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# AG STUDENT

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# KANSAS STATE UNIVERSITY AG STUDENT

Vol. XXXVIII

February 1962

No. 3

## In This Issue

From the Dean's Office .....	4
Grow Unique, Decorative Herbs .....	5
Here's How the Sedimentation Test Shapes Up .....	6
Your Child's Creative Ability Can Be Developed .....	8
Catfish Feeding May Be Profitable .....	10
Will Induced Hormones Control Livestock Breeding Dates? .....	12

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The Ag Student Magazine is written and edited by students interested in agricultural journalism, and is published by the Agricultural Association of Kansas State University of Agriculture and Applied Science, Manhattan, Kansas, in October, December, February, March, April, and May. Subscription rates \$1.50 a year; 2 years, \$2; single copies by mail, 30c, at office 20c.

Second class postage paid at Manhattan, Kansas.

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## From the Dean's Office

*by Assistant Dean Carpenter*

**K**ANSANS are celebrating a second centennial. One hundred years ago congress passed the Morrill Act which made possible the establishment of the land-grant college in Manhattan.

KSU students have learned in early courses, from accounts in the general catalog, and in the published history records, that President Lincoln signed the above act into law on July 2, 1862.

The passage of the act made possible higher education which (1) was for persons from the lower income class including farmers, business men, and industrial workers, and (2) was practical as well as respectable.

U. S. colleges before 1862 were patterned after European colleges. Only people from families of wealth and position were able to afford higher education. Courses taught were those which were considered respectable by such groups as lawyers, teachers, ministers and doctors. Work offered included: Latin, Philosophy, Greek, and other classical subjects.

After the land-grant colleges were established other laws were enacted to provide for the experiment stations and the extension service. The total effect of the land-grant institution cannot be easily measured. But

one authority has called them "America's greatest developmental agency."

Highly efficient agricultural production has freed many people from the production of food, and this has released manpower to manufacture other needed goods and to enter many fields of service occupations.

We are the best fed, best clothed people in the world and we are helping feed many people in other lands.

When we consider these developments, we believe that everyone will want to reflect seriously and give thanks for the wisdom and foresight of Justin Morrill and our 1862 congress.

Graduating seniors at mid-winter this year went into the following jobs: farming, military service, packer buying, commercial feed lot, Peace Corps, milling company, extension service, feed manufacturing, vocational agriculture teaching, insurance, soil conservation, and orchard management. Jobs were plentiful.

In January several persons of this office helped celebrate the land-grant centennial by presenting a program at each of the 12 area vocational agriculture teachers' conferences throughout Kansas.

The program featured "careers and opportunities in agriculture through higher education." Materials were provided to the teachers for teaching lessons on the subject and for their use in celebrating National FFA Week in February. The 1962 FFA week theme is "Horizons Unlimited . . . Agricultural Opportunities in Many Fields."

Faculty members who assisted with one or more of the programs included: Dr. R. A. Bohannon, Dr. R. J. Agan, Prof. L. F. Hall, Prof. H. R. Bradley, Prof. S. E. Trieb, Prof. V. E. Jacobs and Dean F. R. Carpenter.

# Woody's

*Haberdashers*

*for K. S. U.*

*in*

*Manhattan's*

*Aggieville*

*Shopping Center*

# Herbs—Unique, Decorative . . .

## Grow Them Yourself

by Nancy Smith

**A** BIT of the unusual in any kitchen can be provided by a fragrant and striking-looking herb garden growing on the window sill. These herbs, planted in varied and attractive vases, can be used in cooking in their fresh or preserved form.

Perhaps someone has said of your cooking, "This tastes delicious!" Maybe the secret was a dash of just the right kitchen herb.

As you experienced cooks well know, there is quite a knack to knowing how to use herbs correctly. When herbs are used in cookery, they are separated into two categories, fine and robust. Their classification depends mainly on their use.

Fine herbs are blends of certain herbs used in combination with others and not by themselves. They are mixed together and chopped to a fine texture. The mixture used

depends on the individual cook. Fine herbs are used mainly in soups, omelettes, cheeses, sauces, salads, and herb butter. Robust herbs need not be, but are often mixed with other herbs. The ones most often used include dill, fennel, horseradish, caraway, savory, sage, and mint.

Fresh herbs are, of course, the most desirable. For this reason many people find it fascinating to grow their own herbs. You may buy your herbs already started from many nurserymen, but these are often 10 to 15 times more expensive than starting your own plants from seeds.

The seeds should be sown in shallow boxes. Cigar boxes are perfect. If you desire to sow more, use a flat—if less, use a flower pot. These seeds need to be planted six to eight weeks before you plan to set them out in your garden. The kitchen



Herbs can be grown at home by planting seeds in flats six to eight weeks before you set them out in your garden.

window sill is a perfect place to start your seedlings. (Be sure there are no gas fumes near.)

The soil should not be too rich because the seedlings will soon have to be transplanted. A good soil mixture is one part of garden loam to two parts of clean, sharp sand. Be sure the sand isn't salty. Mix this well and add about one part of leaf mold. The boxes should be about  $\frac{7}{8}$  full and watered thoroughly once to settle the soil before planting.

