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TEN TEXAS TOPICS

—BY—

TEXAS TILLERS AND TOILERS



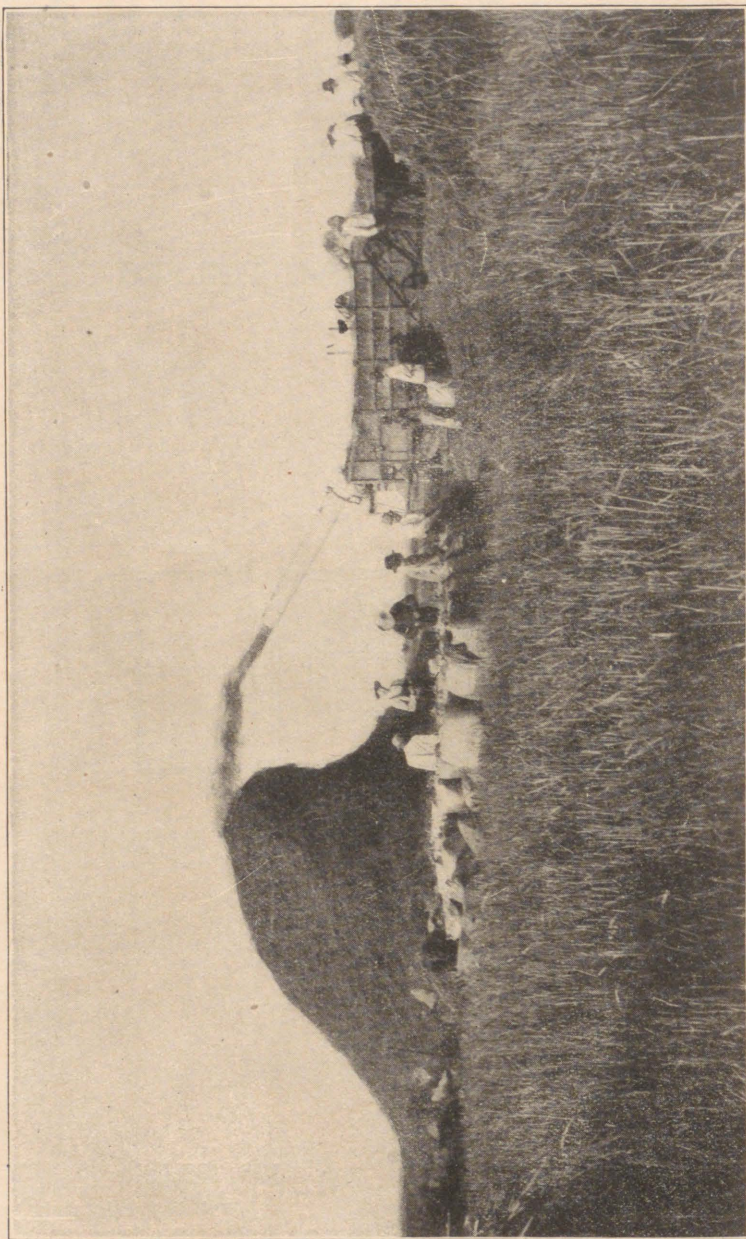
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Threshing Rice on Line of Southern Pacific—Sunset Route

RICE.

By DR. S. A. KNAPP, LAKE CHARLES, LA.

Director of U. S. Government Experiment Stations in the South.

The invasion of Texas by the industrial armies, who sought to transform her coast prairies from the wild range, where countless herds grazed at will, into fields of waving grain, interspersed with homes of comfort and culture, has been so sudden, so unexpected, and upon such an immense scale, that it requires considerable study to comprehend it.

Some rice was cultivated in Texas prior to its annexation to the United States. In 1850 there were about 110 acres of rice in Texas. For some years the industry declined, and at the expiration of forty years the increase was slight. The total in 1890 was about 135 acres. During the subsequent ten years the increase was relatively large, reporting 8,711 acres in rice in the census of 1900. That this was due almost entirely to the great impetus given to the rice industry by the settlement of Southwest Louisiana and the new machine methods there introduced is shown by the localities in which the increase occurred. Of the 8,711 acres reported in Texas in the census of 1900, 8,206 were in Orange and Jefferson Counties, which are the first counties traversed by the Southern Pacific Railroad in its westward course from Louisiana. The last census covered the season of 1899. From this date to the present (1903) the increase in the rice industry in Texas has been phenomenal. Conservative estimates place the area planted in 1903 at 200,000 to 220,000 acres, not concentrated in a few counties, but distributed along the Gulf Coast from the Sabine River to the Rio Grande and eighty miles inland.

