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A STATEMENT
OF
GENERAL CONDITIONS AND RECOMMENDATIONS
COVERING
FARMING OPERATIONS ON THE PARKER PROJECT
AT
PARKER, ARIZONA
MAY - 1942

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The Parker Project, comprising of more than one hundred thousand acres of valley land is situated on the east side of the Colorado River, on the Colorado River Indian Reservation, between Parker, Arizona, and Blythe, California. A soils survey completed in 1941 by Mr. W. G. Harper, of the Indian Service, covered a total of 115,908 acres of which 68,422 acres were recommended for development. Of the remaining acreage 16,214 acres were shown as being questionable and 31,272 acres shown as not being suitable for development.

In 1912 an irrigation system was constructed to supply irrigation water to farm lands situated in the north portion of the Project near Parker. Since that time water has been pumped from the Colorado River into the canals to irrigate these lands. The completion of the Headgate Rock diversion dam in the Colorado River just above Parker in 1941, will make it possible for future irrigation to supply water by gravity, to the farm lands of the entire project. The water supply is abundant.

There are approximately 5,000 acres of land being farmed on the project at the present time. Of this approximately 2,200 acres are being farmed by the Indians and 2,800 acres by lessees. Approximately 50% of all cultivated acreage is planted in cotton, 33 1/3% to alfalfa and the balance in other crops.

SUBJUGATION PLANS

The rate at which the subjugation of these lands can progress will be dependent upon the amount of equipment which can be secured for the carrying out of the work. Subjugation must precede all farming operations. It is thought at least 5,000 acres of land can be subjugated and made ready for the planting of crops in time for Fall planting in September of this year. It has been estimated that the subjugation can then proceed at the rate of 10,000 acres each year.

The lands of the different soils classifications as shown on Mr. Harper's map present a very irregular pattern. Lands recommended for development are interspersed with tracts of land coming the classification of questionable or of not being recommended for development. Many sloughs or dry water ways occur in areas containing some of the best land. To level such areas will prove expensive, yet unless these low places are filled and the land leveled, the subjugated areas will be very irregular in shape and extremely difficult to handle. It would seem advisable to start with the subjugation of lands best adapted to the growing of food crops and lands situated as near the camps as is possible.

An inspection of the lands suitable for the planting of gardens was made by Mr. Don Gordon (Extension Agent, Indian

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Service, Mr. L. M. Armstrong (Indian Irrigation) and the writer. Efforts were made to find lands to which water could be readily applied for irrigation, and lands with soils showing an adaptation to the growing of vegetables. That portion of Section 35, Township 8 North R 21 West, lying just south of the camp, and portions of Sections 2,3,10,11,13,14,15, 22, 24, 25, and 26 Township 7 North R 21 West, appear well suited for this purpose.

This tract of land lies on each side of the main highway between Camps No. one and three. The tract of land lying west and north of Camp No. 1 would also be well suited for this purpose, but this tract would require more work to level it, as well as more time to extend the canals to it of irrigation purposes.

SOILS

The soils of the valley are of alluvium, deposited by the Colorado River. The texture of these soils ranges from sandy loams to clays with a depth of top soil varying from one to several feet. Over most of the valley the soils are of a chocolate colored loam, which appears fertile and capable of producing satisfactory yields. The valley slopes to the south at the rate of approximately 2 feet per mile. The gentle slope of the valley, coupled with the fact that most

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of the soils of the valley are pervious in character, would indicate that irrigation can be carried on by the application of rather large heads of water with comparatively short runs without danger of any appreciable amount of soil erosion.

The Colorado River Indian Agency has no records in its files of chemical analyses having been run on the soils of the project. The general appearance of the soils suggest them to be fertile. Though most soils of Southern Arizona respond readily to the application of phosphates, especially when applied to alfalfa,--specialists at the University of Arizona feel that for a period of a few years the soils of the Parker Project will give satisfactory crop yields without the application of fertilizers.

Some fertilizer test plots have been conducted by the Indian Extension Service at Parker and by the State Extension Service of California at Blythe, California. These tests were made on lands which have been continuously cropped for a period of several years. At Parker the response was most noticeable where the application of superphosphates was made to land seeded to Sudan grass, though some increase in yield was noted where an application was made to alfalfa land. At Blythe the addition of ammonium phosphate to the plots which were already with superphosphates, gave the highest

response. Two of the largest operators of farms on the Indian Reservation at Parker (Lessees) are applying superphosphates, to alfalfa and report increases in crop yields of from 10% to 20%.

