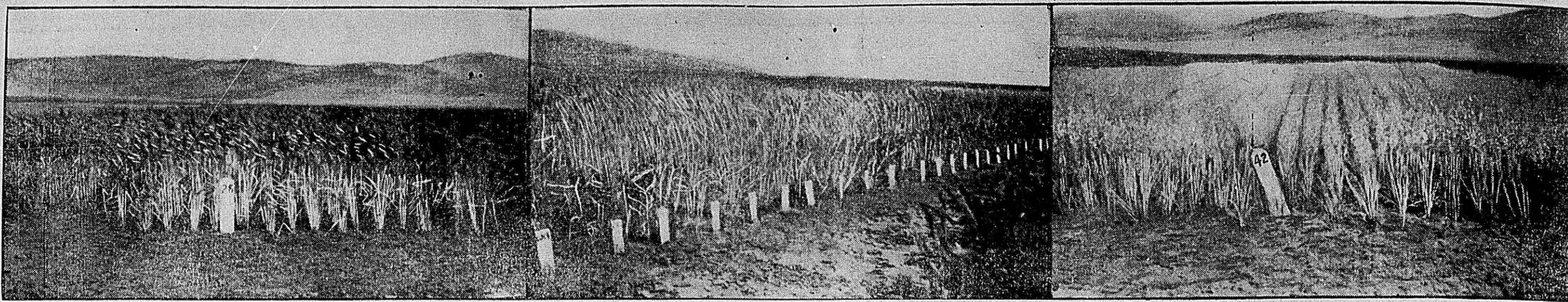


Dry Farming, The Salvation of Arid Utah



HOW EXPERIMENTS ARE CONDUCTED AT THE NEPHI EXPERIMENT STATION BY EXPERTS.

The Central Photograph Shows Row Tests of Various Sorts and the Right and Left Views Show Small Plots of Wheat, the Seed of Which Will Next be Planted in 40 Acre Tracts and Then Distributed to Farmers.

WHAT irrigation has accomplished for the west is soon to be duplicated in scientific dry farming. By this is not meant that the produce from dry farms will ever equal in quantity that of irrigated lands, but it does mean that the millions of acres of lands which have lain for all time in the past only as sagebrush wastes are to be reclaimed by the intelligent farmer and made to yield bountiful returns for a comparatively small expenditure of money and effort.

The six experiment stations being operated by the state are demonstrating this.

A visit was made Monday to the experiment station near Nephi in Juab county. This station is operated jointly by the general government, through its department of agriculture, and the state, under the supervision of Dr. D. Ball and Prof. Lewis A. Merrill, agronomist. It is under the efficient eyes of F. D. Farrell, a graduate of the Utah Agricultural college, and Stephen Boswell, an expert farmer to whom much credit is due for its success. The party visiting the station Monday was composed of John C. Sharp and John Q. Evans of the board of trustees of the U. A. C., Senators Badger, Stookey and Marks of the state legislature, and Dr. Ball and Prof. Merrill with press representatives. President J. W. Paxman of Juab state, a successful dry farmer, and Isaac Grace, declared to be Utah's best farmer, met the visitors at the experiment station and conducted them to their own farms nearby. State Senator Alonzo Hyde of Nephi also accompanied the party to the experiment station.

EFFECT OF DRY FARMING.

As to the industrial result of dry farming, a statement made by Senator Hyde while the party was driving to the station is of great significance.

"After the panic and just before, I believe Juab county was in worse shape than any other section of the state. Many homes were placarded with 'for sale' and 'for rent' cards, people were moving away in search of employment, especially the younger men, business houses were doing scarcely any volume of business and a spirit of depression was general among all classes. It was soon after that that the results of the state experiment station attracted the attention of farmers and young men here and the Paxman and Grace farms and many others were begun. It seemed as if someone had worked a miracle. No sooner was the sagebrush grubbed from the wide stretches of land, the plow and harrow at work, crops in and then sprouting, than all was changed. Our young men returned. Thousands of acres of land were reclaimed and prosperity seemed to descend upon us. Now after three or four years of dry farming there is not a home for sale in this entire city, not a home that can be rented and instead we see on almost every hand a cottage springing up for some newly married couple or some family which has emerged from its former poor condition and is now prospering and preparing to enjoy the fruits of this prosperity."