Throughout this vast area, nearly as large as the state of Indiana, rice is hardy, luxuriant, and yields large crops, with a grain of superior quality. Fields differ in yield and quality, but it is due to the farmer and not to the land nor the climate. The farmer either fails in thorough planting and management of the crop, or in irrigating properly. Where everything is thoroughly done the crop results are satisfactory, from Port Arthur to Brownsville. Several causes contribute to bring about this marvelous development.

1. The deep-soiled, rich, clay loam lands of the Texas Coast are admirably adapted to rice. They are retentive of

water and very fertile. The cattlemen had supposed that they were worthless for any purpose but stock-raising, but prominent Texas farmers tested them for the production of rice, and ascertained their adaptation and value.

2. The improved farm machinery, which the wheat fields of the Northwestern states had perfected, and which in the last decade had been adjusted to rice culture in Louisiana, was found to be admirably suited to the rice lands of Texas.

3. In 1898 the United States Department of Agriculture, by direction of its Secretary, the Hon. James Wilson, took efficient measures to perfect and nationalize the rice industry.

It should be borne in mind that the production of rice in all Oriental countries is a hand process, where the planting is much like the raising of cabbage, except the flooding. The improved Louisiana methods transformed rice production into a machine process, similar to the production of wheat. The gang-plow, the disk-harrow, the smoothing-harrow, the forced feed-drill and the twine binder, used with such marvelous results in the wheat fields of the Northwest, find equal opportunity in the rice fields of the Gulf Coast. The shocking, the stacking and the threshing of rice are similar to the methods used for wheat.

SELECTING A RICE FARM.

Any farmer who knows good wheat land will not fail in selecting a rice farm, unless he omits to examine the subsoil. Rice lands, when machinery is used, must possess a clay subsoil sufficiently tenacious to hold water, and firm enough to sustain the machinery used in harvesting. The land must be susceptible of good drainage, and the clay must be near enough to the surface to dry out in a few days after the water is turned off; or, in case of a strong clay loam as in Texas, the soil must readily give up its water. The Coast lands of Texas are almost universally good rice lands.

WATER FOR IRRIGATION.

A second point in the selection of a rice farm is water. It would be as idle to talk about raising rice without water as fish. Fresh water must be obtainable, and in large quantities. It requires 24 to 30 inches of water to supply soil absorption, evaporation and irrigation during the growing period of rice, hence the amount necessary to be pumped depends on the rainfall during that time. Some seasons the rains are almost sufficient. Some farms are situated a

little lower than the adjacent lands, and use is made of the surplus water that flows from them. For these reasons it is difficult to give general estimates of the cost of irrigating rice farms. It may require the full amount of water, and it may require very little; the range of cost is from \$1.50 to \$6.00 per acre. Occasionally it may fall below, and rarely it may go above, depending upon rainfall, character and location of land, method of pumping, height of lift, etc.

DRAINAGE.

A third point in selecting a rice farm is drainage. Upon the prompt removal of water from the rice field depends the plowing, the sowing and the harvesting at the proper time, and frequently the sowing of the crops after harvesting.

In a fourth consideration may be grouped fuel supply, railroad facilities, cost of improvement, distance to markets, churches, schools, general environment, etc.

All things considered, the Gulf Coast rice lands between New Orleans, Louisiana, and Brownsville, Texas, have advantages superior to any other in the world. The quality of the lands are of a high order. Give them good tillage and care, and they will produce as large crops of rice as can be grown on the most fertile acres of any country.

