emphasized the economic and social background of the "farm problem" and helped them become more familiar with the work of the extension services of the land-grant colleges in this area.
This article reports a supplementary study to others made of consumer preferences for and uses of pork. This one deals, not with amounts or quality, but with the frequency of pork use among a sample of urban households.

**by Ardis McMechan**

**Pork Production** has long been a mainstay of Iowa agriculture. But some recent studies have shown that Americans are eating less pork per person than they used to. Still other studies have been made of consumer preferences for certain physical characteristics and other qualities of pork.

To obtain some related information, we studied a group of households in Des Moines to find out how often they included pork in their meals at home. We didn't try to measure either the actual number of pounds or the quality characteristics of the pork used. We were interested mainly in the frequency with which pork was used in meals at home—regardless of actual amounts.

We obtained information on the characteristics of different households in Des Moines, on the kinds of pork they used and on how often they served it. Our survey covered 499 urban households in 1955. The results don't necessarily reflect the state as a whole or other urban areas. But they do give us an indication of how often pork is used by different families in the state's largest city.

Among other things, we wanted to find answers from these households to questions like these: Did income make a difference in how often pork was used? Did the ages of the family members influence the frequency of pork use? Did large families use pork more often than smaller ones? What kinds of pork were most often used?

Here are some of the answers we found for these kinds of questions. Bear in mind that we're interested in frequency rather than quantity of pork used and that a high or low frequency in using pork for family meals doesn't necessarily reflect the relative amounts actually used.

Do families with high incomes use pork less often than families with lower incomes?

Yes and no. The households were divided into four nearly equal groups according to their income. The groupings were: highest incomes, upper middle incomes, lower middle incomes and lowest incomes. Both the lowest and highest income groups reported that they included pork in their meals less often than either of the two middle groups. The high and low groups, however, used meat of any kind less often in their meals than did the people of the middle incomes.

In choosing meat for household meals, what kinds were included most often?

Pork—particularly cured pork—was included far more frequently in meals at home than either beef, poultry or fish. "Cured pork," however, includes many breakfast-type meats or meat products which may consist of relatively small servings.

What kinds of pork did the households use?

Though pork is sold in a number of forms, we grouped the responses about forms into three classes: fresh, cured and specialty. Fresh pork included such items as chops and roasts. Cured pork included smoked varieties such as bacon, ham and sausage. The specialty pork classification included all kinds of pork products which contained at least 75 percent pork but had been processed in some way—such as luncheon meat and liver sausage.

What households used specialty pork most often?

The households with children, especially children 11 years old or younger, used specialty pork more often than did households with only adults. About 80 percent of the households with children used specialty pork in the meals at home, while about 55 percent of the households with adults only reported this.

Who used cured pork most frequently?

Cured pork was included in home meals more often than either

ARDIS McMECHAN is assistant extension editor. The information reported in this article is based on her research as a graduate student in home management.
fresh or specialty pork. About a third of all households were relatively high in their use of cured pork. Households composed of adults only — the group which tended to use all meats less frequently than other households — came up to the average in their use of cured pork.

What about fresh pork? How often was it used?

Fresh pork was included in home meals less often than any of the other forms of pork. Households with children were more likely to use fresh pork than households with only adults. There was some indication that households with one or more children over 11 years of age used fresh pork in their home meals relatively often.

Did there seem to be a "taste factor" present in pork use?

Relatively frequent use of cured and fresh pork was reported by about a third and a fourth of all households, respectively — regardless of their income, food expenditure, household size or make-up. Medium rates of use of specialty pork were reported by about a third of all households. In other words, a certain portion of this sample of urban households seemed simply to like pork and to use it regularly — regardless of household characteristics.

As households used other meats more often, did they use pork less frequently?

Not as far as cured pork was concerned. But the use of fresh and specialty pork did decline as households included other meat in their meals more often.

Was there a relationship between the amount of money spent for food and frequency of pork use?

The middle income groups — who had food expenditures averaging $16-$24 a week — were more inclined than others to use each of the different kinds of pork. Frequent use of fresh and specialty pork also was reported by households whose food costs averaged more than $24 a week. For households who spent less than $16 a week for food, pork as well as other meats were used less often than in households where the food expenditures were higher.

What about the size of the household?

Large households were more likely to use meats most often in general, while small households tended to limit their use of meat. But the small households reported about average inclusion of cured pork and meats other than pork.

What difference did the presence of children make?

Households which included children had a greater inclination to use all kinds of meat more frequently than did those households with just adults. Specialty pork was used more often in households with children younger than 11 years while fresh pork was used relatively often in those households with older children. Cured pork use was about average for these households.

Which households were less inclined to use pork in their meals at home?

Households reporting lower incomes didn’t use either cured or specialty pork as often as did the others. The people with high incomes were also less inclined to use specialty pork, but they used cured pork about as often as the households reporting middle incomes. The use of fresh pork, on the other hand, wasn’t related to the income levels of the people in this study. Low food expenditures were associated with less frequent use of all pork and other meat types.

