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THE PROGRESSIVE FARMER.

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THE INDUSTRIAL AND EDUCATIONAL INTERESTS OF OUR PEOPLE PARAMOUNT TO ALL OTHER CONSIDERATIONS OF STATE POLICY.

Vol. 13.

RALEIGH, N. C., JUNE 14, 1898.

No. 19

Agriculture.

EDITED BY BENJ IRBY, RALEIGH, N. C.

Prof. Benj. Irby, late Professor of Agriculture, Agricultural and Mechanical College, Raleigh, N. C., has become a regular contributor to this paper. All questions relating to the farm, garden or orchard will be answered by Prof. Irby.

CONCENTRATED FEED STUFFS.

Such highly concentrated and high priced feed stuffs as cotton seed meal, linseed meal, gluten meals, malt sprouts, ship stuffs, wheat bran, etc., are so easily adulterated by having cheap and worthless stuffs mixed with them in the process of grinding that Massachusetts has undertaken to protect her citizens from such frauds by enacting a law requiring all such substances to be submitted to the State Experiment Station for inspection, analysis and license before they are offered for sale within that State. We should do likewise.

A recent bulletin from Massachusetts Experiment Station classifies these feeding stuffs, gives their analyses, states their origin and value, and gives eight different formulas for advantageously mixing them so as to make them well balanced and economical rations. We give below the substance of all these important and interesting matters, for we believe they will be of interest, and what is better, if remembered, will be of much real benefit to our readers.

All cattle feeds, either concentrated or coarse, are made up of six groups of substances: Water, ash, cellulose or fiber, fat, protein and non nitrogenous extract matter.

Water: The several grains and by-products contain when placed upon the market from 8 to 15 per cent. of water.

Crude ash represents the mineral ingredients of the seed. It will remain behind as ashes should the seed be burned. These ashes consist of lime, potash, soda, magnesia, iron, phosphoric acid and sulphuric acid. Ash helps to form and nourish the bones, nerves, brain, etc.

Crude cellulose or fiber is the coarse or woody part of the plant. It may be called the plant's framework. It is present as a rule only to a limited extent in the grains and by-products.

Crude fat includes not only the various fats and oils found in different feed stuffs, but also waxes, resins and coloring matters. It is sometimes termed ether extract, because it represents that portion of the plant soluble in ether. Fat found in grains and seeds is comparatively free from foreign substances (waxes, resins, etc.). One pound of fat is equal to 2 1/2 pounds of carbohydrates and has the same effect in animal nutrition, that is, it produces fat, heat and energy in the animal.

Crude protein is the general name for all of the nitrogenous matters of the seed. It corresponds to the lean meat in the animal, and may be termed "vegetable meat." It has the same elementary composition as animal flesh, and is considered the most valuable part of concentrated feeds. It alone produces muscle, nerve, brain, hair, horn, hoof, gristle, etc.

Non nitrogenous extract matter consists of sugars, starch and gums. The grains are very rich in starch and similar substances.

Carbohydrates: The fiber and extract matter have the same functions in the process of nutrition, and collectively they are termed carbohydrates. They produce fat, heat and energy.

Nutritive ratio: The numerical relation which the protein of feed bears to the carbohydrates (and fat reduced to carbohydrates) is termed its nutritive ratio. Fat is multiplied by 2 1/2 to convert it into carbohydrates. If a ton of feed should contain 96 pounds of digestible protein and 928 pounds of digestible carbohydrates, it would have 9 1/4 times as much carbohydrates as protein, or 1:9 1/4, which is its nutritive ratio.

Digestibility: Any feed stuff is valuable as a source of nourishment only so far as its various parts can be digested and assimilated. The concentrated feeds are much more digestible than the coarse feeds. For instance, of every 100 pounds of timothy hay only 45 pounds are digestible; but of 100 pounds of cotton seed meal 65 1/2 pounds are digestible. Most of the home grown coarse feeds are high in carbohydrates, low in protein, and comparatively indigestible. Nearly all of the concentrated feeds are very

digestible, and a large number are high in protein and low to medium in carbohydrates. The concentrated feeds are fed with the home grown coarse feeds, therefore, first to increase the digestible matter, and second, to increase the amount of protein in the daily ration.

