

## IRRIGATION AND SOIL IMPROVEMENT

Irrigation in Utah was first practiced in Utah by the Mormons. Since that time practical experiments are fast placing it upon a scientific basis, although there is yet much to be learned of firmer soil and plant requirements.

Of the five practical methods of irrigation, the Border (Flood) and the Furrow (corrugation) are the better under conditions as existing in this section, with the former preferable where practical. Under either method the runs should be of such length only as will secure an even distribution of moisture, the same to be determined by soil and surface conditions.

**Time of Irrigation**  
Fall irrigation is strongly recommended, for the reason that if throughout the dormant season the soil remains wet the dissolution of such materials as are needed for use of plant life occurs, and as the carbon dioxides in the water exert a strongly solvent action upon the minerals of the soil as also do the organic salts and plant and animal residues, this is of tremendous value during the early spring growth. It also hastens the germination of seeds and should the soil contain from 10 to 15 per cent water to a depth of 8 or 10 feet spring irrigation may be delayed, which is especially desirable for cereal crops that the rootlets may penetrate the soil deeply. Pastures should receive early and frequent light irrigations.

**Soil Composition**  
Of the ten distinctive separate elements necessary to crop production Nitrogen Phosphorus and Potassium limit the quantity and quality to a greater extent than do the remaining seven. These three must be properly proportional. Should either be deficient the soil will produce only in the proportion of its existence, i. e., should either be or become 10 per cent out of proportion less than that required by nature the crop yield would be decreased to that extent, the excess thus created in the others would remain dormant until the deficit is restored, then an increased production may be obtained by increasing the amount of these elements in the proportion required by nature. This is her law, there is no exception. Different types of soil must necessarily contain different amounts of these elements and frequently they are not well balanced. Analysis of the soil and fertilizer trials is the only accurate solution. However, the county agent may be able to approximately determine cause of trouble and suggest treatment.

**Soil Improvement**  
Diversified farming is strongly recommended on all soils, here the question arises as to what crops are adapted to yours, that is your problem, and your success depends largely upon the proper solution. It is up to you.

A carefully planned cycle of high class crop rotation appears to have many advantages, enabling a steady economic use of water, utilizing all the different elements of soil composition which should replenish rather than exhaust the same, and by growing crops requiring water at different periods of the season the high power peak-load now made in furnishing water for a large acreage of meadow and upon which power charges are based, would be avoided. Furthermore, too extensive production of any one crop may eventually lead to overproduction which results in price stagnation. Experiments are being made in sowing vetch, soy beans, mammoth clover and other leguminous plants with growing crops as a fertilizer, and also for fall pasture, the success of which has not yet been fully determined although encouraging reports have been made, that the nitrogen humus and pasture are of great value is positive but the effect upon growing crops is in question.

Many fields treated with lime, potash, sulphur and other minerals for the use of different crops have shown excellent results, and where land is pregated with alkali sweet clover is recommended.

**Soil Requirements**  
Fall plowing is preferable to spring for the conservation of moisture and in the adaptability for early spring seeding. As no fixed rule of time of application, nor amount of water to be used can definitely be made which would be applicable to all localities, on account of surface and subsoil variations and with underlying clay, hardpan, gravel, etc., to be taken into consideration farmers must determine soil requirements of their various localities in making this important decision. However, upon applying water in the spring the soil should be

kept between the maximum capillary saturation and the point of lento capillarity usually the condition known as "field moisture capacity" is near the desirable point.

**Anticipations**  
The multiplicity of difficult subjects and obstinate things an agriculturist must solve, provide for and contend with are now becoming more fully realized thro the work of experiment stations and other scientific investigators. That greater progress has been made during the last decade than in all time previous is beyond dispute, and it is to be hoped that by the aid of such organizations as the Farm Bureau the co-operation of the various districts, counties, states and the Federal Government the agricultural industry may be brot to a state of high efficiency in all its various branches.

This is unquestionably one of the greatest problems of the age, not only to the farmer but to the world. Successful farming is a big sized man's job.



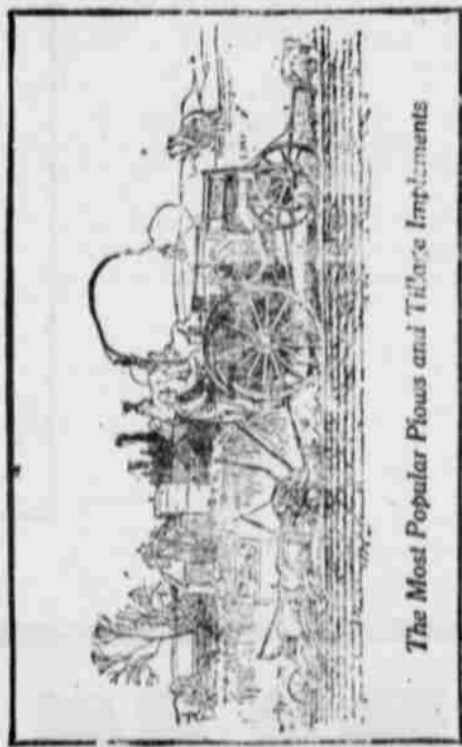
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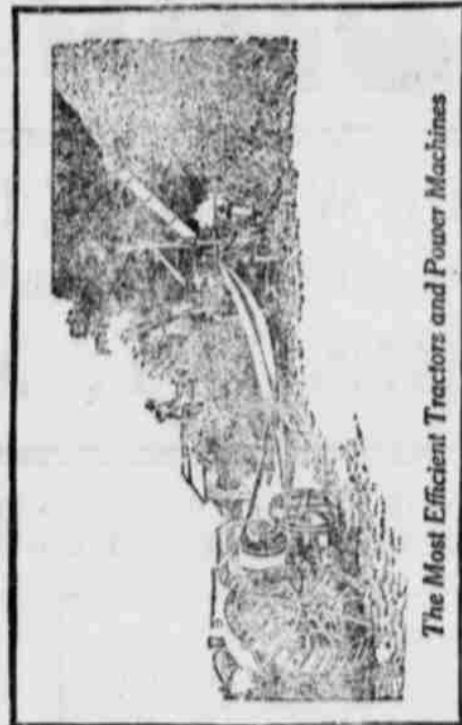
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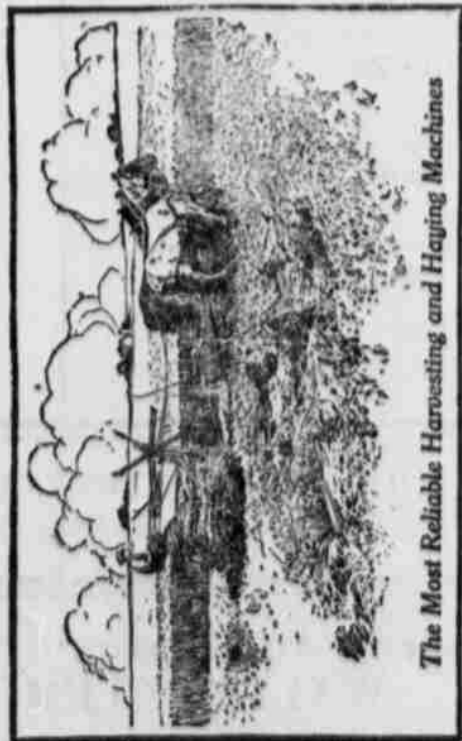
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