The application of additional organic matter to the soils of the valley would undoubtedly result in added yields. Some of the valley soils are more deficient in organic matter than are others. The planting of green manure crops on these deficient soils, preferably legumes, would bring about a great improvement. Sour clover grows profusely on most of the irrigated farms of the valley indicating that it would make a good green manure crop.

Due to the fact that there is considerable variation in the soils of the project and that the depth of the soil varies in different locations, and since too, alkali occurs in spots over most of the project, efforts should be made to secure the services of soils technicians to make additional soils studies of each tract subjugated before subjugations starts. Such studies should include the making of borings to determine the depth of top soil, the texture of the soil and the character of the subsoil. Where alkali exists in concentrations such as might affect the growing of crops, analyses of the soils should be run to determine the alkali content. On

alkali soils it would also be advisable to have percolation tests run to determine the possibility of leaching out of the Alkali salts.

ALKALI

A report on the alkaline conditions of the valley was made in 1932 by Mr. A. T. Strahorn, Bureau of Chemistry, U.S. D.A. Alkali tests were made by him on 135 different locations and to a depth of six feet. His report indicated the alkali situation in the valley to be rather serious as he estimates an increase of unproductive land due to alkali, between the years of 1912 and 1919, at 1,500 acres; and between 1919 and 1932 and increase of 2,005 acres. The greatest alkali area of the valley is located on the east side of the valley in Townships 8 and 9 north. Mr. Strahorn points out that excessive alkali conditions in the valley are associated with soils that are largely clay loams or clays and soils having impervious subsoils. He further states that his tests failed to locate any black alkali.

Even though Mr. Strahorn's map shows the greatest amount of alkali land to be located in the north east portion of the valley, near Parker, yet some alkali does exist in spotted locations in the southern part of the project, on the lands to be subjugated. The lack of an adequate drainage system on

the present irrigated lands of the Reservation has resulted in the destruction of much of the productive value of many of the lands now under cultivation. Subjugation plans should contemplate the need of an adequate drainage system. Wherever the soil studies indicate an alkali problem existing, a drainage system should be made an integral part of the subjugation plan.

Quite a percentage of the area shown on the soils map as not suitable for development is composed of hilly or hummocky sandy land. The cost of leveling such lands would be excessive. Many of the soils in this classification are of a type not well suited to agriculture, being either light sandy soils, subject to blowing or leaching, or heavy clays or clay loams, containing alkali salts.

CLIMATE

Temperature records show that the Parker area cannot be classes as frost free. The temperature range throughout the year will be a few degrees lower than at Yuma or the Imperial Valley and a few degrees higher than at points in the Salt River Valley. (With the exception of frost free areas). The temperature variation between the Parker area and these other areas is very slight. Most crops which are adapted to conditions in these other valleys should do well at Parker. There

would likely be a few possible exceptions. All temperature records which have been recorded at Parker have been taken at the Indian Agency. Temperatures on the river bottom lands would vary a few degrees from those at the Indian Agency.

RECOMMENDATIONS

GENERAL

With as large a population being located in the camps as is contemplated, the first effort in the planting of crops should be that of producing as much food as is practicable. This should include not only the vegetables which will be consumed, but in addition insofar as is possible, meats and dairy and poultry products. In planning operation for commercial production consideration should be given to the production of such crops which are needed by the Government in the present war effort as well as the growing of such crops of which the Japanese have a good knowledge.

Every effort should be made to produce as much on the land as is possible for the support of the population of the camps. Such efforts should be extended to the production of feed to be fed to all livestock and poultry which might be raised on the project.

The farming operations carried on by the Indians and lessees on the north end of the project have been limited to

the growing of a comparatively small number of crops. As a result, it has been impossible to get first hand information from the farmers at Parker, relative to the growing of many of the crops which will likely be grown here. In order to secure additional information relative to cropping practices carried on in similar localities, the writer accompanied by Mr. Don Gordon, Extension Agent, Indian Service, made an extended trip into the Imperial Valley of California, to Yuma, Tucson and the Salt River Valley during the week of April 26. Producers, Extension Specialists, College Specialists and Experimental Station Field men were interviewed.