There are four classes of these concentrated feeding stuffs, as follows: Class 1 contains 80 to 45 per cent. of protein, 50 to 60 per cent. of carbohydrates (including fats) and are 75 to 90 per cent. digestible. This class includes cotton seed meal, linseed meal, Chicago gluten meal, cream gluten meal, King gluten meal, and Hammond gluten meal.

Class 2 contains 20 to 90 per cent. protein, 60 to 70 per cent. carbohydrates, (including fats), and are 80 to 85 per cent. digestible. These include Buffalo, Golden, Diamond, Davenport, Climax, Joliet and Standard gluten feeds, all made from corn, Atlas meal, dried brewer's grain and malt sprouts.

Class 3 contains 14 to 20 per cent. protein 70 to 75 per cent. carbohydrates and are 60 to 75 per cent. digestible. These include wheat bran, middlings, "mixed feeds" and H. O. dairy feed.

Class 4 contains 8 to 14 per cent. protein, 75 to 85 per cent. carbohydrates and are 75 to 90 per cent. digestible. These include wheat feeds, barley feeds, oat feeds, corn feeds, cerealine feeds, hominy feeds, corn chops, oat chops, corn germ feeds and chop feeds.

The seed of the cotton plant as it comes from the gin where the cotton fiber has been removed is still covered with a coat of white down technically known as "linters." This being removed, the seed itself appears as black in color and irregular egg shaped in form. The thick, hard, black seed coat or hull is filled with the coiled embryo (meat), which in turn contains a large number of oil containing cells. Machines have been invented to remove the hull. The meat is then cooked in large iron kettles, and while still hot is wrapped in hair cloth, and subjected to a pressure of 3,000 to 4,000 pounds per square inch, to remove as much of the oil as possible. The pressed cotton seed cake is cracked, ground and results in the decorticated bright yellow cotton seed meal of commerce. A ton of seed furnishes about 800 pounds of meal. Sometimes a considerable amount of hull is ground fine and mixed with the meal, producing a dark colored article, having not much over one half the feeding value of the prime material.

In like manner, linseed meal is produced by grinding the cakes of flax seed after the oil has been pressed out. Most of flax seed used in America is grown in Minnesota and the two Dakotas. The old process linseed meal has had only the oil moved that could be pressed out; the new process meal has had additional oil extracted by treating it with solvent chemicals after it comes from the press. The former is very properly called "oil meal," the latter contains very little oil.

This question of feeding and feeding stuffs is an important one. Believing that our farmer readers should study these questions more, we will in next week's PROGRESSIVE FARMER have something more to say on this subject and will also give a list of different feed mixtures recommended by the Massachusetts Station.

Plain, common sense dictates that the farmer should raise a good side line of all food supplies in addition to his principal crops.

EXPERIMENT STATIONS.

Farmers should ever bear in mind that these stations were established and are supported for their benefit. As their name indicates, their leading work should be the making of experiments to clear up doubtful or obscure points. Farmers are not always prepared or have not the required appliances to make the necessary experiments to clear up points which arise in their experience. Let them not be backward in such case to call on the experiment stations to do the work for them. If it involves a general principle, station workers would be glad to do the work. Let the farmers keep in close touch with their experiment stations, is the sound advice of the Southern Cultivator.

"Give a man the sure possession of a rock and he will turn it into a garden; give him a nine years' lease of a garden and he will convert it into a desert."

SAM JONES ON FARMING—HAPPIEST OF VOCATIONS.

When His Crib is Full of Corn, His Smoke House Full of Bacon, and Live Stock is His Lot, He is Independent of All the World

Every man does work, will work, must work. Vagabonds enjoy being idle. The secret of happiness here is not only in the fact that we work, but that we love to work and love our work and enjoy it. The spirit of discontent that makes so many men dissatisfied with their vocation and situation in life is the bane of humanity. The doctors would like to be lawyers, the lawyers would like to be merchants, the merchants would like to be farmers, the farmers would like to be gentlemen, and so on, each thinking that the other has the better job. This is the source of discontent and the father of the spirit of dissatisfaction. So few people choose really anything, and abide their choice. A man who chooses to be a farmer and puts his energy and intelligence into his work not only improves his farm, but fills his own pocket. If a man will take care of his farm, his farm will take care of his bank account.