They are marvelously supplied with lakes and rivers, which furnish water for irrigation and transportation; the substrata of water veins furnish abundant water. Underneath the surface of the central portion of this territory is an unlimited supply of fuel oil, easily accessible and close to transportation. These rice lands are treeless, and therefore ready for immediate use. Bordering them on the north are vast tracts of yellow pine, furnishing an unlimited supply of the best building material at very moderate rates. Transportation is low, because the railroad facilities are excellent, and all sections are but a short distance from the gulf. The climate is genial and healthful. The majority of the settlers are sturdy, progressive Americans, who will have good highways, schools and churches, with such facilities for rapid communication as meet the requirements of modern business and belong to a high civilization.

COST PER ACRE OF RAISING RICE.

As previously stated, cost varies so with conditions that it is difficult to make careful estimates, but we can approximate. First, we will confine our estimates to land on an

irrigating canal. Unimproved prairie land along good canals is selling at from \$20 to \$30 per acre.

200 acres at an average of \$25 per acre would cost.	\$5,000 00
One house, a barn, granary and a tool room.	1,800 00
Three miles of four-wire fence.	375 00
Teams and tools to handle 200 acres.	2,000 00
Incidental investments	125 00

Total permanent investment.....\$9,300 00

Current investment for the crop:

Seed rice for 200 acres, 66 2-3 barrels.	\$ 333 33
Cost of breaking, preparing land, planting, harvesting and threshing rice crop.	1,600 00
2,000 sacks, 9c each.	180 00
Hauling to market, on an average.	200 00
Incidental and expenses not estimated.	100 00

Total current investment.....\$2,413 33

Yield at ten barrels per acre, 2,000 barrels, one-fourth of which is allowed for the use of water from a canal, leaving 1,500 barrels net at \$3 per barrel\$4,500 00

Deducting cost of producing the crop, \$2,413.33, and we have left \$2,086.66, or a little over 20 per cent on the permanent investment. Many rice farmers have done better than this the past year. Our estimates for the cost of the farm and improvements are rather high, and the allowance for raising the crop is very liberal. We have made no separate allowance for the maintenance of teams, because it is included in the estimated cost of raising the crop. If a man is a good farmer, he will average not less than ten barrels per acre. Upon these estimates the only chance for loss is the possibility of a lower price for rice than \$3 per barrel; upon the other hand, there are some items in this estimate upon which he ought to improve. The cost of improvements could be reduced by his supervision and work. The labor of making a crop could be placed at a nominal sum if the farmer is prepared to do his own work, and under good farm management the number of barrels of rice per acre should be increased to twelve or fifteen. In addition to the rice a winter crop of wheat, rye, barley and oats can be grown on a portion of the land, and harvested in time to make a crop of rice.

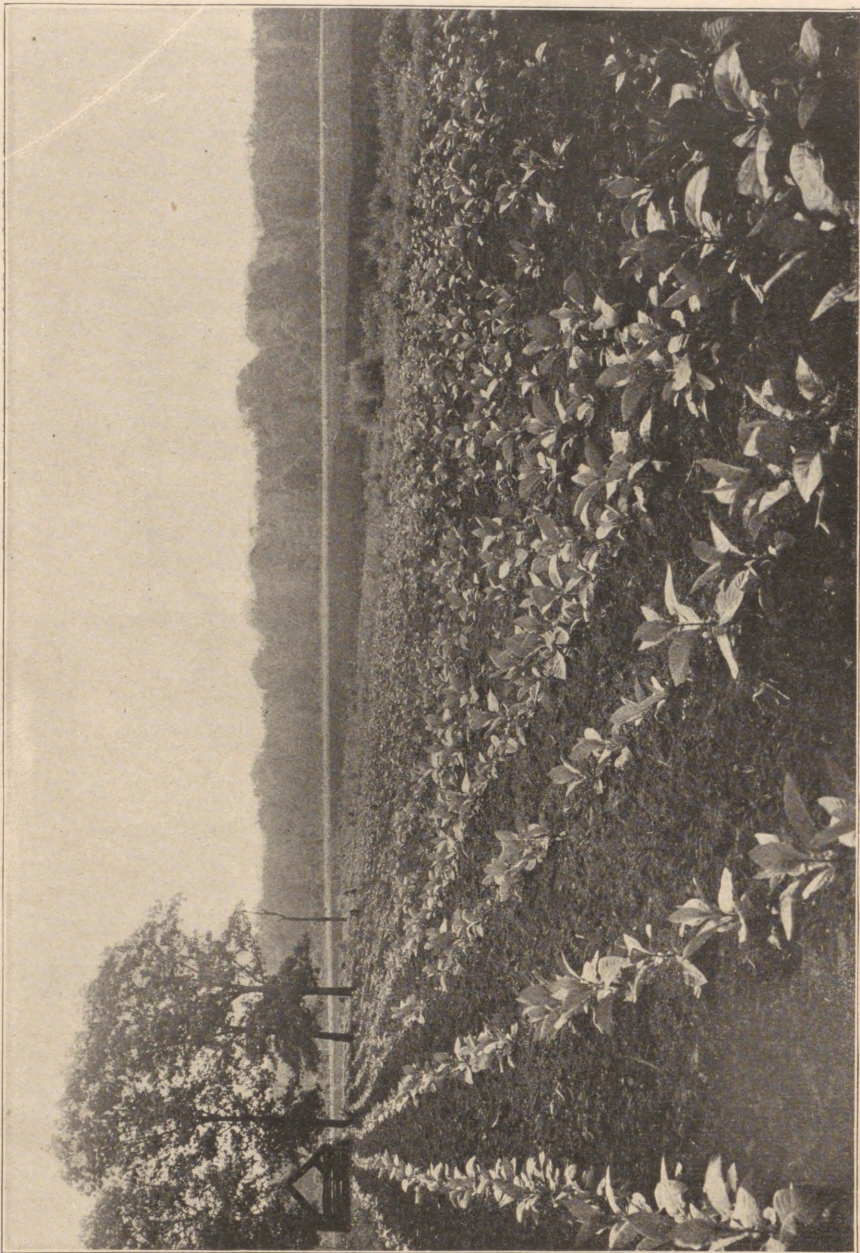
DEEP WELLS.