VEGETABLE PRODUCTION

There are many kinds of vegetables which can be successfully grown on the Parker project. Most of these vegetables will need to be planted at two different times in the year. For winter vegetables the plantings should be made in the Fall and for Spring vegetables and the plantings should be made in the winter or early Spring. To produce the vegetables which can be grown at Parker and in quantities sufficient to supply the occupants of the camps, will likely require approximately 500 acres. Soil free from alkali and well adapted to the growing of such crops should be selected for this purpose. Such soils can be found within a short distance of the camps.

The Extension Service of California recommends the planting of more than 40 different vegetables in the Imperial Valley. Thirty-five of these are shown as having a good adaptation and the remaining varieties as having a fair adaptation. The slight variation in temperature between the Imperial Valley and Parker might reduce slightly the number of varieties which can be successfully grown. With the experience of the Japanese people in the growing of garden crops, little difficulty should be experienced in getting such a project under way. It would be well to secure assistance from Japanese leaders who have ~~have~~ had training and experience in the growing of truck, in working up the project.

COMMERCIAL TRUCK CROPS

Of the truck crops there are many which might be successfully grown. Head lettuce, cantaloupes, melons, okra, carrots, beets, summer squash, and many others offer possibilities. The acreage devoted to the growing of truck crops this year will be dependent upon the amount of land subjugated and the amount of acreage used in the production of pasture crops. The Japanese people have had more experience in the production of truck crops than in the growing of any other kinds of crops. In addition to this they have been growing these crops under conditions very similar to the conditions which will

prevail at Parker. These crops provide for a larger amount of hand labor to produce them, yet, on the other hand they represent a higher acre cash income than do most any other kind of crops. There seems to be no logical reason why large quantities of truck crops should not be grown here. Such truck crops of which there is a possibility of a shortage should be encouraged.

TRUCK CROPS FOR CANNING

Considerable time was spent in an effort to ascertain whether there might not be a possibility of producing certain vegetables, tomatoes, garden peas, and green corn for canning purposes.

Tomatoes

For several years the University of Arizona has been conducting field tests on tomatoes on its Experimental Farm at Yuma. The Earliana and other early maturing varieties of tomatoes are being planted there. The results of these experiments to date have not been too satisfactory. Even though the Mesa Experimental Farm at Yuma is located in what is considered as a frost free area, the winter temperatures seem to limit the yields. Experiment Station men, College Specialists and Extension workers seriously question the possibility of producing tomatoes successfully on the Parker project. Of the

3,500 acres of tomatoes which were produced in the Imperial Valley, approximately 80% of these were produced for shipment while only 20% were produced for canning. Most of the tomatoes produced in the Imperial Valley are grown in frost free areas. Even in such areas the plants are given protection by setting willows, lined with paper, on the north side of the rows to give protection from the cold and winds. College Specialists do recommend the growing of such tomatoes as might be consumed in the camps.

Garden Peas

The feasibility of producing garden peas on the Parker project was also questioned by practically all specialists that were contacted. Fall and Spring plantings have been tried out in many sections of Arizona and while the Fall planted crops seem to do the best, there are several factors which tend to limit the yields. In the Imperial Valley of California, in 1932, 1141 cars were shipped from the Fall planted crop while only 41 cars were shipped from the Spring crop. The one problem is the difficulty of securing germination, as it is extremely difficult to get peas to germinate during hot weather. Another problem seems to be that of controlling the mildew and aphids which give trouble to the Fall grown crop. Spring plantings do not seem to do well on account

of the heat. The Iaxatonia and the Dwarf Telephone varieties seem to do the best.

Green Corn

Some green corn is grown for shipment in some scattered areas of the Imperial Valley but the acreage planted to this crop in the southern part of Arizona is very small. One of the big problems seems to be that of getting the corn to properly fertilize the grain of the ear where the crop is planted in the Spring. The corn ear worm is also a factor in holding down acreage of this crop.

DEHYDRATION OF VEGETABLES

Some work has been done at the Indian School at Phoenix on the dehydration of fruits, meats and vegetables. The results so far seem to be rather encouraging and the product seems to be very palatable and of excellent quality. With the shortage of tin cans, it would seem worth while to investigate the possibilities of setting up a dehydration plant here on the project to supply vegetables for shipment.

