

SUNFLOWERS FOR SILAGE

(By C. L. Smith Agriculturalist.)

Although the sunflower (*Helianthus Annuus*) is a native of North America and has grown in nearly every garden in the country, it is only in recent years that it has been recognized as a forage plant. The earliest record of sunflower cultivation is found in Spain, about 350 years ago. It adapts itself to a wide range of soil and climate, responding to rich soil and cultivation much like the corn plant. It has been extensively cultivated for its seeds, which are very rich in oil. In this country the seed has been extensively used for poultry food. Owing to the abundance of oil in the seeds and the woody character of the mature stock many farmers in the middle west have grown sunflowers for fuel.

Owing to habitual use of oils and oily foods in Russia, more attention has been given to improvement of varieties there than elsewhere. Sunflower oil has been produced in commercial quantities in that country for the last hundred years. They have produced a number of varieties somewhat different in character. The varieties that have proven most popular and seem best adapted to this country is a large, coarse growing sort with striped seeds, known as the Mammoth Russian.

In 1915 the Montana Experiment Station tried out in a small way the growing of Sunflowers under irrigation. The results were so promising that in 1917 they began some definitely planned work to test the relative returns from sunflowers planted in different ways.

The highest yield they secured from planting in rows 36 inches apart dropping the seeds 4 to 5 inches apart in the rows, using only five pounds to the acre. This gave yield of 14.1 tons per acre.

Bulletin No. 131, Montana Experiment Station, gives the following:

"In the light of four years' experience in growing sunflowers, it has been found that the most practical way of planting the seed is with the ordinary grain drill. A sufficient number of seed outlets should be stopped up to permit of planting only in rows 30 to 36 inches apart. The drill should be regulated so that the seeds will be dropped 4 to 5 inches apart in rows. The set for this will vary with the different drills, but with a standard Van Brunt the desired distribution may be secured when the drill is set to plant four pecks of wheat to the acre. Planting in this way, rows 36 inches apart and seeds 4 to 5 inches apart in the rows, will require five pounds of seed to the acre on the average. The largest yields were produced from the earliest plantings."

In Oregon and Washington some sunflowers were grown in an experimental way in 1918. The results were such as to stimulate interest and in 1919 a considerable acreage was planted for silage purposes. The yields were in a general way very satisfactory, varying from 10 tons per acre under dry land conditions to 50 tons per acre. In the higher altitudes, under dry farming conditions the average yields per acre were greater than any other crop.

Whenever comparisons have been made with corn silage, the results indicate that ton for ton the sunflower silage has a feeding value equal to corn silage.

In Wallowa county where the average conditions are unfavorable for corn, about 200 acres of sunflowers were grown for silage in 1919. The largest yield reported was 40 tons per acre, the lowest, 10 tons per acre. The average for the 200 being slightly over 13 tons per acre. The farmers who fed silage the past winter are all enthusiastic regarding its value. The Wallowa County Farm Bureau has adopted the slogan, "One thousand silos on one thousand farms." It has been estimated that the feeding value of silage the past winter averaged \$1,000 per silo.

In Deschutes County the results both in growing and feeding sunflowers have been so satisfactory that the Farm Bureau has inaugurated a strenuous and enthusiastic silo campaign. The First National Bank of Bend has volunteered to finance any farmer who wanted to build a silo. They have also secured several tons of choice sunflower seed, which is furnished to farmers at wholesale prices.

In Klamath County a number of farmers have experimented with the wild sunflower which grows luxuriantly on dry lands. They find that cut at the proper stage, it is relished and eaten greedily by all kinds of livestock.

The digestible nutrients in 100 pounds of sunflower silage is 21.4 total dry matter; 1.24 crude protein; 10.13 crude fiber, and nitrogen free extract; 9.37 ether extract with a nutritive ratio of 3.8 carbohydrate to 1 per cent of protein.

Corn silage has 26.3 dry matter; 1.1 crude protein; 15.09 crude fiber and free nitrogen extract; 0.7 ether extract, a nutritive ratio of 15.1 carbohydrate to 1.0 of protein.

In fattening beef steers it has been demonstrated that a ratio of 1.0 protein to 3.0 carbohydrate is most economical. With young animals and dairy cows the most satisfactory ratio has been found about 1.0 protein to 5.0 or 6.0 carbohydrate.