There is no life more charming than that of the farmer, and if I wasn't a preacher and hadn't rather be a preacher than anything else in the world, I would frequently envy the farmer his farm and his toil. Riding through the country on the railroad trains and seeing the busy farmers along the way [planting and cultivating their crops, is always interesting to me, and I spend no hours more pleasantly than those I spend on my farm looking after its varied interests. The farm with its crops and its cattle and hogs and sheep and ducks and chickens and turkeys, all put a charm upon the whole situation. Every bushel of corn and wheat, every pound of cotton, every pig and calf and colt, adds wealth to the country as well as to the farmer, for the farmers are really the producers of this country and lie at the basis of all prosperity. We need housebuilders, lawyers, doctors, preachers, railroad men and all classes, perhaps, but the farmer is the essential man of all. They should be encouraged more than they are. While they work others ought to think in their interests and plan for their good, for just as the farmer prospers the country prospers. The farmer with his improved implements and improved roadways ought to compete with any other class in the world. The Georgia farmers are rapidly catching on to the improved machinery and implements and to take care of them. The farmer of Georgia is beginning to learn that it doesn't pay to have his corn crib in Kansas and his smoke house in Chicago, and his cotton factory in Massachusetts and his banker on Wall street and his boss the little merchant in town, and Kentucky and Missouri his stock producing sections. Well-for him it is that he has learned that a corn crib full of corn in his own yard, a smoke house full of bacon in his yard, a few colts and calves in his lot, and his economical wife for his banker, makes him independent of the world. If I had what the farmers of Georgia pay for guano I wouldn't want any crop, or land either; and I dare assert that there is not a farmer in Georgia who could not spend thirty days in the year producing and compounding fertilizers into compost and save every dollar that he expends for guano and improve his land one hundred per cent. more every year, for guano is like a drink of whiskey to a man—it will stimulate him for awhile, but leaves him with less energy and vitality than he had before.

The farmers have much to learn. They are learning. The farmers of Van Buren, Ark., ship from three to five carloads of strawberries per day during the strawberry season. They produce no better strawberries than we do in Bartow county, Georgia. What a vast sum those shipments of strawberries bring to that community! Let North Georgia learn of them. No finer vegetables grow than we can raise in our county. Let the farmer see that everything he produces for sale brings him something, adds to his wealth and prosperity. Let him know that everything he buys that adds to his poverty and takes from his income. If he would prosper he must produce much and spend little, and never go into debt for anything. A man on a farm had better be afraid of debt of any kind, for when a farmer gets into

debt two or three hundred dollars, it is harder for him to pay than almost any other class of laboring men. I drove out into the country a piece of day and passed a farm home with twenty-odd bales of cotton lying under the shed, a crib full of corn in the lot, and all kinds of stock and everything prosperous. So it goes. There was a man running that farm. If a man attends to his farm his farm looks after him.

I have spent several days at home with a sick family now and will return soon to the general conference. I will write some things from the general conference—whatever may be of interest to the general public.

SAM P. JONES.
P. S.—I propose to dig up some snakes in my next letter. S. P. J.

THE FARMER'S REST.

"I planned that machine while listening to you preach," said a mechanic to his pastor. "What did I preach about?" asked the pastor, and his parishioner was obliged to confess that he did not know. It is possible that a good many farmers are plowing, sowing or rping, while their eyes are on the preacher on Sunday. Can't you give one day in the week and leave your field to rest while your brain and body recovers from the strain of the week's work?

Give yourself a day off, and do not fall into the error of an old friend of ours. "How much will you take for that bunch of lambs?" a neighbor asked him as they stood in front of the country church and watched the lambs playing on the hillside opposite.

"You know, brother George," was the reply, "that I never do business on Sunday, but if you'll come over to-morrow you can buy 'em for \$9 a head." Don't carry your farm around on your shoulders on Sunday. The day was instituted in order to allow us to throw down our burdens and get ready for a fresh start.—Farmers' Voice.

CARE OF CORN.

