

IMPROVING WHEAT BY SELECTION; HOW NEW VARIETIES OCCUR

Best Method of Producing Them is to Select Individual Plants From Field and Increase the Grain From Each Plant Separately.

THERE are more than a thousand known varieties of wheat and probably as many more varieties of which there are no records. It may be interesting to know how these new varieties occur and the methods used in producing them when it is desired to systematically improve some old or well known variety.

It is now recognized that one of the best ways of doing this is to select in

in this manner developed several varieties of oats which were extensively cultivated in Ireland, Scotland and England during the past century.

The ordinary observer, in looking over a field of average Turkey red wheat, for example, would probably think it all pure Turkey red wheat. However, if he would select single plants and examine them carefully he will soon discover they are all different. If each one of these single plants



THE ABOVE CUT SHOWS TWO PLANTS OF TURKEY RED WHEAT, EACH ORIGINATING FROM A SINGLE PLANT. THE ONE LODGES, BUT THE OTHER STANDS UPRIGHT.

Individual plants from any large field and increase the grain from each plant separately until enough has been secured to make a yield test. If a single plant of wheat be chosen from a field, it can be increased enough so that in about four years a tenth-acre plot can be sown from the product of a single plant.

Occasionally in passing through a field of wheat, an outstanding plant will be discovered. If these are saved and increased in this way they often give rise to varieties that show much improvement over old varieties. An excellent example of this is the Fultz wheat, which is a red grain, beardless variety, and which was selected from the Lancaster wheat, a red variety, but bearded, by Abraham Fultz of Millin county, Pennsylvania, in 1862. The Fultz variety is still very extensively grown in the eastern states. Three years after the Fultz was originated, that is in 1865, Garret Clawson found in a field of Fultz a white grained, beardless variety. He selected this out and increased it and gave it the name of Clawson wheat. This variety is still grown in Pennsylvania.

Other experiments might be given to illustrate this method. One of the first men to use the system of isolating single plants from the field and increasing was Patrick Shirreff, who

is planted separately and increased it will be found that the yield of the wheat produced from each is very different. At the Nebraska experiment station there are now about ninety strains of Turkey wheat, which have been selected from about two thousand original plants of Turkey wheat. Each of these strains comes from a single plant. In other words, a field of wheat, instead of being uniformly of one type, is a mixture of types, which are very similar in appearance, some of which, however, are capable of yielding far more than others. These new types, which are constantly occurring in wheat fields, are what animal breeders used to call "Sports." From time to time, among animals and plants, these new variations occur. Many times they are of no value whatever and are not as good as the original type from which they sprung, but occasionally one of these "Sports" is an improvement and in that case it should be saved and increased.

There is great opportunity here for keen eyed farmers who are interested in doing something for the betterment of their state, to discover among the various crops they are growing these individual plants which are outstanding and use them as a foundation to build up improved varieties.

GRAIN RATION FOR HOGS ON PASTURE

Considerable Saving is Effected of Costly Concentrates.

RESULTS OF EXPERIMENTS.

By Professor Charles B. Lee, Department of Animal Husbandry, University of Nebraska.

Feeders and breeders are coming more and more to realize the advantages derived from feeding a grain ration to hogs running on pasture. By such a practice a considerable saving is effected of the costly concentrates, a saving which the present high price of grain makes of considerable importance. From experiments carried on at the Nebraska station, comparing one lot of mature hogs fattened on alfalfa pasture and corn, with another lot fattened on corn alone, it was found that the alfalfa and corn ration effected a saving of about two and one-third bushels of corn on every one hundred pounds gain in weight. Or, after deducting 15 cents a head for pasture, at the present price of corn, this would mean a saving of something like \$1.55 on every one hundred pounds of pork produced. Certainly such a saving demands consideration at the hands of the economic swine producer.