PIONEER DRY FARMER.

Dr. E. D. Ball declared in warm admiration of Prof. Merrill, "There is the man who first conceived these experiment stations, the real father of dry farming, despite claims of others, and the man to whom all credit is due for overcoming an obstinate prejudice against this method of agriculture. Many failures were recorded before Prof. Merrill showed how to achieve results by introducing scientific methods, now if these methods are followed, success awaits the dry farmer in no less degree than the man who brings water to his farm and cultivates it with thrift and industry. We do not claim that dry farming should supplant farming by irrigation,

but on the other hand we want to encourage irrigation enterprises. But we do know from results of our work that in districts which cannot be reached with water, successful cultivation of the soil can be accomplished if the results of our experiments are followed."

Senator Hyde, answering a question declared that these experiment stations must not be looked upon as model farms. This is not their purpose. They are to determine things which must not be done as well as to indicate the right way of doing things. He declared that there were many failures on these experiment stations and that if the farmers would profit by these failures and avoid the obstacles pointed out by the stations after failures, they would not suffer the losses that otherwise would follow. In following the methods that have brought success they will achieve success, he said. The failures are as important as the successes, he said, and should be regarded as such.

SCIENCE ON THE FARM.

The visit to the station was a revelation of wonder after wonder. The systematic manner in which the farm is conducted should guarantee its success and the results being obtained affirm this statement.

The visiting party upon arriving at the neat little farm after a ride of four miles south and east of Nephi was first shown a cistern just completed at the farm which will be used to save rain water for use at the station. It is of concrete and is not plastered. This in itself has so far been a partial failure with an important lesson. It will be a success, it is declared when this lesson is put to its use. Though quite a considerable quantity of water has been led into the cistern by the success of the experiment now. Plastering the walls will be the remedy and this is to be done at once.

The laboratory was next inspected. Here were found several pieces of simple apparatus and the process is still more simple. Small cans of soil are secured from day to day from the farm at different depths. The cans are all of the same size and the soil when brought in to the laboratory is weighed on a pair of accurate scales. The cans are then placed in a cupboard-like affair made of galvanized iron and provided with a gasoline burner and thermometer. Heat at 110 degrees is maintained until the soil is absolutely dry and it is then weighed. The loss in weight represents the weight of moisture which was in the soil at the time it was taken from the farm. The moisture content of the soil is in this way calculated and is recorded for comparison with results at harvest time.

Mr. Farrell, who is known to all Nephi as "Dave," explained to the visitors the three most prominent factors in successful dry farming. They are conservation of moisture, time of planting, selection of seed.

EXPERIMENTS CONDUCTED.

Experiments along all three lines are constantly being made at the station and the results are made a record for guidance in the future. The method of procedure is as follows:

To conserve moisture, land is plowed to different depths, sub-soled to different depths and then covered with a mulch of varying thickness. This mulch is regarded as the most important factor of all in dry farming. Its purpose is to make air tight, heat tight and water tight the soil under it. It acts as a cover over the ploughed ground and stops the penetration of sun heat into the damp ground beneath it. It prevents the evaporation of water through it. If allowed to dry after a rain it cakes hard and then cracks, allowing the moisture to pass away in vapor through the cracks. To offset this a rain, it is harrowed and again made soft to cover the moist ground. A slight rain is regarded more as a misfortune in dry farming than a blessing, but after harrowing the mulch after a heavy rain the precipitation is conserved and much good is thereby done. Not relying on the rains, though, it is the aim of the dry farmer to conserve with this mulch, the moisture that has accumulated through the winter. Thus with proper conservation of



PEACHES AND BARLEY.

The Upper Photograph Shows the "dry-farm" Peach Orchard on the Broad head Farm Near Nephi. The lower Picture is of a One-Fifth Acre Plot of barley on the Experiment Station Farm.

moisture, dry farming is not actually dry farming at all, but wet farming using the moisture that has been saved within the ground rather than in reservoirs to be used to flood the land. The visitors kicked up five or six inches of this mulch, and although rain had not fallen for five or six weeks, the soil just under this mulch was so wet that it could be moulded into balls containing sufficient moisture for the ball to retain its shape. The ground was not wet, but it was sufficiently moist to furnish the plants every requirement in this, the most important of dry farming factors.