FOR A GOOD CORN CROP. Cultivation should begin before corn is planted, but most corn being planted at this time necessitates a different method. The right cultivation at the right time insures a full corn crib, and that is what every farmer should have this fall. When the corn is from two to four inches tall, deep cultivation close to the hill is impossible, although that is just the time when the space between the rows should be "dug up."

Keeping the space between the rows mellow when the corn is below knee-high gives a chance for the main roots, as they shoot out from that time on to make rapid progress in their search for plant food. As the corn plant receives a large percentage of its growth from the soil, it is important that we do everything in our power to hurry it along in its development. If we were to cultivate first shallow, then deep, we would be doing a greater injury than we would to neglect cultivating at all.

DON'T OUT THE ROOTS.

Long before we are aware of it the corn plant has sent roots away out under where the cultivator teeth run, and if we do the work right we must gradually work the cultivator teeth to the surface, so the last time over they won't run over an inch deep. This gives an opportunity for the long roots to send out small fibrous ones that are continually branching out and penetrating the surface after moisture and plant food.

LATE CULTIVATION.

It is easily seen that to make a practice of going through the corn after harvest with a one-horse double shovel plow cannot help but destroy these small roots, which retards the development of the stalk, besides shortening the ear, as well as the kernels. Not that it is not practical to keep up the cultivation of the soil, for it is necessary if one expects a good crop of a good quality, but use judgment in all things, and when you do a piece of work study the logic of it so that you may understand why you are doing it and follow the most approved methods.—Elias F. Brown, Reading, Mich., in Epitome.

Better let the crows have three per cent. of their food from your sprouting corn, for they will take in return nine times as much in the form of injurious insects, and you will not suffer any stings of conscience at having poisoned a few friendly, beneficial and useful birds.—Rural New Yorker.

VALUE OF HOG AND HEN MANURE.

A friend who makes no effort to save the manure from 80 to 50 hogs and a good many hens, and who draws out the tub from his closet and dumps it anywhere to get rid of it, asks if these small sources of manure are worth paying careful attention to. As he lives in the West, where land was new and rich, it is no wonder that he has been careless along this line in the past. But if I were on his farm now I should save carefully the hog and hen manure at least. I will give you the value of the above named kinds of manure, as taken from the New York Farmers' Institute Bulletin, which is unquestionable authority. At the prices that nitrogen, phosphoric acid and potash would cost you, at whole sale in market, a ton of solid excrement, fresh, from swine, would be worth \$2 25; from human beings, \$4 10. The urine from swine, \$2 10; from human beings, \$2 00. Fresh hen manure is worth \$4 30. After it became dry, of course it would be worth more per ton. I should feed hogs, myself, on rough cement floors, if making a business of raising or feeding them, and save all the manure, and get it onto my land without wash or loss. With bedding to absorb the liquid one could make a good deal of manure from 50 hogs. The hen manure will not ordinarily be as important, but I should dust it with dry soil or land plaster often, for good of hens, and gather it up and pack away in barrels, or some way, so as to save it. The human excrement is rather a small matter. It might not pay to save it for its manurial value. But for health's sake it should not be allowed to soak into the earth. And if we take that much care we may as well save it for crops. We use large galvanized iron pails, which are emptied in the manure in shed as they get full. Some absorbent and deodorizer is needed for these pails, or tubs. We use dry muck, gathered in summer. Dust, dry soil, sifted coal ashes, land plaster, etc., can be used. Dry muck is the lightest and best when you can get it. There is no possible contamination of air or water on our farm from our closets. We have a box in the end of each closet large enough to hold a year's supply of absorbent. A little shovel takes the muck, or soil from a hole at the bottom of box, on a level with seat. As it is used more falls down. We do not keep hogs or hens, or I should practice just what I preach in that line.—T. B. Terry, in Practical Farmer.

The low price of cotton may be a blessing in disguise. It will teach Southern farmers to diversify, and raise their own supplies.

BURR KNAPP'S FARM FURROWS.

One of the greatest faults is fault finding. The milking stool is a poor curry comb.

He who eats more than he produces robs the world. Some men who pet their neighbor's children will only pound their own.

No grind, no grist. Failure sighs while success hustles. An old field may produce new grain.

Lazy bees, no honey; lazy farmer, no money. Who refuses to toil has no right to the soil.