FARM CROPS

LONG STAPLE COTTON

The growing of a large acreage of long staple cotton on the project would seem entirely feasible and practical. The crop is one which is well adapted to local conditions and it

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is a crop which the Government is urging farmers to produce on increased acreages. The growing of this crop will require a great deal of hand labor, yet it is one of the most dependable crops grown and one which will yield satisfactory returns per acre in cash. It is on account of the smaller yields, the higher labor cost of picking and the extra expense of ginning, coupled with the fact that many localities do not have gins for the ginning of this variety of cotton, that has been responsible for the comparatively small acreage which has been planted to this variety of cotton. The Arizona Bulletin No. 135 "Field Experiments with Cotton", states "The prices paid for Pima cotton have been more than enough to overcome the lower yields and extra picking and ginning expenses every year from 1923 to 1938, with one exception of 1923, when Pima yields were exceptionally low."

Farmers have been growing some of the long staple cotton on the project near Parker but have had to have this cotton hauled to Peoria, near Phoenix, for ginning, a distance of about 150 miles. The expense of hauling the crop such a long distance to a gin has been a very dominant factor in holding down the acreage planted to this crop. If a large acreage is devoted to the growing of long staple cotton the Parker project, either the Government or some private

enterprise should establish a gin at Parker, or on the project.

FLAX SEED PRODUCTION

The acreage devoted to the growing of flax in the Imperial Valley has increased much faster than that of most any crop during the past ten years (approximately 400%). Flax seed yields for the State of California are about 300% of those for the entire United States. Flax is a crop which can be handled with ordinary farm machinery which would be used for the growing of small grains. It can be grown on large acreages; it is a crop which the Government is urging farmers to grow in larger quantities and it yields a satisfactory cash return where properly handled. The average yield for the State of California is something over 20 bushels per acre and the average gross return per bushel, calculated for the years of 1935 to 1939 was \$1.91 per bushel. Including the value of the straw the gross return was \$2.12 per bushel.

While the production of flax will not require the amount of hand labor to grow it as does cotton, or some other crops, yet there seems to be a demand for flax seed products and as a stable cash crop it can likely be recommended to be planted on a comparatively large acreage.

GUAYULE

Even though the growing of this crop is in the experimental stages and the locations where it can be successfully

grown will likely be limited to comparatively small areas, it would seem wise to watch the development of this crop with the idea of introducing an acreage on the project. Experimental plantings have already been made at Parker, Blythe, and Yuma. These plantings were made during the early Spring of 1942.

IRISH POTATOES

The possibility of producing sufficient Irish potatoes to care for the needs of the occupants of the camps appears to be very promising. Potatoes are being grown successfully both in the Imperial Valley of California and in the Salt River Valley of Arizona. There are three large producers in the Salt River Valley who have a total acreage of approximately 800 acres and who report yields from the Spring crop of 200 bags or more per acre. Extreme care has to be exercised in the selection of seed and in the handling of the crop during the growing period. Bliss Triumph, the White Rose, Katahdins and Pomtiacs seem to be giving the best results.

Livestock Production

HOG PRODUCTION

Since the camp will be occupied some time in advance of the time that crops can be planted, it would seem advisable to purchase sufficient feeder hogs to consume the garbage

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coming from the various mess halls. Three hundred to five hundred feeder pigs should be purchased as soon as possible for this purpose. Those in charge of the mess halls estimated that each of the 70 kitchens will produce approximately 45 gallons of garbage daily. This garbage will have to be supplemented with grains and other feeds. It would also appear advisable to produce all the pork on the project which will be consumed. Basing the estimated need on one half the average consumption for the United States, the inhabitants of the camps will consume approximately 4000 hogs, averaging 200 pounds each year. To produce this number of feeder pigs will require about 325 brood sows, producing 2 litters each year.

BREED

The animal husbandry department of the University of Arizona recommends the use of Duroc Jersey boars on Berkshire, Poland China or some other breed of sows, but state that the feeding of straight breeds will prove successful. To grow hogs successfully in localities where the temperature runs as high as here at Parker, ample shade and water should be provided. To maintain sanitary conditions in the hog lot, it is advisable to move the lot at rather frequent intervals. A two wire electric fence for keeping the hogs confined in the pastures will work very successfully. Alfalfa pasture supplemented with farm grown grains will provide all the feed needed.

DAIRY PRODUCTION

Milk in some form will have to be furnished to the occupants of the camps especially to the children. If milk is produced on the project to care for the needs of 20,000 people, a dairy herd of approximately 700 to 800 cows will have to be established. The Holstein breed would be best suited for such an enterprise. The setting up of such a herd would run into a sizeable amount of money. It is quite possible that the cost of such animals will be from \$150.00 to \$200.00 per cow. The operation of a dairy herd of 700 cows would call for the establishing of at least 700 acres of pasture. Most of this should be alfalfa but some Sudan grass could be planted to carry the herd during the extreme heat of the summer when the alfalfa is permitted to go dormant by withholding the irrigation water.