Small households and those composed of adults only were less inclined to use either fresh or specialty pork products — though they didn’t differ meaningfully from the others in the use of cured pork. Households of adults only were made up of people older, on the average, than households with children. These adult households used beef, poultry and fish less often than the others. But these people reported eating out more frequently and no information was available on the meats used when they ate away from home. It’s also possible that with children no longer present in the household, these older folks may place less emphasis on the importance of including meat in their diets.

What had people heard about the health value of pork?

We were also interested in finding out what these Des Moines households had heard about the health value of pork. The comments that were made in response to the question on what had been heard about health values were grouped into those which were "heard nothing" (about 40 percent), those comments which were generally unfavorable, such as "hard to digest," (about 30 percent) and those generally favorable, such as "high in energy," (about 30 percent).

What does it mean altogether?

Pork of any kind, and cured pork in particular, were included in home meals more often than were any of the other meats studied. Fresh pork was used less often than either cured or specialty. But frequency of use doesn’t necessarily reflect actual amounts or pounds used. For example, the cured and specialty pork categories include more of the kinds of meats likely to be served in small quantities — such as bacon or sandwich meats — while fresh pork use might be assumed to provide a full serving at each meal.

The frequency of using cured pork didn’t necessarily mean less frequent use of either beef, poultry or fish. But as households included meats other than pork in their meals more often, the rate of using fresh and specialty pork declined.

The households’ incomes, food costs and size and composition of family were closely associated with one another. As incomes increased so did food expenditures and size of households. There were more children over 11 years of age in the higher income groups. The lower levels of income included primarily households of one or two adults who spent relatively lower amounts of money for food.

A certain proportion of the households used pork regularly regardless of income level, food expenditures, size or composition of family. Households consisting only of adults tended to use pork less often, while families with youngsters tended to include it in their meals at home more often.
CATTLE SLAUGHTER turned up sharply in mid-April -- the second week of April saw federally inspected slaughter 9 percent higher than a year ago, and the third week saw 13 percent more. Sheep slaughter was up 22 percent and lamb slaughter up 24 percent.

These sharp boosts in slaughter more than offset the 5 to 7 percent smaller hog kill for these 2 weeks. And total meat production ran about 5 percent over a year ago.

This is more of an increase in meat production than the increase in population over last year. With demand lagging -- because of the business slowdown -- prices of all types of livestock dipped downward in late April.

**Weekly Average Prices of Slaughter Cattle at Chicago**

![Graph showing weekly average prices of slaughter cattle at Chicago](image)

**Estimated Federally Inspected Cattle Slaughter**

![Graph showing estimated federally inspected cattle slaughter](image)

CATTLE . . .

Cattlemen had 5 percent more cattle on feed April 1 than a year ago. The Corn Belt was up 3 percent, with the western region up 9 percent.

A closer look at this report shows little reason for optimism for any near bounce in the fed-cattle market. There are more long fed cattle in feedlots than at this time last year -- and more cattle carrying weight. It looks like it will be late summer or early fall before there are any grounds to hope for much improvement in the fed-cattle market from the supply standpoint.

Choice dressed beef was selling about 10 percent lower on the wholesale market in late April than a year earlier. Average price of live steers was about 9 percent lower than it was a year ago. Slaughter has been up. This slaughter increase explains part of the lower beef price. Weaker consumer demand resulting from the business recession also is part of the answer. Many consumers in the depressed areas are buying less beef and lower grades. In addition, supplies of poultry are up, creating competition in the retail market.

For an improved cattle outlook, we'll need some combination of these factors: improved business, bringing stronger consumer demand; general withholding of nonfed cattle, to build up cattle numbers and thus cut back total slaughter; reduced sales of fed cattle; and reduced competition from poultry.

HOGS . . .

Hog slaughter lagged behind year-ago levels during April and early May. June slaughter will be close to that of last year -- because of the increase in the number of sows coming to market.
September and October, however, will see the full impact of the larger 1961 spring pig crop hitting the market. As a result, prices will drop seasonally.

The weekly price low last year came in late August. This was highly unusual. It was the result of heavy unloading of storage pork by packers and the bunching up of slaughter of hogs that normally would have been sold in late July and early September.

This year's price pattern is more likely to be a so-called normal one. There's more likely to be an advantage in selling in August and September than in October.

March cold storage pork stocks were the second smallest on record. Biggest cutback in holdings remains in bellies. When slaughter gets down to the late May, June and early July levels, we're going to have small supplies of some of these cuts, and the result is likely to be higher wholesale prices, squeezed killing prices or both. So there's a likelihood of strong hog prices in late spring -- especially if the business situation bottoms out in April as many analysts hope will happen.

POULTRY

Marketings of broilers and turkeys are running ahead of last year. Broiler prices reached a peak in late February and then dropped. But the number of broiler-type eggs being hatched hasn't dropped. Settings have averaged well above last year.

Broiler slaughter for the first 3 months of the year has been about 10 percent over that of a year ago. May will be up 15 percent, and June will be about 17 percent over a year ago. Thus there will be increased competition from broilers for both spring lamb and fed cattle sales during the next few months.

Turkey growers are stepping up production sharply. In January they planned on a 20-percent boost. Probably a season's boost in hatch of around 10 percent will come closer to hitting the mark this year. If this proves true, some further weakening in turkey prices still is in store.

-- Francis A. Kutish