TIME TO PLANT.

Experiments in time of planting confront the expert with his most trying task, for never are two seasons just alike and the time of planting seems to depend entirely upon the rains. The experiments have shown one thing to be paramount. The thrifty farmer must, at the approach of planting time, have his ground all ready for the planting. It must be kept ready so that at a moment's notice the seed may be placed in the prepared ground. He must have his animals ready. He must have his help ready to make the onslaught at the psychological moment. It must be done this way and no other if best results are in view.

To determine the best time of planting, the expert in charge has a method. The center photograph and the group of three show this. A "heaven" is seen at each row. Each bears a number. This number is also found in the record kept of the experiments. A row of counted seeds may be planted on a given date. The condition of the weather, soil and seed and many other considerations are noted in this record. A similar record is made of seed planted a day, two days, a week, two weeks or a month later. Thus there may be several

similar tests are made with different seeds. Counted seeds from selected lots may be planted with regard to the size of the seed. Small seeds may be in one row, larger seeds in another, still larger seeds in another and so on throughout the test. The harvest result compared with the record will show which class of seeds has produced the best result. In passing, Mr. Farrell declares that the results of his experiments have shown that for a given class of seed, the largest seeds of the class produce the best result. Of two given classes, the larger seeds of this class give the best result. "Blood will tell," even in wheat, remarked one of the party as the summing up of this experiment.

SELECTION OF SEED.

The method of developing these experiments to a point where they will be of actual value to the farmer is the most interesting part of the subject from its broadest standpoint. The seeds selected from the single row tests are planted in plots of one-tenth and one-fifth acres, as may be seen by plat 42, plat 28 and plat 25. The results of planting in these plots are similarly recorded and deductions made from the results as to the best time of planting, kinds of seeds, depth of plowing and other considerations. The quantity of seed obtained from these plots is then planted out in 40-acre plots and then the seed selected and distributed among farmers who will agree to the conditions imposed by the station as to time of planting, depth of cultivation, future use of seed, etc. In time sufficient seed will have been grown to furnish the farmers of the entire state with the beginnings of

their vast dry farms.

DRY FARMED BARLEY.

Plat 25, shown in the small picture at the bottom of the picture of the dry farm peach orchard, shows a small plot of winter barley from Tennessee. It was said when the seed for this plat was received that it would be time wasted to try to raise it in this climate and especially by dry farming. The result as shown in the picture is sufficient answer to these dire forecasts. It is a success, and next year's results are expected to be even more valuable. The yield is estimated by Mr. Farrell as 35 bushels to the acre.

Plat 42 shows Turkey Red, a variety of wheat not much planted in Utah, but claimed to be the very best wheat for dry farming. Prof. Merrill has succeeded in convincing President Paxman, Isaac Grace and other farmers in and about Nephi of this, and their crops are large as a result. Prof. Merrill advises the use of this wheat on dry farms as the best for this climate. The yield is high and the chaff and straw comparatively light. Its demands for moisture are most easily satisfied of all varieties. Kofod wheat has for long been esteemed highly by farmers throughout the state and may almost be called a native wheat here, but both Dr. Ball and Prof. Merrill declare it to be vastly inferior to Turkey Red.

Plat 28 shows another common variety of wheat planted to a great extent in Utah. It is so common that it has been called "wheat" with no other name to distinguish it. Although many varieties are giving splendid results at the Nephi station, all join in a chorus which begins and ends with Turkey Red, and every effort is being made to encourage planting of this variety.

DRY FARMED PEACHES.

Much interest was occasioned in the visit to David Broadhead's dry farm. A peach orchard was found there, nestled in the land at the bottom of the foothills. A deep mulch was found on the ground, extended with vigorous hoeing right under the trees. The

growth was very rank and old farmers were betting their watches, hats and all sorts of articles of usefulness that the orchard was irrigated. Mr. Broadhead declared with considerable emphasis that not a drop of water, except that provided by Jupiter Pluvius in his fearful periods, had been put on the orchard.

Prof. Merrill and Dr. Ball in explaining points brought up by members of the party said that such results were unusual in dry farming and that the soil being used by Mr. Broadhead was exceptional and that at the experiment station even with great care no such result could be obtained.