In addition to the acreage of pasture land there would be a need for an additional acreage planted to small grains (approximately 500 acres) to furnish pasture in winter and also to furnish the grain supplements to be fed the dairy herd.

Though considerable work has been done on dairy pasture mixtures, dairy specialists still recommend the alfalfa. There is considerable difference of opinion even among college men as to the best variety to plant. At one station the Hairy

Peruvian is preferred, while at another the Chilean is recommended. It would seem that the planting of either of these two varieties would give results here at Parker or the planting of a divided acreage of the two. The one objection to the use of alfalfa as a pasture crop is the hazard from bloat. Some dairymen report little trouble but others report rather heavy losses at certain seasons of the year. The planting of a few pounds of barley or other small grains in the hay in the Fall, will reduce the bloat hazard of the alfalfa pasture. Too much grain planted with the alfalfa tends to stunt the plants and weaken the stand:

The alfalfa pasture will not provide much growth during the two hottest months of the summer, nor during the coldest part of the winter. Sudan grass seeded in the Spring will carry the herd during the hot weather at which time the alfalfa should be allowed to go dormant and not be irrigated. This will keep down grass and prolong the life of the stand. Small grains, to be harvested, should be planted in the Fall of the year to provide winter pasture for the herd during the winter months. The harvested grain will constitute the grain supplement to be fed to the herd.

ENSILAGE

Though many dairymen make a practice of growing corn or sorghums for ensilage to carry the dairy herd during times of

poor pasture, the Extension Dairy Department of the University of Arizona recommends the growing of all year pasture crops, supplemented with the feeding of alfalfa hay and grains. If ensilage is grown it would be well to plant Mexican June corn or Atlas sorgho as these give about the largest tonnage per acre of any of the corn or sorghum varieties. Trench silos will prove entirely satisfactory as they are easily constructed and represent little expense.

BEEF PRODUCTION

Large quantities of beef will be needed to supply the occupants of the camps. Many farmers in the and Salt River Valleys are carrying on feeding operations on a big scale by pasturing the cattle on alfalfa pasture and by feeding supplemental feeds such as alfalfa, ensilage or grains. It will likely require at least 1,500 steers to produce the beef that will be required, yearly, to feed the people of the camps. To produce feed to carry this number of steers for a six months period will probably prove the most satisfactory in the production of beef but this should be supplemented with a liberal quantity of ensilage. Hegari or some other grain sorghum which produces a large percentage of matured grain should be planted as a silage crop.

POULTRY PRODUCTION

It will require a flock of approximately 30,000 chickens to produce eggs for 20,000 people allowing only three eggs per

person per week. This estimate is based on an average production per bird of 150 eggs per year. The setting up of such a poultry flock would not entail so much expense as would the establishment of a dairy herd to care for the needs of the camps. By following the no poultry house plan, as is being used at the U.S.D.A. South West Poultry Station at Glendale, Arizona, birds can be grown and handled with a minimum amount of expense. Chicks there are brooded in tents for a few weeks after which they are put into fenced lots where nothing but shade is provided to protect them from the weather. One flock at this station has only a Mulberry tree to furnish the shade. In the other pens a simple type of a shed, about ten feet square, and light enough to be moved by 4 men, is constructed, the roofing being of palm leaves or of some other native materials. One flock on the farm is kept in an air-conditioned house but records show that the birds in the open are producing as many eggs per year as are the ones where the temperature never is allowed to go above 80 degrees. The scratch feeds are all produced on the farm as is the majority of the mash. Fish meal or meat scrap is purchased to supply the added protein. The station estimated that one man can care for as many as 5,000 birds where this method is used. Flocks are limited to about 100 birds. The Extension Poultryman

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of the Arizona Extension Service recommends the growing of Leg-horns for egg production, but where meat is also an important item he suggests one of the dual purpose breed such as the Rhode Island Reds or the Rocks.

No recommendations are being made relative to the growing of fruits of different kinds. It is only natural to suppose that most of the fruits, berry fruits, stone fruits, figs, dates, grapes and other fruits grown in the Imperial or Salt River Valleys will do equally well on the Parker project.

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