In the experiment mentioned it will be noticed that mature hogs were used. In such a case fattening can be carried on very satisfactorily on alfalfa, using corn alone for the grain ration. In the case of younger pigs it is necessary for best results to make the grain ration consist partly of some protein food, such as skim milk, wheat shorts, oil meal, blood meal, or tankage. Such an addition is necessary owing to the inability of the pig to get sufficient protein from the alfalfa to supply his body requirements. The stomach of the pig is small and consequently cannot take care of a large amount of roughage. Where skim milk is plentiful, no better ration for growing pigs can be had than a slop made up of cornmeal and skim milk. The slop should be thin enough to pour readily, using enough corn to equal about 3 per cent of the pig's live weight. That is, if the pig weighed one hundred pounds, he should have about three pounds of corn per day in addition to the skim milk. In a great many cases, however, skim milk is not available and in these instances it becomes necessary to supply protein in some other form. Here is where our commercial feeds become useful.

Perhaps the most universally used one of these is wheat shorts. This feed comes to us as a by-product from the manufacturer of our patent flours and makes one of the best all-around protein feeds which we have. A mixture of about one pound of shorts to two and one-half pounds of corn makes a very desirable feed for pigs. This may be fed by either feeding the shorts alone, in the form of slop, and the corn in a dry state, or by grinding the corn and mixing the two together and feeding both as a slop. The two feeds just discussed are both to some extent home produced. We have another plant food also which is very good under many conditions, namely, oil meal or oil cake, which, aside from the shape in which it comes, is the same thing. This substance makes a very excellent protein food for all branches of live stock, except for very young stuff. It is not so good for young pigs, on account of its oil content, a constituent which is very hard for the young stomach to handle. It should be fed in the proportion of one part oil meal to nine parts corn. In tankage and blood meal, we have two packing house products very popular as protein concentrates. The latter of these, on account of its low fat content, is the better for young pigs, although the former is preferred for older swine. Tankage should be used in the proportion of one part tankage to nine parts corn, while blood meal, the highest protein concentrate we have, should be fed one part blood meal to nineteen parts corn.

So far in the discussion of rations, corn has been taken for the basis of the grain ration. In some localities, however, other feeds are more available, such as barley, speltz, wheat, millet and kafir corn. Should any one of these feeds be used instead of corn, the same general directions may be used for combining with the protein concentrate. Better results can be obtained by grinding these smaller grains before feeding. Should other pasture than alfalfa be furnished, a little variation in the grain rations mentioned may be advisable, although it is probable that with any good pasture they will give excellent results. For older hogs the grain ration can be lessened considerably, as has been mentioned above. Breeding stock can be carried over the summer very nicely on a 2 per cent grain ration when on good pasture. In the latter end of the feeding period fattening hogs on alfalfa or clover probably make most economical gains on a pure corn ration.

Greater economy along agricultural lines is demanded by an increased consumption of foodstuffs and a higher cost of living, and it is doubtful if the farmer can make any department of his business more remunerative than the production of pork when the proper methods are used.

THE OUTLET

PERPETRATED BY WALT McDUGALL

OUR SPECIMEN CENTENARIANS.
SHOWING HOW THEY DO IT.

MISS ARIA LAMPWICK
106 years old
Remembers Lafayette kissing her. Drinks two quarts of tea and a pint of coffee daily; ate pickles, candy and table d'hoie dinners all her life. Doesn't believe in ventilation germs or vaccination. Walks nine miles daily selling worm lozenges. Doesn't want to vote.

SARTORIS GUY SHRIMP
109 YEARS OLD
Hasn't shaved or bathed since '69 and that was accidental. Never drinks water but will take anything else from cider to gasoline. Walks fully one hundred (100) miles every year. Never chews his food, eats tobacco and gets drunk when possible. He claims to have invented the Rest Cure.

MRS. MINERVA FISHBALL
103 YEARS OLD
She never wore corsets or stockings. Cooks for nineteen men every day. drinks gin and coffee, dips and snuff and has always eaten her food fried. Loves to dance and play pinochle all night. Reads the Ladies Home Companion.

J. CALVIN EELS JR.
117 YEARS.
He works nineteen hours daily, chews 2 plugs of Old Rosebud every 12 hours. Has been married seven times and always sleeps in his clothes. Eats his meal raw and always quarrels with his neighbors, thereby keeping in constant good humor and digestion.