### Water Seeds Carefully

Seeds should usually be covered with two or three times their own diameter of soil. Very fine seeds should be scattered on the top of the soil and a thin layer of soil sprinkled about them. Then water them adequately, but not too much.

A good plan to follow when watering these flats the first time or two is to set them in pans of water. The flats must, of course, have holes in the bottom. The water will then rise into the flats in just a few minutes. But don't let the water flow over the top of the flat and "drown" the seeds.

If this method is too trying, the seedlings can be watered from above by using a fine atomized spray. The

(Continued on Page 14)

A variety of herbs can be purchased at nearly any nursery or greenhouse. Grown in this manner, herbs can be used as house plants, and are also excellent gift ideas.



# Here's How the Sedimentation Test Shapes Up

by Darrell Garner

**M**ANY MILLERS and grain men have been upset by the announcement that the sedimentation test will be the basis for premiums on the 1962 wheat crop. They say that the test is not an accurate index of bread-making properties; that it is hard to get accurate readings and harder to reproduce the readings on the same sample; that an adequate number of trained personnel is not available at the country points where tests will need to be made; and that the announcement was made without consulting domestic users of wheat.

However, in answer to these questions scientists have found that the sedimentation test can be used to predict the loaf volume producing ability of a type of flour correctly about 70 to 80% of the time. This is a 10 to 20% better prediction of quality than can be made by using protein content alone. Research shows that sedimentation value is a useful measure of wheat protein quality. The test can be applied without the use of elaborate equipment, without the services of a trained chemist, and without a great delay of time. Researchers find that it is possible for test results in two different laboratories to vary within two units. This is an error of about the same size as errors in the old protein content determination.

## Test Measures Gluten Quality

The test is based on the known facts that gluten protein absorbs water and swells when treated with lactic acid under certain conditions, and that the amount of water and the resulting swelling depends upon the "quality" as well as the quantity of protein. Good quality gluten (from a bread-baking standpoint) absorbs more water and swells more than poor quality gluten. Therefore, the sedimentation test is not only a measure of the quantity of protein

in wheat but also of the quality of this protein.

Sedimentation values range from about 3 for very weak wheat to about 70 for the strongest. The following classification has been suggested. (1) Values of 60 and over for wheat of high protein content and superior gluten quality. (2) Values of 40 to 59 for wheat with good gluten quality and a usual protein range of 12 to 14%. (3) Values of 20 to 39 for low quality hard wheat. (4) Values of less than 20 usually apply to soft wheat.

## ASC Offices Will Test Wheat

Secretary of Agriculture, Orville Freeman, has announced that the wheat sedimentation test will be used to determine premiums for 1962 crop wheat placed under government loan. You the farmer may ask, "This looks good, but will it help me?" The answer is, "Yes, it will." According to government plans, county ASC offices will be equipped to make the test. The test can be run on farm-stored wheat at no cost to you and the loan will be made on the

basis of the test results. If accompanied by a test certificate, warehouse receipts are also eligible for a loan premium. No discounts will be made on low quality wheat produced in the 1962 crop and the test is not mandatory.

