

Michigan Agricultural College

Extension Division

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## FEEDING CULL AND SURPLUS POTATOES

BY J. W. WESTON

During years of over-production of potatoes, the demands for human consumption seldom absorb the entire crop. At such times, the profitable use of surplus potatoes as a livestock food becomes a vital question.

From the standpoint of strict economy of food stuffs, good potatoes should not be used other than for human consumption. In years of over-production, however, table stock potatoes can be fed to livestock when there is danger of greater loss to the grower by placing them on the market. Cull potatoes can be fed profitably under all conditions. There are always large quantities of small, bruised, cut, second growth, or diseased potatoes that should be fed to livestock and never marketed.

The danger of over-feeding, however, should be considered in connection with utilization of potatoes as stock feed. The general practice is to grow potatoes as a cash crop only. In years of over-production, growers are likely to find late in the season that they cannot market their potatoes profitably, and the attempt is then made to save them all by feeding in a short space of time to a relatively small number of animals. Often large amounts of potatoes are placed before the livestock with disastrous results. The grower should start using his small and cull potatoes early in the year, saving only the large, uniform, good type and good quality tubers for market purposes. This will avoid danger of excess feeding in the spring. Figures given below show the maximum amounts which may be fed with safety.

Examples of efficient use of potatoes as livestock feed can be found in several European countries. One country, much smaller than the United States, produced before the war an average of one and one-half billion bushels per year. This is four times our present production. This European country normally uses 40 per cent of the entire crop for livestock feed, only 28 per cent going for human consumption.

The crop report for December 1, 1922, showed the yield of potatoes for the entire United States as 451,185,000 bushels. It is estimated that our normal consumption is about 350,000,000 bushels a year, leaving a surplus stock of practically 100,000,000 bushels. It is in years such as this that the use of potatoes as a livestock food is especially important.

## FOOD VALUE

Most of the solid material in potatoes is starch, which is a good fattening food. It is important, however, that potatoes be fed in combination with feeds that furnish the required protein, because of the fact that potatoes are low in this element, as will be seen from the following table showing approximate percentage composition:

Protein, 2.2 per cent; carbohydrates, 17.8 per cent; fat, .1 per cent; ash, 1.1 per cent; water, 78.8 per cent.

The feeder of livestock who knows the feeding value of potatoes is in a position to use a large part of his crop profitably for this purpose, instead of forcing it on a profitless market. The practice of feeding potatoes has not become more general in the United States because of the abundance of relatively cheap grains for stock feeding.

The value of potatoes as stock feed will depend upon the comparative value of grains. Experiments have shown that 4 bushels of cooked potatoes will take the place of 1 bushel of corn for hog feeding. On this basis, potatoes would be worth twenty-five cents a bushel (less cost of cooking) with corn at one dollar a bushel.

The following suggestions for potato feeding are based upon the experience of men who have demonstrated the value of potatoes in partial substitution for other feeds.

### POTATOES FOR DAIRY COWS

Milk cows should not be fed more than 25 to 30 pounds of raw potatoes per day for each 1,000 pounds of live weight. Larger amounts may injure the quality of the butter. It has been found that when cows eat a surplus of potatoes the time required to churn the butter is increased.

The value of potatoes as dairy cow feed is comparable to that of good corn silage, ton for ton.

It is reported that sunburned potatoes, and especially sprouted stored potatoes, contain solanin, a poisonous compound. Where only a few sunburned are present, this probably would never cause any injury. If fed in large amounts, it might produce milk and butter of poor flavor.

Cows require some green or succulent food. Potatoes fed in moderate quantities, such as referred to above, furnish this food and act as a laxative, keeping the cow's digestive tract in a good, healthy condition. Large quantities of potatoes, however, may cause scouring. Potatoes should be run through a root cutter or chopped well before being fed.

### POTATOES FOR HOG FEED

For hogs, potatoes should be cooked and fed in combination with a feed containing considerable protein, such as cooked cull beans or middlings. When potatoes are fed in combination with corn, barley or rye, the ration should be balanced by the use of skim milk or a small amount of oilmeal or Digester Tankage.