THEOPOMPUS FOSH, A.B., LL.D., M.A., D.F.
114 1/2 Years old.
Reads 9 papers and 2 books daily. Always drank swamp water, eats Welsh rabbits and lobster at night, reads in bed, smokes Cutworm Twist and rides a bicycle. Never wears an overcoat or underclothes and sleeps in the open air in winter. Has Hay fever in February.

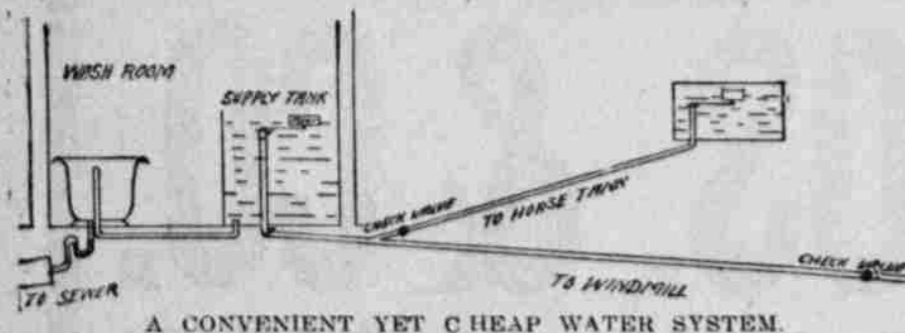
GEN. SOAPSTONE FIDDLEFACE
108 YEARS OLD.
Winner of Amateur Pool Championship. Has chewed tobacco since the age of 9. Drinks a quart of rye daily. Never exercises. Never goes to bed until 3 A.M. Uses tobacco, paprika, Worcestershire sauce, horse radish and mustard on all his food. Very inascible and a confirmed misogynist. Was never married.

WATER SUPPLY ON THE FARM

By L. W. Chase, Department of Agricultural Engineering, University of Nebraska.

When we visit our city friends and step into the well equipped bathroom, with its flowing hot and cold water, to wash the dust and grime of the trip from our hands and face we invariably remark, "Isn't this great! My, but I wish we could have such conveniences at home." We seem to think that such conveniences are for the people in the city and that they come free, while in the country only a few can have them, and they are the "big bugs." In the first place such conveniences do not come free in town, and in the second place it costs money to keep them supplied with running water. The plumbing in the average city dwelling costs about \$250, while

he should use about thirty gallons per day per person. With a family of five, which can be considered as about the average in the country, 150 gallons of water should be used each day. Assuming that this water is pumped and carried to the house by hand, it will take one person thirty-seven and one-half minutes each day to pump the water and twenty-five minutes each day to carry it, or sixty-two and one-half minutes each day to put the water in the house in a pail and not have it where it is convenient. Saying that it takes one hour each day to get the amount of water which should be used each day and assuming that the farmer who carries this water can earn 20 cents per hour, it will cost him \$6 per month to put the water in the house. It has been demonstrated in the farm



A CONVENIENT YET CHEAP WATER SYSTEM.

the water rent is from 50 cents to \$1 per month. It will probably cost the farmer more to put in his water and sewer system in the country than it costs his friend in town, but it should not take nearly as much to keep it up after once being installed.

But before the farmer spends any money for his water and sewer system he should first consider whether it is a paying investment. In the city of Cincinnati, O., the people use about sixty gallons of water per person per day, while in other cities it is much lower, the average being about forty gallons per person per day. The farmer's work is such that he should use as much water per day as the average city inhabitant, but it is not generally the case that he does, so in this computation we can assume that

mechanics' laboratory that 1 cent of gasoline under normal conditions will pump 153 gallons of water from a well forty-three feet deep, making it cost only 31 cents per month to put the water in the house, and it can be put any place it is needed.

It is not always essential that the house be completely modern to be convenient. One farmer who couldn't make his house modern put his storage tank in the wash room in such a manner that when it was full the float closed the valve and the windmill pumped the water to the horse trough. This outfit was very cheap, probably not costing over \$40, including the labor. The bathtub doesn't need to be enameled in order to be serviceable, although a cast iron tub is preferable to a tin one.

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