Bulletin 131 of the Montana Experiment Station says:

"The figures show that 100 pounds of sunflower silage made from plants 5 per cent in bloom, compared to a like amount of silage from immature corn, contains approximately the same total dry substance; that the sunflower silage is 0.24 pounds higher in digestible crude protein; that there are but 1.27 pounds more digestible fiber and nitrogen-free extract in the corn silage, and that the ether extract is practically the same; the proportion of digestible carbohydrates in the sunflower silage is 1.98 while the corn silage it is but 1:12.3. One hundred pounds of silage made from mature corn contains 4 pounds more total dry substance, 0.14 lbs. less digestible crude protein, 4.87 pounds more digestible crude fiber and nitrogen-free extract, and 0.33 pounds more digestible ether extract.

The proportion of protein to carbohydrates in the mature corn silage is 1.15:1, while in the sunflower silage it is 1.9:3. With low proteins feeds the higher digestible crude protein of the sunflower would give it an advantage over the corn silage. Results from feeding experiments with sunflower silage indicate that more mature plants make a silage with a higher nutritive value, but the best stage of maturity for cutting the crop we do not yet know. As practically all corn grown in the higher altitudes of Montana would have to be ensiled when immature, these figures should be used for comparison. When digestible nutrients yield per acre, drought and frost resisting qualities of the sunflower have a distinct advantage over corn for silage purposes in the mountain valleys of the West or in other sections of the United States or Canada with similar climatic conditions."

Why A Silo On Every Farm
Careful students of agriculture agree that in order to provide for the maintenance of increase of the fertility of the soil, livestock in some form should be an important factor; that crop rotation is the best known factor against plant disease and insect pests; that to profitably carry out a system of crop rotation with legumes as one of the crops in the rotation, there should be enough livestock on the farm to consume all the forage and a portion of the grain.

Such diversity of crops is an assurance against an entire crop failure, such as often occurs with any single crop system.

It provides for a better division of labor throughout the year and for a continuity of income.

The silo makes it both possible and profitable to keep more livestock on the farm.

It provides a convenient and cheap storeroom for roughage, preserving it in a succulent and palatable form. It combines more quality and greater profits on the investment than any other building on the farm.

Silage made from well grown corn, sunflowers, wheat and vetch, peas and oats, rye or barley, cut at the proper time, fed in combination with clover, alfalfa or vetch hay provides a forage ration, succulent, palatable and properly balanced.

It cheapens the cost of milk, meat prevents waste in feeding, and saves labor.

It is an economical and satisfactory feed for calves or any young stock, for breeding ewes, brood sows—in fact, it may well be made a part of the daily ration for all farm animals. It should never exceed more than one half the daily ration.

Any dairyman who can break even with a silo, can easily make 25 per cent profit by the building and proper filling of a silo.

Crops can be put in the silo during weather that would make it impossible to cure hay or other fodder in any other way.

As a business proposition, any dairyman with a half dozen cows or more can afford to borrow money to build a silo, it would pay for itself in a short time.

The important factors of a good silo are—it should rest on a solid foundation, should be absolutely air-tight smooth inside and the height should be three times the diameter.

Thirty pounds of corn silage and 15 pounds of alfalfa hay make a well balanced ration daily for a 1000 lb. cow. With this forage ration, a cow that is giving less than 20 pounds of milk a day cannot profitably use a grain ration.

For a cow giving over 20 pounds of milk a day, the addition of one pound of mized grain for each five pounds of milk will usually pay a profit.

An analysis of numerous reports of cow-testing associations indicates that cows fed silage produced about 25 per cent greater production than those that are fed dry forage.

WORK BEGINS TO END FREIGHT CONGESTION

Committees Formed at Important Points to Keep Cars Moving.

Washington.—Attack on the freight congestion which has threatened to paralyze the national arteries of transportation will be concentrated immediately at a score of junction points, operating officials of the American Railway association were instructed.

Formation of committees at each of 30 "gateways" was ordered, the duties of which will be to dig cars out of the mass and see that they are forwarded expeditiously.

These instructions were supplemental to the action of the interstate commerce commission covering drastic routing and equipment pooling, which were designed to deal with the congestion as a whole.

The car committee began work Monday at the following cities:

Omaha, Seattle, Baltimore, Cincinnati, Youngstown, O.; Minneapolis, St. Paul, Norfolk, New York, St. Louis, Boston, Denver, Philadelphia, Buffalo, Portland, Or.; Peoria, Birmingham, Kansas City, Cleveland, Detroit, Wash., D. C.; New Orleans, Pittsburg, Louisville, Galveston, Atlanta, San Francisco, Dallas, Toledo and Chicago.

As a step to permanently relieve car shortage, which threatens to disrupt transportation, the interstate commerce commission has decided that \$15,000,000 of the \$300,000,000 revolving fund provided by the Esch-Cummings law be made available quickly for purchase of railroad rolling stock.