Lands irrigated by wells have their special problems. They can be bought, without improvements, for from \$10 to \$15 per acre. There is some added cost for improvements over lands on a canal; on the other hand, the owner of the farm controls the water, and quite a portion of the increased cost for improvements is offset by the lower price at which the unimproved lands are bought. Many farmers prefer the well system for irrigation.

One of the serious detriments to profitable farming in any country lies in occasional crop failures or partial failures. On an average, farmers in most countries will make a maximum crop once in five years, and one minimum crop; the other three crops range somewhere between these extremes. If a farmer could be sure of a full crop every year farming would be one of the most profitable lines of business in the United States.

This is precisely the position of the rice farmer. If he has plenty of water he can make a good crop every year. For this reason rice lands in Europe and Asia are valued much higher than other farm lands.

The genial climate, the abundant rainfall, the numerous navigable rivers, the proximity to the Gulf of Mexico, the network of grand railways, the cheap fuel and building material and the wealth of soil will make the Coast rice lands of Texas and Louisiana within a brief period the most valuable in the United States.



An East Texas Tobacco Field, on Line of the SOUTHERN PACIFIC

TOBACCO

By PROF. L. H. SHELFER, NACOGDOCHES, TEX.

Tobacco Expert in Charge of U. S. Government Experiment Station for Eastern Texas. (Recently Resigned.)

Tobacco is a widely distributed plant, in relation to both soil and climate. In fact, the weed will grow from the extreme North, where it is too cold to grow corn and many other crops, to the torrid zone, where none but the most tropical plants can thrive. A luxuriant growth of tobacco can be made upon almost any soil. But seldom do we find a soil and climate that produce a leaf possessing the desirable qualities that give it a value.

For generations mankind has been using the weed, and the taste has become cultivated to using tobacco possessing the desired flavor. Consequently, only tobacco grown in the favorable localities is in demand. As the islands of Sumatra and Cuba have always produced the best leaf, large amounts have been imported from these places; and now we annually pay about \$14,000,000 for filler tobacco from the island of Cuba, to say nothing of the enormous quantity of wrapper imported from both Sumatra and Cuba. Many attempts have been made and are still being made by the government and by private individuals to produce tobacco in the United States that could be substituted for these imported goods. For nearly two years I have been making investigations to determine whether a high grade of Cuban tobacco could be grown in the state of Texas. The first year of the work was devoted largely to an examination and rehandling of several crops of tobacco in various parts of the state. These crops had been grown by inexperienced persons, and often upon soil not adapted to the weed, and had also been stored in improper condition for years. It was very discouraging to see the quality of most of this tobacco; however, small quantities of a very desirable leaf were obtained, especially at Woodville, where a sample was secured that possessed the true Cuban aroma. These small quantities of desirable leaf served as a clew to trace out the proper soil, and much time was then devoted to examining the numerous soils of East Texas.