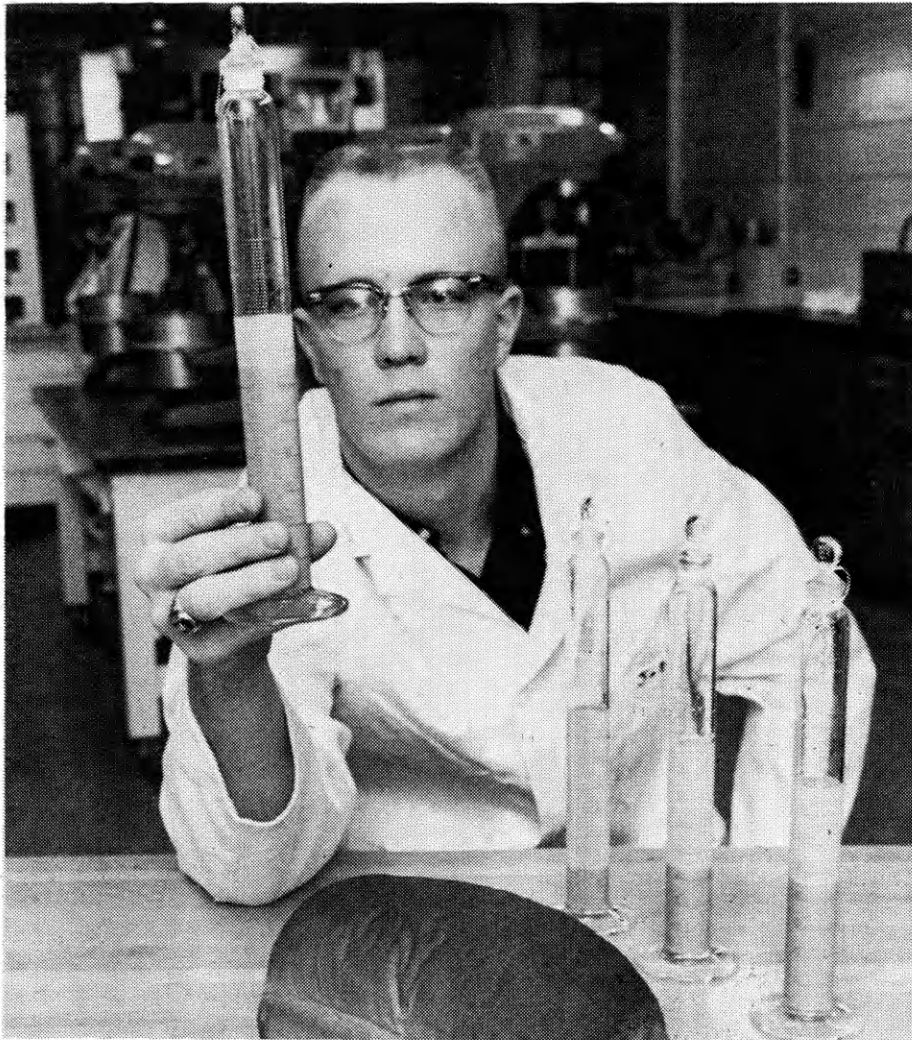
## There Won't Be Discounts

The fact that no discounts will be made for low sedimentation values along with the announced premium schedule indicates that the test will be of financial benefit to farmers. For example, if a farmer's wheat tests 45 on the sedimentation test, he will receive a premium of 6 cents per bushel. This would correspond to a 2-cent premium on the basis of the old test and would mean an extra \$40 per thousand bushels. Premiums will be offered for wheat testing higher than 40, and wheat not tested or which rates lower than 40 will be eligible for a basic price support averaging about \$2 per bushel.

The actual test is a simple procedure developed by Dr. Lawrence Zeleny of the USDA Grain Marketing Service in 1947. It consists of

AVERAGE SEDIMENTATION VALUES AND PROTEIN CONTENTS ON  
1961 CROP ENVIRONMENT SERIES

Variety	Average of each variety at all stations		Average of all varieties at each station		
	Average sed. value	Average protein	Station	Average sed. value	Average protein
Bison .....	49	12.2	Dodge City .....	66	13.8
Kaw .....	49	12.8	Garden City .....	66	14.6
Ottawa .....	49	12.9	(Garden City), Irri. ..	(44)	(11.6)
Rodco .....	48	12.1	Manhattan .....	60	14.6
Triumph .....	47	12.6	Colby .....	58	15.4
Tascosa .....	46	11.4	(Colby), Irri. ....	(49)	(13.8)
Wichita .....	39	11.7	Thayer .....	50	12.2
Turkey .....	38	10.8	Hutchinson .....	46	11.4
Concho .....	37	11.1	Tribune .....	46	11.9
Pawnee .....	33	11.1	Hays .....	40	10.9
			Mankato .....	36	10.6
			Belleville .....	35	10.7
			Newton .....	35	10.2
			St. John .....	34	9.8
			Columbus .....	32	10.4
			Moundridge .....	28	10.4
			Powhattan .....	24	10.5



By grinding a sample of wheat, sifting out the flour, and suspending it in a solution of dilute lactic acid, better quality wheat can be determined by how high it swells.

grinding a sample of wheat in a small mill, sifting out the endosperm flour, and suspending the crude flour in dilute lactic acid solution in a cylinder. After allowing the suspended flour to settle for exactly 5 minutes, the volume occupied by the swollen mass of flour is read from markings on the side of the cylinder. This number is the sedimentation value. Relatively little instruction is needed to master the test, and complete equipment for making sedimentation tests in a routine manner costs about \$900. With this equipment two persons should be able to perform about 200 tests in an 8-hour day.

Sedimentation value indicates the maximum potential blending strength of wheat, while ordinary bread-baking tests usually favor medium strength wheats. But the sedimentation test should not be condemned because it does not agree

with all the baking methods in use today because gluten strength in wheat is sometimes covered up by these tests. When all the factors of evaluating potential bread-making strength are considered, the sedimentation test is a welcome, reasonably reliable shortcut to determine wheat quality.

Protein quality and quantity are

probably affected by climate as much as anything, although soil fertility, plant diseases, and other factors affect it. Despite variations in climate, some varieties show unusually high sedimentation values. Average sedimentation values and protein content of varieties tested in the Kansas Crop Environment Series for 1961 show this fact. Bison, Kaw, and Ottawa had test values of 49 and a protein content of about 12.5% as compared to Pawnee with a test value of 33 and 11.0% protein. These figures are averages of all stations in Kansas. For an extreme case, a test value of 24 with 9.0% protein was reported for the Turkey variety as compared to another station's test value of 67 with a 15.5% protein content for Bison.

#### USDA Developed the Test

While Secretary Freeman did not specifically consult any individuals or groups outside the USDA before announcing the program, it was generally known that the government was working on the project. The USDA's scientific and technical experts studied the test very carefully, and the hope is that the quality premiums will encourage production of higher quality wheat. If this is accomplished the foreign demand for wheat with high protein quantity and high gluten quality to mix with their low quality wheat will be met more successfully with Kansas wheat. The new test is designed to enable buyers to identify the stronger wheats, and if successful should show beneficial results to both farmers and buyers of wheat. Among these results would be higher profits to farmers, better wheat for foreign and domestic markets, and a reduction of the present burdensome surplus.