The average results of feeding trials conducted by several experiment stations show that 420 pounds of potatoes (fed after cooking) are equal to 100 pounds of grain for pig feeding. When mixed and fed with other by-products such as cull beans, middlings, and skim milk, potatoes may make up a large part of the ration, but for best results they should not be fed in larger quantity than 4 to 5 pounds of potatoes to 1 pound of grain.

Hogs cannot be expected to do well under winter conditions or when closely confined unless they are given access to some mineral matter and roughage, such as clover or alfalfa hay. For mineral matter, it is recommended that hard wood ashes and charcoal be placed at their disposal. In case these are not obtainable, the following mixture can be kept before them: 30 pounds ground limestone, 30 pounds bone meal, 30 pounds salt, 10 pounds sulphur.

### POTATOES FOR BEEF CATTLE

Beef cattle may be fed from 30 to 40 pounds of raw potatoes with very satisfactory results. One pound of digestible nutrients in potatoes is equal to 1 pound of digestible nutrients in corn. One hundred pounds of corn contain 85 pounds of digestible nutrients, and 100 pounds of potatoes contain 17 pounds of digestible nutrients. Therefore, 500 pounds of raw potatoes equal 100 pounds of corn in feeding value. In addition, potatoes have a succulent value which is not easy to estimate but is very beneficial in keeping animals in a healthy condition.

Potatoes should be fairly clean and should be run through a root cutter or chopped well before being fed.

### POTATOES FOR HORSES

Roots are of importance for horse feeding in most sections of the country chiefly as an aid to digestion, for the cereals generally furnish nutriment at lower cost.

Horses should not be watered soon after being fed potatoes. The preferable time for watering is about one-half hour before feeding. Horses may be fed as much as 15 pounds of raw potatoes per day. A good rule to follow is to give, with the other food, about 12 pounds to each 1,000 pounds of live weight. Larger quantities sometimes tend to cause digestive disturbances. Potatoes should be run through a root cutter or chopped well before being fed.

### POTATOES FOR SHEEP

Two to 3 pounds of raw potatoes per day make an excellent addition to the ration of either fattening or breeding sheep. In addition to furnishing considerable nourishment, they provide a succulent factor which keeps the bowels of the animal in a healthy condition. Potatoes should be run through a root cutter or chopped well before being fed.

### POTATOES FOR POULTRY

When given in a correct proportion, potatoes are satisfactory as a component in a well balanced ration for poultry. The starchy part of the potatoes will maintain the heat of the body. They are cheap and easily prepared.

To get the right proportion one must take into consideration the condition of the birds as to weather (winter or summer temperature), method of housing, extent of liberty, and whether the birds are expected to produce eggs or merely put on fat and flesh.

A good cheap diet used for layers, that are at liberty, is composed of equal parts by weight of potatoes and bran. The potatoes should be boiled and the bran mashed into them while hot. When mixed, this ration should be fed warm. If the weather is cold, some linseed oil or fat should be added.

For confined layers, the porportion of the potatoes should be reduced. Malt culms or sprouts are very good in combination with potatoes. Corn meal, barley meal, or rice meal should not be fed in combination with potatoes, for they lack protein matter.

For fattening poultry, large quantities of potatoes can be used. Ducks, geese, and turkeys fattern well on a mixture of potatoes and middlings.

An egg laying mash may consist of the following, in the relative proportions given: 10 pounds of meat scrap, 10 pounds of middlings, 10 pounds ground oats, 20 pounds of bran, and 30 pounds of cooked potatoes.

### POTATO FEEDING IMPORTANT

The proper feeding of cull potatoes will aid in improving the market quality of the potato crop, and they will pay a return well above the cost of handling. In years of over-production of potatoes, part of the loss suffered by growers who fail to find a paying market can be prevented by feeding the surplus, in well balanced rations, to livestock on the farm.