Another strange circumstance was one where the far-famed Alaska wheat was planted. Its utter worthlessness was very easily seen. This wheat was claimed by its "inventor" to have been discovered by him in a small quantity under a rock in Alaska. By careful culture he had produced enough to let a few farmers have a few pounds at \$1 per pound for seed. So many farmers swallowed the bait and the hook with it and the crops were so disappointing that the famous discoverer of Alaska wheat is now subject to a fraud order and is forbidden the use of the mails. To show how hard this fraud order is on the discoverer, Senator Stookey gravely announced that now he cannot even write to his mother-in-law.

In dry farming particularly, part of the farm is allowed to lie idle during alternate years. Some farmers have utilized this fallow land, however, by planting during the off years potatoes, beans, squash, melons, corn and other garden stuff. Their success has not been marked with any phenomenal results, but still they have profited both in money and experience. One of the most successful of these farmers is Thomas Smith, whose farm near the Paxman and Grace farms six miles out of Nephi.

STATE DRIVING WELLS.

Test wells being driven by the state are also of interest to dry farmers. The flow may not be great as in the past, but with pumps and reservoirs dry farming may be revolutionized in many sections of the state where rains are scarce and streams unknown. The contract has just been let for one to be driven near Nephi. One is going down in Dog valley just over the range west of Nephi, and others have been driven and are to be driven under the direction of the state land board.

There are in Juab county 20,000 acres under cultivation and the experiment station officials point out that if the yield on these dry farms can be increased only as much as one bushel to the acre by using scientific methods, it will mean at the least \$20,000 added to the farmers' bank accounts and 20,000 bushels more of wheat added to the food supply. There are 60,000 acres brought to be cultivated each season making 80,000 in all and there are 200,000 acres in the valley which should be cultivated before two years more have passed. The average yield of 30 bushels to the acre will give \$3,000,000 worth of wheat to the food consuming public with the money in the bank for the farmer.

Scientific dry farming is only six years old in Utah, and Utah leads all other states. It was the first state to support dry farm experiment stations and has been followed by Oregon and Montana in the west. The results are being closely watched by the department of agriculture and much aid is being received from the general government in the support of the station at Nephi. Other stations are located at Tooele, Enterprise, Panguitch, Richfield and Monticello, and the success at all is marked. The interest of farmers in the stations is gratifying and the future is full of promise.

HOW FARMERS PROFIT.

The results of these experiments are communicated to the farmers in various ways. Bulletins are published by the Agricultural college and distributed to farmers throughout the state. These bulletins cite the experiments undertaken and the deductions from them. Lectures are given through-

out the farming communities of the state and institute cars are sent on tour with lecturers aboard. Samples of grain and other products are exhibited and the farmers given an object lesson in the results to be obtained by scientific farming.

Eight years ago Boswell and Garrett started dry farming, but failed in their undertaking because of the lack of experience in this line of agriculture. They gave it up. Boswell is now with the experiment station, the fruit of his combination of science and experience made him one of the best farmers in the state. His crops in Juab county are object lessons to the farmer who turns up his nose at books and science in their connection with farming. Garrett is now a successful dry farmer because he has followed the methods of scientific experimenters. The same may be said of Mr. Grace and President Paxman, who are foremost in dry farming in this state. President Paxman is Utah's member of the executive committee of the National Dry Farming congress.

Dave Farrell, who is the expert in charge of the station, is an enthusiast. His whole spirit is in his work and for that reason his success is assured. In the opinion of those who are concerned with the operation of the station, he has attracted attention from other states and has refused offers to go to other states at advanced salaries. His answer to those who made the offer was that he was too much interested where he is to think of making a change. His next step will be to go to Cornell to specialize in plant breeding. So far he is distinctly a Utah product. Coming from the Farrell family so well known in the northern end of the state, he is the commercial expert in dry land agriculture. Picking him out for his superior mental equipment, Mr. Merrill induced him to "switch" from the commercial to the agricultural course. It was a difficult matter, because Farrell had grown up with an aversion to farm work, of which he had much while on his father's farm. Now Farrell is glad he was induced to change. Asked if he likes farming, he will say no, but he will supplement it with the statement that he is heart and soul taken up with agriculture and the way he says it convinces his hearer that there is a considerable difference between agriculture and farming.

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