#### PREMIUM SCHEDULES

1962		1961	
Sedimentation test value	Cents per bushel	Protein content (percent)	Cents per bushel (hard red winter)
40-44	3	12.0-12.9	1
45-49	6	13.0-13.9	2
50-54	10		
60-64	14		
65 and over	19	14.0-14.4	3
	24	14.5-14.9	4
		15.0-15.4	5
		15.5-15.9	6
		16.0-16.4	7
		16.5-16.9	8
		17.0-17.4	9
		Over 17.4	2c for each 1/2%

# Your Child's Creative Ability Can Be

By using a few simple methods parents and teachers can promote

by Linda Kernohan

**C**HILDREN, unless taught differently, have no fear of self-expression. A child's imagination, when used to solve problems and develop plans, is creative. And most children *are* creative. Rarely do you see a child peeking out of the corner of his eye to see what conclusions other children are reaching — but adults have to know what other adults are doing.

Creativity is a word that's getting tossed around a lot lately. What does it mean? Creativity is a successful step into the unknown. Creativity is the ability to change, invent, or place elements together in

such a manner that their value or beauty is increased.

## Don't Discourage Creativity

Because creativity begins during childhood, it is important to see that it is not discouraged at that time. Teachers and parents should promote an atmosphere necessary for creativity to develop.

Schools can help by placing a high value on creativity and originality. New ideas should be tested and the children helped to think them through. Teachers should encourage pupils to jot down ideas as they think of them, give pupils credit for self-

initiated learning, and lessen the threat of evaluation in the form of grades.

Creative ability is different than intelligence. Some children are highly intelligent as measured by I.Q. tests, but they may have few original ideas. Creative children are often unpopular with teachers because they may think up new things to do — often mischievous things. Each person should be treated as an individual to develop the creative growth process within him.

## Mothers Can Help

Mothers could help their children develop creativity by asking, "What do you think?" instead of always answering their children's questions. A question often asked is, "Mommy, what can I do now?" Mothers trying to foster creativity might suggest that the children make a list of all

Developing creativity in your children is your responsibility. A good way to begin is to throw away the color books and let them color designs that they have created.



Rather than having a child express his creativity on the living room walls, give him a blackboard or easel to practice on.





# Be Developed

promote originality.

the things they might do, then pick out something from the list and do it. (It's a good idea, moms. It will keep them busy for at least 20 minutes while they're making out the list!)

## Give Some Guidance

This permissiveness in letting children decide for themselves what they want to do, of course, has its limitations. If your child is painting a mural on your living-room wall, this doesn't mean you should let him continue in order to promote creativeness. You should channel his creativity in acceptable directions. Provide opportunities for self-expression—have an easel set up so he can paint, have clay available for him, let him build with blocks, offer him finger-painting experience, or give him a box of crayons. (Throw away the coloring books, though. Let him make his own designs to color.)

Research indicates that children's imaginations are being inhibited.

Several children were asked the following question: "What are all of the things Mother Hubbard could have done when she found her cupboard was bare?" Most children thought that Mother Hubbard shouldn't have allowed her cupboard to get bare in the first place—the emphasis on prevention rather than possible solutions to her problem. Teaching children prevention methods is important, but they should also be taught to cope imaginatively and realistically with unpreventable frustration and failure.

Would you like to know if you're a creative individual? Here's a simple test you can take to find out. Draw two parallel lines and use these lines to make a design.

The experts tell us that the less creative person stays within the bounds of the original lines. The more creative individual draws outside the lines as well as inside, but stays close to the original ones. The still more creative person adds lines, almost forgetting the original two,

and comes up with a new design altogether—perhaps inventing a melody by adding bars, notes, and a staff.

