

REPORT OF THE COUNTY AGRICULTURIST FOR 1915

(Continued from last week.)

SUDAN GRASS. (Trials.)

Sudan grass is generally considered a southern plant and not adapted to the climate of the Northwest. Trials with this crop by the Agricultural College had not proven it a success prior to 1914, and it was not recommended by the Agriculturist in 1914 although, when we found that some of our farmers were trying it, we watched results with interest. Mr. John Van Allen near Redmond met with very promising results with this crop on a small plot of ground this year, the plants growing to a height of seven feet and some of the heads maturing. In 1915 we encouraged trials of the crop in small plots in various sections of the county. Mr. Van Allen planted about one half acre to the crop and, to our knowledge, four other plots were planted. All who planted Sudan grass this year obtained a good crop, making at least one good cutting of hay and Mr. Van Allen's crop grew to an average height of six feet and matured the seed. This crop will be tried on a larger scale next season. The plant is relished by stock either as a hay or a pasture.

FIELD PEAS. (Demonstration.)

Field Peas were proven a successful crop for this section on the demonstration farms at Redmond and Metolius in charge of the Agricultural College in 1912 and 1913. A considerable acreage of the crop planted by farmers in this county in 1914 but practically all proved a failure because of attacks by the aphids. Because of these failures, the farmers generally had decided that field peas would not prove a profitable crop but, because of the successes with the crop on the demonstration farms and experiment stations, the Agriculturist recommended it to the farmers of Crook county for planting in 1915.

As a result of our recommendations 1200 pounds of field peas for seed were purchased and planted this year. The varieties planted consisted of 800 pounds of common Canadian, 200 pounds of San Luis valley, 100 pounds of Carlton, 60 pounds of Kaiser, 30 pounds of Cossack and 10 pounds of Grey Winter varieties.

The Jack rabbits destroyed about five acres of this crop for farmers planting it and the aphids destroyed a field of one half acre. The remainder of the seed planted produced a good crop, the Carlton and Cossack varieties proving a profitable crop even at Milliean on the "high desert". On irrigated lands, all varieties made a good crop with the Carlton, the Kaiser, the San Luis Valley, the Cossack and the Canadian proving most profitable in the order named. The Grey Winter variety was destroyed by aphids.

The agriculturist had advised that seed from this crop be saved for another year's planting and had expected that this would be done but, with one exception, the peas were harvested by hogs or cut for hay. One demonstration harvested the seed but crop was planted so late that yields were small.

We undertook the clubbing of orders for field peas for seed during the winter of 1914-15 but without success. The same method will be undertaken for obtaining seed for crop of 1916.

DRAINAGE OF ALKALI LAND. (A Demonstration.)

Many otherwise fertile fields along the Crooked river and Ochoco bottom lands are made unprofitable and in some instances absolutely worthless because of the presence of black alkali in the soil. An effort was made by County Agriculturist during the year 1914 to interest owners of these lands in the drainage for improving their soils. In January, 1915 we received a request from H. C. Cram & Sons of Prineville, located about four miles east on the Ochoco river bottoms, to visit their farm and suggest means for correcting their black alkali soils. Drainage of these lands was recommended as the best method for their improvement, but because of the extremely high cost of drain tile, we suggested the trial of this method on a small field as a demonstration. Our recommendations were followed and sufficient tile for draining four acres were procured and placed in the field. Mr. Cram's report of this demonstration in writing shows very clearly the results obtained, and is as follows:

"As per your request we are sending you the following report on four acres of land which we tile drained this year: Cost of 1500 ft. 3 inch tile, \$35; Freight Portland to Redmond, \$72 (split car rate); haulage, Redmond to ranch, \$17.50; labor 7 days at \$2, \$14; Total cash, \$138.50 or \$34.63 per acre. The tile was laid 50 feet apart, three feet deep, and easily drained this space at that depth. A system laid four feet deep would have drained 80 feet between lines, increasing the area drained by this amount to a little over 5 acres. We were unable to get the latter depth owing to difficulty for securing outlet for that level. Another item which would be materially reduced is the freight. Taking a carload lot of 30,000 pounds minimum weight, the rate would be \$109 to Redmond, or about one and one half cents per