Every shine has its shadows and even a shadow has its use. If you do not want it, the greatest of bargains is not cheap.—Ex.

THE COCKLEBUR.

This vile weed probably does more injury to the farmer than any other weed that pollutes the farm. We do not need to describe it. It may interest farmers, however, to know that the sexes of the flowers are borne in different blossoms on the same plant, the pollen producing flowers, however, appearing at the upper end of the principal stem and the seed producing flowers developing lower down, gravitation thus aiding in the fertilizing of the plant. The cocklebur is an annual, and is spread only from the seed, and hence it is a comparatively easy matter to get rid of it, namely, by thorough culture, mowing the stubble before the seed is mature, and pulling out every plant that makes its appearance in the corn field. It is thus comparatively easy to get rid of the plant with thorough culture, and without possibility. It is very easy to take at

least five dollars per acre off the value of a farm by allowing the cocklebur to have their way. Nothing, however, but eternal vigilance in cultivation will prevent the damage. Where the farmer attempts to grow sheep, he must get rid of the cocklebur or submit to a reduction in the price of his wool that will do much to diminish the profits on his sheep. The cocklebur is an advertisement of a poor farmer, or at least a farm poorly managed.—Wallace's Farmer.

There is nothing so conducive to the health and happiness of a well-regulated farm family as plenty of good, delicious fruit the year around.

THE FARMER AND THE CITIZEN.

Elections occur this year of Congressmen, of State legislatures that are to choose 80 U. S. Senators and make or unmake the laws of the various States, of State, county and local officials. The men elected this fall will thus have more to do directly with each one of us than will the next president. Such reforms as may be wanted from Congress must be worked for by nominating and electing men favorable to them. The same is true of State legislatures. While lots of things are not yet right, and the battle for reform must be kept up, here are some things each one of us can work for in our own community, and the more persistently we keep up these efforts the more each one of us will enjoy life.

Better schools, better churches, more temperance, more books, more social life, better roads, better citizenship, more savings banks, better farming, better stock, fewer weeds, better machinery, better care of tools, less waste, better thrift, more co-operation.—Farm and Home.

The farmer who gives no time to anything but work, will wake up some day and find out that that kind of work does not always pay the best.

PEAS ON STUBBLE LAND.

Weeds and grass will succeed the harvested grain, and will do no harm; in fact will do good, by adding humus to the soil, but the quality of the humus they supply is greatly inferior to that which peas will furnish. The former have little nitrogen gathering, or subsoiling power, compared with the peas, and if corn is to occupy the land the following year, the stems of ragweed become the abode of insects, which renders it very difficult to get a stand of corn on stubble land, says Southern Cultivator. Peas may either be sown broadcast or cultivated in drill. If the land is rich so the peas will grow off rapidly and take possession of the land quickly, they may be sown broadcast; if the land is medium or rather poor it is better to plant in drills and help the peas by cultivating them some. Generally one or two plowings will be all they need. Plant in drills three feet apart, and drop five or six seed every eighteen inches. Some corn planters can do this work very satisfactorily. The improvement of land through the agency of peas is much facilitated by manuring the peas with acid phosphate and muriate of potash, say 200 pounds of phosphate and 50 to 100 pounds of potash to the acre. Such application will make the peas grow much ranker and the fertilizer will not be lost, but retained for the next year's crop, either in the peas vines or in the soil. All mineral plant food present in decaying vegetable matter (as in buried pea vines) is available to growing plants and is less apt to affect crops injuriously in case of drought. So it is a good plan to apply fertilizers to a pea crop for the benefit of the corn or cotton crop which is to follow the peas the next year.

A few days ago at Wake Forest we saw a farmer taking in a check from a cotton buyer for about 25 bales of cotton. On investigation we found that the farmer was one of those wise tillers of the soil who always make home supplies, and are therefore independent. This wise farmer found it quite convenient to sell his cotton just when it suited him, and was not under the necessity of selling it at the first possible day to meet a mortgage.

If all the farmers in North Carolina would do likewise, the cry of hard times would not be so frequent or so loud.—Commonwealth.

The earlier in life that a weed is killed the better. They rob the soil of moisture and plant food.