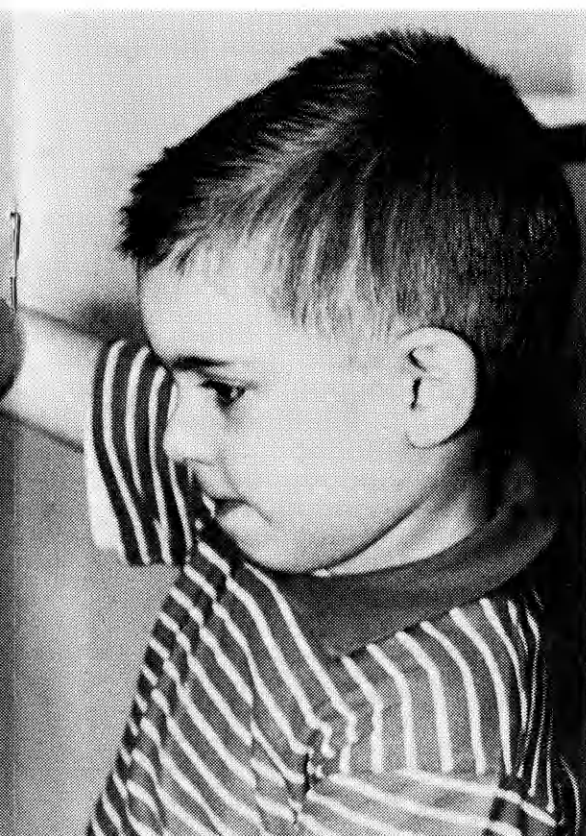
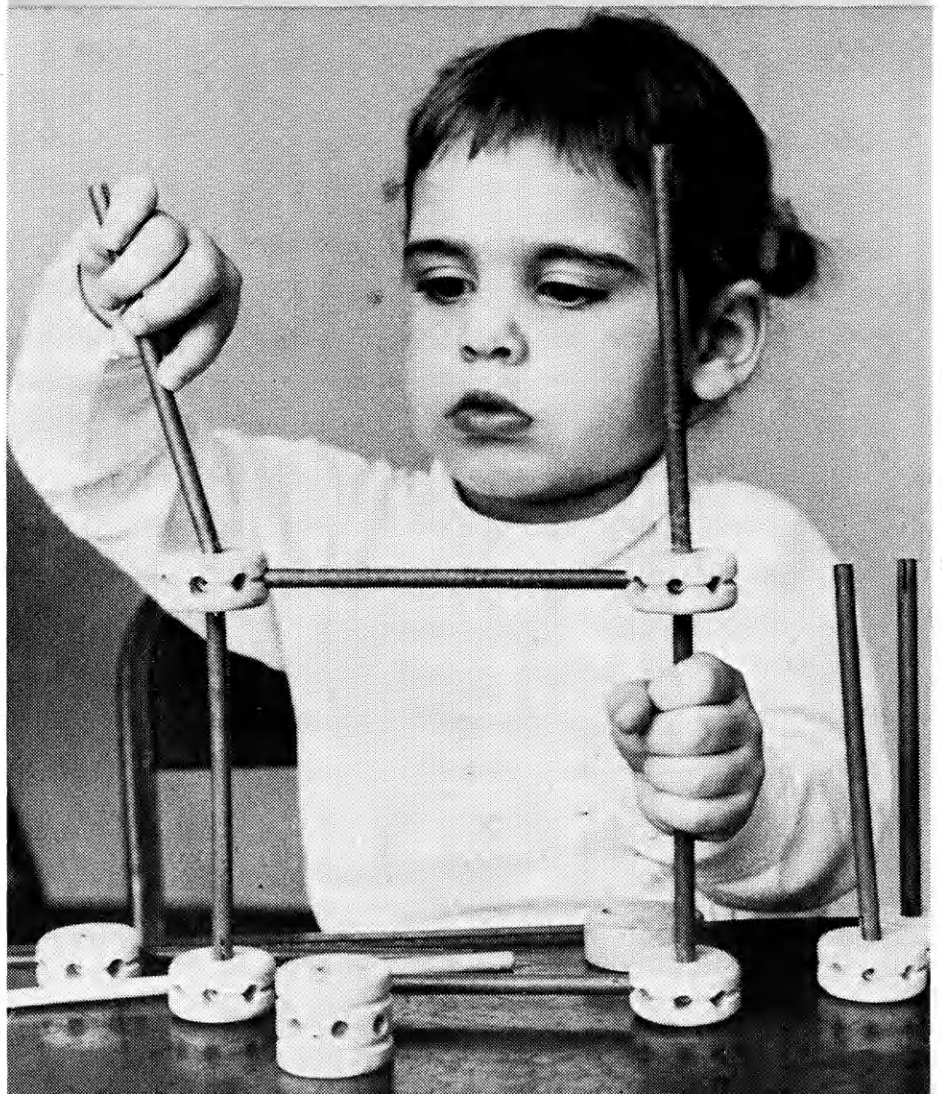
Persons who have a sense of humor, who are sensitive to problems and defects in the environment, who have the ability to tolerate vagueness, and who have a feeling of independence in judgment are generally creative individuals.

It's just plain practical to be creative. If you can only reproduce what has already been done and can't improve it, you're inviting cut-throat competition.

## Creative People Needed

The world needs creative men and women, not only to invent better mousetraps, but to help us to live together more peacefully in a rapidly changing and increasingly complex society. The future of our civilization depends upon the quality of the creative thinking of the next generation. Why? Think it out for yourself. That's a good way for you to begin to develop your creativity!

This child may be no construction engineer but research indicates her imagination may not be as inhibited. Children have no fear of self expression like many adults.



## Researchers Say

# Catfish Feeding May Be Profitable



The market for channel catfish is increasing. More people are beginning to look upon the firm, sweet meat as a delicacy. In the future, feeding fish may be profitable.

by Gordon Bieberle

**“WHAT?** You say feeding out channel catfish is becoming a booming business?” That’s right! The catfish program is just getting started, but experts feel that it is similar to the broiler business, which had its boom about 15 years ago. Here’s the way this program works: First, you buy baby catfish from a hatcheryman and feed them out to market weight. Then you sell them to dressers and markets.