foot. Taking this basis for the above job: Cost of tile, \$35 (assuming no reduction for carload); freight, \$22.50; haulage \$17.50 (assuming same haul); labor \$14, total \$89 or \$22.25 per acre. Now as to results: Crop, 1914, four acres, 20 bushels barley or five bushels per acre; crop 1915, four acres, 278 bushels wheat and barley or 69½ per acre. Placing a value of 80 cents per bushel on this crop the result is \$222.50 minus \$138.50, equals \$84.00 net gain this year from the above operation. In our minds and from these results we firmly believe that tile drainage is an unqualified success. This four acre tract we tried only as an experiment and we intend to drain 40 acres more as quickly as possible. There are few investments which pay so well on alkali land. Hoping that 1916 may see many Crook county acres tile drained, we beg to remain, very truly yours, H. C. Cram & Sons."

It will be noted by this report that the absolute cost of tile in less than carload rate is figured. If a large amount of tile were used and it could be shipped in carload lots the net gain would be \$222.40 minus \$59, or \$163.40, which equals a profit of \$44.40 above the cost of the tile for four acres or an increased profit above the cost of the tile and of the crop grown the previous year or \$28.40 for four acres, or \$7.10 per acre. It will be noted that the freight bill from the dealer to the purchaser equaled considerably more than the first cost of the tile and if the tile could be purchased in carload lots this expense would still be greater than this first cost of the tile.

When results of this kind can be obtained through a demonstration on the ground, it is unnecessary to spend a great deal of time in writing concerning the advantage of drainage for soils of this character. In our opinion, the drain tile should be laid at least three to four feet deep and lines not more than 40 feet apart. On larger tracts, it will of course be necessary to increase the size of the tile as lines become longer and laterals converge and, in every case, the levels should be run and plans for the entire drainage system completed before any of the tile is laid.

An effort is being made to discover clay deposits for the manufacture of drain tile within Crook county, which discovery and manufacture would reduce the cost of this tile at least one half.

SUMMER FALLOWING LAND.

The average total rainfall for Crook county in 1914 was 6½ inches. The same total for 1915 was seven inches. Both of these totals are below the normal amount for this section but the maximum annual rainfall for same, according to all information which we can obtain, is below 14 inches and, under these conditions, it is unnecessary to state that summer fallowing is required for growth of crops on the dry lands of the county. The purpose of the summer fallow in this section is to store and conserve the moisture of the fallow for the use of the crop the crop year. Ninety per cent of the annual precipitation occurs between October 30th and May 1st.

So-called summer fallowing of the land is practiced by all farmers on unirrigated lands in Crook county, excepting possibly a few who have cultivated tracts along the river bottoms which are sub-irrigated. However, in the majority of cases, although a crop is grown on the land only alternate years, the methods used in the preparation and cultivation of these lands between crops do not serve the purpose of a fallow in the matter of moisture conservation. A very large percentage of the summer fallow is plowed late in the spring or during the summer of the fallow year. Usually cultivation of these fallow fields consists in merely harrowing the land from one to three or four times with a spike tooth harrow. A fall grain crop is planted the same season that the plowing is done or a spring crop the following spring. In 1915, because of the high cost of wheat, a large number of farmers on dry land planted spring wheat without summer fallow and in only one instance was any grain harvested and in this case, the yield did not prove profitable.

Very little demonstration work on summer fallowing of land was started in 1914 by the Agriculturist. Ten fields in various sections of the county were started as demonstrations in 1915. These demonstrations must necessarily cover at least two years so that results from the ones thus far started in the county will not be available until harvests of 1916 and 1917. One demonstration in the cultivation of the summer fallowed land was however, already proven of value. The demonstrator, Mr. A. S. Fogg, living near Hampton on the "high desert," cultivated a plot of two acres with a common hay rake, the remainder of the same field being cultivated with a spike tooth harrow. Upon examination in September we found the moist earth two inches nearer the surface of the field and more moisture deeper in the soil on the demonstration plot than on the remainder of the field.