CAMPAIGN EXPENSE INQUIRY IS STARTED

Washington.—A senate investigation of the pre-convention campaigning expenses and pledges of presidential candidates has been started. Acting under the Borah resolution adopted by the senate, the election committee authorized a subcommittee to take up the task and Senator Kenyon (Republican, Iowa) was named chairman. Telegraphic requests were sent to the campaign managers of leading candidates to attend the sessions which began here Monday.

Senator Kenyon's associates in the work, as named by Chairman Dillingham of the elections committee, are Senators Spencer of Missouri and Edge of New Jersey, republicans, and Senators Reid of Missouri and Pomerene of Ohio, democrats.

Senator Kenyon announced that the investigation was not aimed at the support or opposition of any candidate, but that it would be pushed to a conclusion before the convention, if possible, with the object of determining if there was need for legislation to prevent corrupt practices.

SENATE PASSES MARINE BILL

Measure for Ship Policy is Sent to Conference.

Washington.—The senate, without a record vote, passed the house merchant marine bill providing for a permanent merchant marine policy.

The measure then was sent to conference.

The bill provides for the sale of government-owned ships to American citizens or corporations as soon as advisable and pending such sale for the operation either by the government or under lease. A permanent board of seven members will be named by the president, comprising two each from the Pacific and Atlantic coasts, one each from the gulf and great lakes, and the seventh from the interior.

Wood Expense in New Jersey \$15,000.

Washington.—Frank H. Hitchcock, one of Major General Leonard Wood's campaign managers, told a senate investigating committee that so far as he knew the largest sum spent in any state by the Wood organization was \$15,000, in New Jersey. He added that the next largest was \$12,500 in Maryland.

Bootleg Whisky is Expensive.

Washington.—From \$60 to \$120 a gallon is the ruling price for whisky in illicit trade, according to Secretary Houston. Mr. Houston wrote congress requesting \$1,500,000 for 1900 watchmen to guard bonded warehouses next year.

Wheat Crop of 500,000,000 Bushels.

Washington.—A winter wheat crop of approximately 500,000,000 bushels was the forecast by the United States Chamber of Commerce.

Census Report Gives Portland 258,288.

Washington.—The population of Portland, Or., according to the 1920 census, is 258,288, it was announced here. This is an increase of 51,074, or 24.6 per cent.



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The Art of Not Hearing.
The art of not hearing should be learnt by all. It is fully as important to domestic happiness as a cultivated ear, for which both money and time are expended. There are so many things which it is painful to hear, so many which we ought not to hear, so very many which, if heard, will disturb the temper, corrupt simplicity and modesty, detract from contentment and happiness, that everyone should be educated to take in or shut out sounds according to his or her pleasure.—Exchange.

Relatives a Pavement for Bride.
In the Hervey Islands a bride on the day before the actual marriage walks upon the backs of her future husband's relatives, and on the happy day her relatives form a similar pavement for him, in each case from house to house.

The Bigger Share.
China and India contain one-half the people of the world. The annual pilgrimage to Benares includes over a million persons.

The Reckoning.
It's well we should feel that life's a reckoning we can't make twice over; there's no real making amends in this world, any more nor you can mend a wrong subtraction by doing your addition right.—George Elliot.

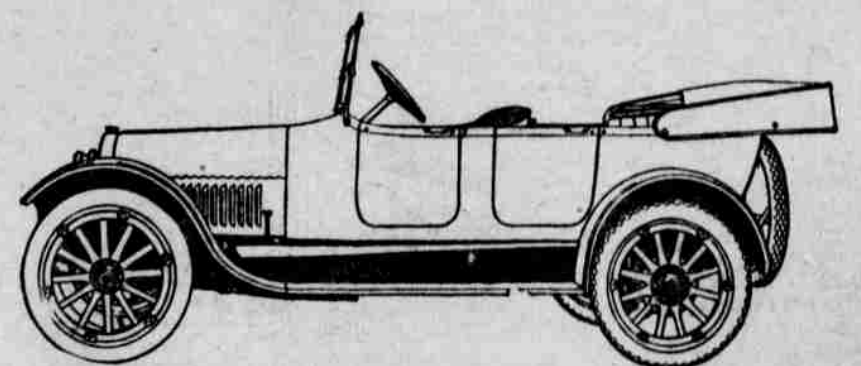
Two Regular Jobs.
Ward and Vokes' idea of a regular job was picking blossoms from a century plant, but our energetic nature prompts us to look for a position tearing the Feb. 20 leaves off a deak calendar.—The Home Sector.



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