How are these channel catfish fed out? What are they fed? When should they be fed? How can you as a farmer make use of this program? These and many more questions are being answered by Dr. O. W. Tiemeier, associate professor of zoology at Kansas State University, who is directing a research program on feeding out fingerling channel catfish. Tiemeier is using ponds in three Kansas areas to conduct his research. He has stocked city-owned ponds in Council Grove, Herington, and a pond near Leonardville.

Tiemeier started work on this project in April, 1960. He stocked three small ponds, about .13 acre each, at Council Grove with 4,500 fingerling channel catfish—1,500 fish per pond—which he received from the Kansas Forestry, Fish and Game Commission in Pratt. Feeding these fish started in June, and continued through October. After October, feeding was stopped until May, 1961, and during that time the fish from the three small ponds were transferred into a large pond. A little more than 94 percent or 4,240 fish were recovered from these small ponds. Rate of recovery was 10,600 fish per acre of water, or 1,622 pounds per acre gain. The fish averaged about nine inches in length when taken out of the small ponds as compared to four inches in length when first stocked.

Only two of the Council Grove ponds were restocked during the 1961 experiment. Each of these ponds was stocked with 1,024 channel catfish fingerlings. Recovery was

about 93 percent; average length again was nine inches.

The Herington pond was similar to the Council Grove pond. In 1961, Tiemeier stocked 3,484 fingerlings in the small .16-acre pond. Rate of recovery on these fish was about 94 percent or 20,425 fish per acre. The rate of gain was 2,240 pounds per acre.

The one-acre farm pond at Leonardville was stocked with 1,016 fish in 1961. Percentage rate of recovery was 94. Rate of gain here was 381 pounds per acre.

The overall average recovery rate for all the ponds was nearly 94 percent, and overall average length of the fish was nearly nine inches. Tiemeier believed that all these fish were big enough to be stocked in larger lakes without being eaten by larger fish.

By now, you’re probably saying to yourself, “Well, all these facts and figures are fine, but how do they apply to me?” Indirectly they may mean a lot to you, but at present they don’t apply directly to you and your farm pond because the program has not yet been adapted to large fish. However, as Dr. Tiemeier analyzes his research, you will be able to benefit more and more from it. Eventually he will be able to tell you exactly when and what to feed your fish for best gains and least loss in feed profits.

### Best Gains Made in Warm Water

So far, the research has shown that the best conversion rate (number of pounds of feed needed to make a pound of gain) comes during the months of July and August when the water temperature is highest. Dr. Tiemeier remarked that he discovered a poor rate of gain in September and October. In order to make a pound of gain, consumption of about four pounds of feed is

necessary. This costs a little more than 17 cents per pound of gain.

"We have been gratified with the results obtained to date and believe that it is possible and feasible to rear one-pound channels the second fall after they are hatched, and that this can be done at a cost of 12 to 20 cents per pound of gain," said Dr. Tiemeier.

Recommended protein content for the feed formula developed at KSU is from 30 to 39 percent. The kind of protein is not as important as the amount of protein. Some materials used include fish meal, soybean meal, meat scraps, wheat bran, salt, beet pulp, blood meal, wheat shorts and dehydrated alfalfa meal.

**More research is still needed to improve commercial catfish production. However, Dr. Otto Tiemeier of Kansas State already knows that water temperatures, and possibly oxygen and carbon dioxide amounts in the water, influence growth rates.**

#### Pellets and Crumbles Are Used

Although the smaller pellets or crumbles are better for the three- to five-inch fish, the pellet size used in Tiemeier's research for larger fish is 3/16 to 1/4 inch in diameter by 3/8 to 1 inch in length. These larger pellets were firmly pressed to prevent rapid dissolving and loss of feed in the water.

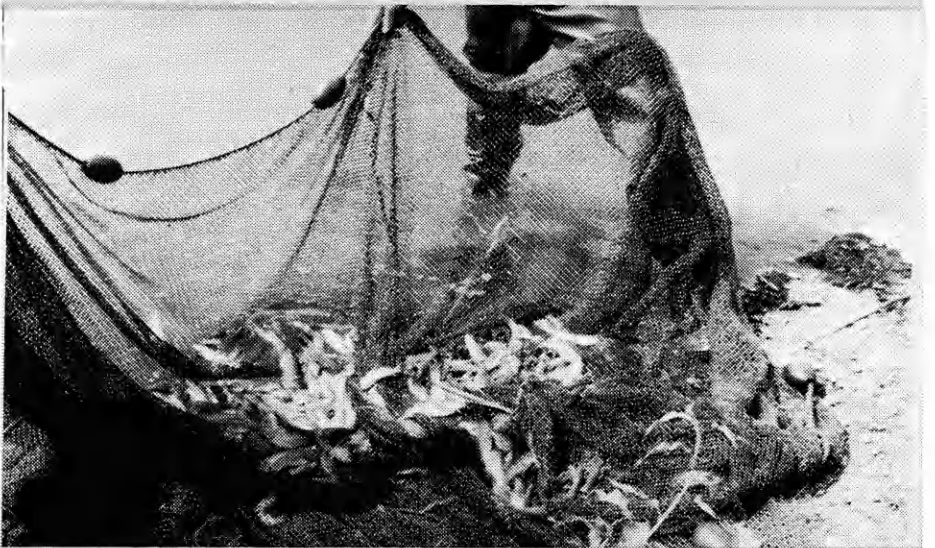
"We fed from about the first of May to the first of September, or when the water temperature was above 60 degrees. Better food conversions are obtained at higher temperatures as well as more rapid rates of growth," said Dr. Tiemeier.