Dry land farmers are advised as follows: Land should be plowed for summer fallow in the fall of the

year preceding the fallow year or early in the spring of that year. Where possible the fall plowing is the better of the two. The use of a sub-surface packer immediately following the plow has proven of value and is necessary for obtaining best results on spring plowing. On fall plowing, land should be left ridged as the packer leaves it until spring when it should be harrowed. On spring plowing, land should be harrowed after packer. Cultivation thereafter must be made with tools which will beat destroy the weeds and leave a slightly coarse earth mulch covering the surface of from one to two inches deep, use to be made of these tools when weeds appear, after each rain or whenever the surface of the field tends to pack. The tools generally used in this cultivation are the spike tooth harrow or the spring tooth harrow but we have found that on the majority of the lands which are of a sandy nature these tools are too severe and leave a deep, pulverized mulch which causes the loss of moisture. The tool known as a "weeder" is much to be preferred for this cultivation and, where this tool is not available, the hay rake usually does better work than will any of the harrows.

EXPERIMENT WITH COMMERCIAL FERTILIZER ON POTATOES. Trial of Union Meat Company's "Beaver Brand E" Fertilizer in Crook County, 1915.

The farmers generally in Crook county, most especially on irrigated lands, are of the opinion that their lands need an application of some commercial fertilizer for obtaining best yields of crops grown. In order to prove the value of a commercial fertilizer an experiment was undertaken during the season of 1915 to determine the amount of increase in yield of potatoes which might be obtained from the use of a commercial fertilizer. Results obtained from the use of Sulphate of Potash on the Demonstration Farm at Redmond in 1912 proved this fertilizer beneficial on alfalfa and analysis of the soils in this section show them to be somewhat deficient in potash and phosphorus.

Because of the high price of potash in 1915 it was not practicable to use this fertilizer on any of the crops. The co-operation of the Union Meat Company of North Portland, Oregon, was obtained in a trial of a commercial fertilizer rich in potash and phosphorus and as the potato yields of lands in this section are comparatively small, this crop was chosen for the experiment. The Union Meat Company furnished 200 pounds of their Beaver Brand "E" fertilizer whose percentage analysis is as follows: ammonia (animal) 3.04, nitrogen, 2.50, phosphoric acid (available) 5.00, phosphoric acid (insoluble) 5.52, phosphoric acid (total) 10.52 and potash (pure) K 2 O equals 12.00. Mr. S. D. Mustard, a farmer and successful potato grower in the Powell Butte district, used this fertilizer under direction of the County Agriculturist and his assistance in the experiment could not be improved upon in any way, he taking great interest and pains throughout.

Data in detail regarding this experiment are as follows: New land was first irrigated then plowed May 1st, furrows were opened and fertilizer dropped in hills and covered with small amount of earth after which potatoes were dropped in same hills and covered with small amount of earth after which potatoes were dropped in same hills and covered. Potatoes were planted June 1st, the variety planted was the Gold Coin. Two hundred pounds of fertilizer were used on one sixth acre with unfertilized potatoes on each side of fertilized plot and full acre of potatoes included fertilized plot was on uniform soil, was planted on same date and received same attention, including the application of irrigation water throughout the season. Potatoes on fertilized plot and one sixth acre unfertilized adjoining were dug, sacked and weighed on November 6 with the following results:

Weight of fertilized plot of one sixth acre, 2371 pounds.

Weight of unfertilized plot of one sixth acre, 2186 pounds.

An increased yield from use of fertilizer on one sixth acre 185 pounds or 1110 pounds per acre. The results obtained from the use of this fertilizer under the circumstances as found this year would not warrant the use of this fertilizer on potatoes at the price for which it sells. The experiment is, however, considered incomplete and not indicative of the value which might be obtained through its use on potatoes under more favorable conditions. The fer-

tilizer was applied to the land too late for obtaining best results the same season and the potatoes were planted later than is common in this section. Increased yields of succeeding crops on this plot may be expected.

After careful study of this experiment and soils in Crook county generally, it is the opinion of the County Agriculturist that one of the first requirements for our soils is humus which is lacking in the upland soils. By planting any clovers or other green manures this humus may be added to the soil and results than obtained from the use of fertilizer will undoubtedly be much more pronounced.

This plot will be watched for results in yields of grain which will be planted next season and it is hoped that further experiments may be carried on with commercial fertilizer on the various crops.

Next Week: Crop Rotations, Eradication of Jack Rabbits as a Farm Pest, Etc.

(Continued next week.)

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