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AN UNDEVELOPED OPPORTUNITY IN AGRICULTURE

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Arizona's Low Humidity Unfavorable For Development Of Certain Types Of Diseases; Great Opportunity To Grow Disease-Free Seed For Market

ARIZONA, by virtue of its climate, holds a unique position in relation to the plant diseases which infest our agricultural crops. This position may best be considered under three general headings: First, the isolated position of the state with reference to other agricultural communities, and the isolation of cultivated areas within the state; second, the abundance of new land uninfested by plant diseases; and third, the prevalence of a very low humidity which is quite unfavorable to the development of certain types of diseases.

It is well known that extensive natural barriers such as deserts and mountain ranges will effectively prevent the advance of plant disease organisms (and most insect pests as well). Not only is the State itself isolated but the various agricultural communities within the State are separated from each other by wide stretches of desert and mountain. This is particularly true in districts dependent entirely on pump or artesian water and those dependent upon the flow of small streams.

Although only five per cent of our land area is potential agricultural land and much of that now under cultivation is already infected with plant diseases, there are still thousands of acres yet uncultivated or uninfected. These areas if handled intelligently can be kept free from disease for a long time to the financial advantage of the cultivator.

Arizona has been endowed by Nature with a semi-arid climate of such low humidity that many types of plant disease organisms do not become of economic importance if, indeed, they can survive at all. This is particularly true of the large number of organisms which cause foliage diseases and are dependent upon rain or dew upon the leaves for sufficient moisture to germinate their tiny spores. There are certain exceptions which only serve to emphasize the



A Field of Irish Potatoes Suitable for Certified Seed

importance of dry air in preventing spread of disease. During seasons of abundant winter rains, certain grain rusts and powdery mildews of grains and beans are prevalent and often destructive in the Yuma and Salt River Valleys. Likewise, during seasons of abundant summer rains diseases such as angular leaf spot of cotton, early blight of potato, and rusts of spring grains in the higher altitudes are both prevalent and destructive.

A consideration of the above mentioned conditions obviously indicates that a farmer in Arizona is in a most favorable position to avoid losses from plant diseases. There is, however, another phase of the matter which is far more important from a financial standpoint, and offers an unusually profitable field for development—and that is, the growing of disease free seed for market

Arizona's Opportunity

There are many of our most important plant diseases which are seed borne and which can be controlled only by seed selection and seed treatment or a combination of both. This has led to the development in many

states of the growing of "certified seed." Certification started for the white potato but is now being extended to other crops. The great handicaps encountered in developing a disease free strain were the lack of a disease free strain to start with, lack of isolated fields to prevent re-infection, lack of soil not already infected with soil borne diseases, and humidity favorable to the development and spread of disease.

Under these conditions certified seed, while far superior to field run or ordinary seed, has been only relatively free from disease, the total tolerance of all diseases, blemishes, defects, and off-types being around five per cent. Working under much more favorable natural conditions, we should be able to practically eliminate all tuber borne diseases.

Of the Arizona potato growing districts, Coconino county appears to be the most promising for such a project, with Greenlee county a close second. Arizona potato growers are finding it profitable to import certified seed from Minnesota, Wisconsin, Colorado, and other northern states

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at a cost of fifty to one hundred per cent over the price of Arizona grown seed. Since the potato growers of Southern Arizona will always be dependent on imported seed, this market should always be open to Arizona grown certified seed. In case the supply of certified seed grown within the state should exceed the local demand, Arizona growers would be in position to offer a superior product to other southern states in competition with northern grown seed.

Growing disease free seed of dry and snap beans would also fill a very definite need and should be profitable. The three most serious seed borne diseases of beans are: anthracnose, a fungus disease; blight, a bacterial disease; and mosaic, a virus disease. Anthracnose lesions on the bean pods enable the strands of the fungus to penetrate the seeds forming brown spots which are conspicuous on white beans and not so evident on the colored varieties. Beans from diseased seed spread infection to the healthy plants. Since the spores are dependent on rain or heavy dew for their spread, the disease has not been prevalent in Arizona. Blight is sometimes injurious, but by starting with clean seed it should be avoided indefinitely. Here, also, the infection of the seed occurs through pod lesions. Mosaic is likewise carried in the seed, but unlike the other two diseases leaves no visible sign of infection on the seed, but the mottling of the bean leaves in the field is definite evidence of infection.

In growing disease free seed the farmer must be able to recognize these diseases if they should appear, and he must also give thought to the selection of varieties which he can raise profitably in his locality.

Certain Southern states have started the certification of sweet potatoes for planting. A number of Midwestern States are now developing plantings of red and black-cap raspberries free from yellows, a mosaic or virus disease which has rendered many plantings unprofitable during the past few years. We have developed in Arizona at present practically disease free citrus nursery stock which is giving us orchards practically free from plant diseases.

This does not by any means ex-

haust the possibilities, as practically every crop of commercial importance is a potential field for the development of disease free seed or propagating stock. Our best prospects in the field of agriculture are frequently said to be in avoiding competition by growing crops in which we can excel in quality or which others cannot grow—and the growing of disease

free seed is an opportunity of this kind. Disease free seed is the cheapest and best insurance the grower can buy, and he will buy it when it becomes available.

Starch is kept from sticking by adding to a small pan full a drop or two of kerosene or a little lard and letting it come to a boil.

Larger and More Certain Returns

THE FARMER is compelled to take many chances. The elements may be friendly, or the reverse; he must take them as they come. He wages a continual battle with weeds and pests; it is estimated that losses caused by insects alone equal the total returns from 600,000 farms. He needs all the help he can get to overcome these natural handicaps.

One of the reasons for the reputation enjoyed by Case machines is that they give the farmer better control of weather, weeds and pests. He can do more and better work while the conditions are favorable. He has time, power and opportunity to do the kind of work necessary to eradicate weeds and pests; to improve his live stock, buildings and equipment, and add to the value of his farm.

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