Fish are fed at the same time and about the same place each day. Feed is spread in a line along the edge of the water that is not over three to four feet deep—it's not scattered too widely. When the feeding program was started in the spring, the full amount of feed was not used. Instead, it was increased gradually so as to train the fish to come to one certain place. The recommended daily amount of feed is five percent of the total weight of the fish being

(Continued on Page 14)



Some day possibly you will be harvesting your crop like this. The catfish program is just getting started, but experts feel that it is similar to the broiler industry.



Research supervised at KSU indicates that it is feasible to rear one-pound channels the second fall after they have been hatched at a cost of 12-20 cents per pound gain.



The recommended daily amount of feed is five percent of the total weight of the fish being fed. This feeding ratio should be checked by weighing some fish every 15 days.





One of the problems facing cattlemen is getting a uniform set of calves of nearly the same age. Researchers and scientists are working on the problem and have developed a hormone that effectively controls the heat period, but conception rates are low.

# Will Adding Hormones Control Livestock Breeding Dates?

Research indicates that eventually you will be able to regulate heat periods in animals.

by *Merle Jones*

**L**IVESTOCK breeders — hormones to regulate the birth of offspring are being perfected. This research will eventually enable you to regulate with precision the time that your animals will come into heat. You will be able to raise a calf, lamb, or pig crop that is more uniform than one in which no attempt has been made to synchronize the estrus (heat period cycle) of your breeding stock. Besides increasing uniformity, you livestock breeders will be realizing the advantages of a shortened period of time during which young animals will be born.

If you run a deferred full feed system and raise your own calves, or if you have a cow and calf system (stockers and feeders), your cows can be bred so that calves will be weighing 400-500 pounds by October for the deferred system buyers. The stocker and feeder raiser can also breed his cattle in order to hit the October market with 700-pound calves that will satisfy the full feed buyers.

The difference between being on a proven system rather than in the present situation is that now you buy and sell haphazardly, causing you to sometimes hit that market "wrong." If the use of hormones can control the cow's reproductive system like research shows it may, then you, as a livestock raiser, can stay on a system and avoid this situation.

Provera is the hormone that has been used most often in the estrus synchronization tests. Provera is derived from progesterone, a natural hormone secreted by the ovary. Progesterone is normally necessary to maintain pregnancy, but it also pre-

vents the animals from coming into heat. Besides synchronizing estrus in animals, and also humans, it is used to help prevent abortion in humans.

Harold Spies, professor of animal husbandry at Kansas State University, said, "This particular type of hormone research is also being conducted with swine and sheep." He goes on to say that the results look encouraging.

## Hormone Mixed with Feed

Sheep, cattle, and swine can be regulated by hormones, such as Provera or Prodox, by mixing the hormone right into the feed.

Sheepmen have reason to be particularly encouraged. Tests conducted on sheep have resulted in 90 to 95 percent control over the ewe's coming into heat. Tests, and this is the most important, showed from 80 to 90 percent lambing for the first breeding following discontinuance of hormonal feeding. Breeding in some of the tests was done by artificial insemination (AI). Thanks to the induced regulation of the heat period

cycle, semen from a proven ram can be made available to help improve lamb quality.

Forty ewes at the Kentucky experiment station were fed 60 to 90 milligrams of Provera daily. Within 2 to 5 days after hormonal feeding was stopped, 38 of the ewes came into heat and 84.2 percent lambed as a result of breeding at the synchronized estrus. In all tests mature animals demonstrated higher conception rates than did yearling animals.

### Swine Hard to Control

Considering the synchronization of estrus in the three types of livestock, sheep are the most easily controlled, while swine are the hardest to control. It would be a great boost to the swine industry if ovarian control of a sow could be accomplished by hormone use with good results. AI, utilizing proven boars, in swine is very difficult because boar semen, unlike bull semen, can't be successfully frozen. Thus semen from good boars is often unattainable because the live semen is good only for about five days.

Illinois swine men have found a way around their poor conception rates. Hormones such as Provera prohibit ovule rupturing, thus allowing fertility to be controlled. Illinois swine raisers then inject, after Provera or similar hormone use, another hormone that causes the follicles of the ovary to rupture and release the egg; thus they are able to control the ovarian cycle by the use of two hormones. Further research may show that this is the only way that

**Uniform calves bring a higher price for the raiser as feeders and bring more for the feeder at market time. Researchers and scientists are working to make it possible to breed all your cows at once and get uniform calves.**



successful fertility in swine can be attained.

### Cattle Conception Rates Low

As for cattle, a number of tests have been run to determine the hormone dosage, length of feeding time, and frequency of feeding. Greatest efficiency has resulted from feeding 75 milligrams of hormone two times a day for 18 days. Control of the heat periods of a cow has been around 90 up to 100 percent, with several tests getting 100 percent control. Sixty-six percent for the first breeding is the highest conception rate recorded, while KSU's test on 50 heifers ran about 25 percent for the first force breeding, three days after hormonal feeding was discontinued. The low rates of conception after hormone use are discouraging, remarked both Professor Harold Spies and Professor Germain Marion, dairy science at KSU.

In the KSU test the heifers that didn't settle from the first breeding were rebred. Rebreedings raised the conception rate to 70 percent. All the heifers were slaughtered within 30 days after breeding. Poor conception rates in the KSU tests are due somewhat to the near market

readiness of the heifers. Fattened cattle have poorer conception rates, since fat animals are lazy and do not show heat as well as thinner animals. Also excess fat around the ovaries will sometimes prohibit the release of an egg from the ovaries.

### Confinement Is AI Drawback

"In the beef industry, the biggest drawback at the present time in breeding beef cattle by AI is in confining animals so they can be watched," said Professor Marion. If the cattle could be confined, better bulls could be used on them. Hormonal control of beef animals will allow better control of animals without increased confinement. Thus AI can utilize proven bulls to a greater advantage.

Research is continually progressing. This often means dollars for you. Scientists ask themselves if dogs, as well as many other animals, can be controlled effectively by hormones.

### May Control Predators Also

You livestock men who lose valuable animals to coyotes and other predators may find additional uses for hormones that can control reproduction. Hormones of this nature placed on meat or other bait may mean one year gone by with no new predators born. That will mean a few more calves to sell and several more lambs.

There is great potential for the successful adaptation of hormones to the needs of livestock men. The future economic uses of hormones for control of the reproductive organs is just being touched upon. Basic research is being carried on in the field of the reproductive organs and of the pituitary gland, often called the "master gland" of the body. Soon your ability to stay on that "system" will be a certainty.

**Results of tests on ewes have been encouraging. Their heat periods are more easily controlled than in other classes of livestock and they show conception rates of 80-90%.**



## Grow Herbs

(Continued from Page 5)

soil should be kept moist, not wet, and don't wash out the seeds!

Most seeds will germinate within a week or 10 days, but some are quite slow starters, especially ones in the parsley family. Herb seeds often will sprout more easily if they have been water treated, or soaked in water for two or three hours at warm temperatures. For extremely small seeds one can mix the seeds with sand, soak them, and then plant the entire mixture.

When the seedlings are about 1½ to 3 inches high, they should be thinned. Slip an old dull kitchen knife under the seedling, remove the root system and all, and replant it immediately. The soil mixture should be the same in the new transplant box.

In about three or four weeks the next step in the procedure should take place. For this last indoor move the soil mixture should be one part garden loam, one part clean sand and one part leaf mold. The seedlings should be planted about six inches apart both ways. These seedlings when set out probably won't flower the first season, but will be healthy and thriving for the next season.

When herbs are potted in attractive vases or cups of unusual design, they make excellent gifts for friends. Their pleasing fragrance and delicate appearance make them a favorite choice for house plants even when they are not used in cooking.

The growing of herbs can become a very satisfying and useful hobby. There are many books containing information about herbs and their uses. The next time someone gives you a compliment on your salad, you can tell her the secret lies in your choice of home-grown herbs.



Best feeding results will be realized in reasonably clear water that is maintained at 3 to 4 feet in depth. Catfish will feed at the same time and place each day.

## Feeding Catfish

(Continued from Page 11)

fed. Tiemeier said that this weight should be checked every 15 days by seining and weighing some fish and then calculating a new weight and grain feeding schedule.

Present research at KSU is designed to find out the fastest and most economical way to raise small fish up to nine inches, so that they can be transferred to larger ponds without being eaten by larger fish. Tiemeier pointed out that the feeding program discussed in this article is a supplementary program, "over and above what's in the water." Such a program is not necessary unless you are raising more than 100 channel catfish per acre.

You can carry out a feeding program similar to this one if you have several ponds on your farm. However, if you have only one pond, Dr. Tiemeier suggests that you wait until the program is adapted to larger fish.

If you plan to start a fish-feeding program, consider the following suggestions before you begin:

1. Don't begin to feed unless you will harvest the fish and will

continue the feeding program through the summer.

2. You will probably obtain best results if the water is not too muddy — visibility should be over three inches.
3. Bullheads and fish such as carp will probably give good results under this program if you can hold reproduction in the pond to a minimum, but it is questionable whether you can teach bluegills, crappies, and bass to take the feed regularly in most ponds.
4. You must harvest the fish according to state fishing laws and regulations. Determine what they are before you begin.
5. Don't expect your state fish and game commission to furnish fish for this program. You can buy small channel catfish from private sources.
6. Any feed mill can prepare the pellets for you if they have mixing and pelleting equipment and receive enough orders to warrant the work involved.
7. Stock your pond at the rate of 500 to 1,000 fish per acre if you want more rapid growth of fish. You may stock at a rate as high as 2,000 per acre, but the rate of growth will probably be slower.

Plans are being made to set up several ponds at K-State to check out various formulas which will be useful in channel catfish feeding over the nation.

"Why do we want to increase channel catfish production?" The answer is simple—the market is increasing. More people are beginning to look upon the firm, sweet meat as a real delicacy.

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