In July, 1902, after a consultation with Colonel S. F. B. Morse, then Assistant Passenger Traffic Manager of the Southern Pacific Railroad, I was invited to accompany him

on a tour of East Texas. We proceeded on a special train, making numerous stops and examining the soil often. Upon our arrival at Nacogdoches I was amazed, for here I saw the soil for which I had been looking. I made no comment upon the fact, however, until the following September, when, during a consultation with the other experts of the Department of Agriculture at Washington, I reported my discovery, which was considered of such importance that I was instructed to proceed at once to Cuba, visit the best tobacco farms, and compare the soils with those I had seen in Texas. Upon seeing the soils that produce the best grades of tobacco, I found them similar in appearance to the Texas soils, and at once sent samples to the laboratory for analysis. Then it was discovered that in composition they were similar. When these facts became known, the Department of Agriculture sent a party of soil experts to thoroughly examine the localities where it was thought these soils existed, making maps showing the exact area covered by them. Small areas of the desired soil were found in various places, but only in a few favored counties was there found a sufficient quantity to insure the development of a tobacco industry.

When the facts were learned, I recommended to the department to grow test crops upon not only the desirable soils of these localities, but upon adjoining soils, and also in various parts of the State that might produce a desirable type of leaf.

The object of these numerous tests of the soil was to thoroughly demonstrate the fact that Cuban tobacco could be produced here, and also to save the farmers from future financial loss, by proving the fact that certain soils produce a very poor leaf. In the test crops only two acres of the very best quality of land were planted, yielding about 800 pounds per acre. This crop was planted in three and one-half foot rows, and fifteen to eighteen inches apart in the drill. We have learned from this year's experience that a better leaf would be made by planting in three foot rows, and only eight inches apart in the drill, also producing a heavier yield.

The soil which has been proven most desirable for the weed is what is known as the red chocolate, and is naturally very rich. It is underlaid by the stiff red clay, which in many places grades into the green sand marl. This marl underlies all true areas of this land, and is the material from which the soil is formed. While this land is found in sufficiently large quantity to insure the development of large

tobacco industries, still it is not to be found in unlimited quantity.

The quality of tobacco grown on this soil improves for several years after the land is put in cultivation, as some of our best quality grew on land that had been cultivated for nearly a century. This is due to the fact that the fresh land is inclined to make a heavy, rank growth, possessing poor flavor and body.

Besides this stiff red land, we have two types of sandy land which will produce leaf of commercial value. These soils are the gray sand underlaid with red clay, and a dark gray sandy loam. Although these two soils will not produce as high priced a leaf as the chocolate land, still it may prove as profitable to the grower. The fact that on these different soils can be grown the several grades of Cuban tobacco will tend to strengthen the Texas tobacco market, as the manufacturer can produce the many grades and blends so necessary for him to have to suit the various tastes of the smoker.

The climatic conditions existing in these localities are similar to those of the Cuban district. In both cases the best tobacco grows in ridges, with a low, flat country separating them from the gulf. In Texas these ridges range from fifty to one hundred and fifty miles from the gulf, just interior to the rice belt, and receiving the full benefit of the gulf clouds, fogs and dews. A similar range of temperature is found in this part of Texas during the tobacco growing season, from March to June, to that of Cuba during the growing season there, from October to January.

The topography of the red land country consists of a series of ridges and gently rolling lands, and comparatively narrow valleys. The beautiful diversified surface of this country is the result of unequal weathering and erosions of the different geological formations since this portion of Texas was uplifted from the Gulf of Mexico. The country is well watered by numerous streams, which furnish excellent drainage system for the soil, and which could also be utilized for water power and irrigation to great advantage.

The rich chocolate soil, which is destined to become noted as tobacco land, is formed by the weathering of a green sand marl. This marl is often found in an unweathered condition where it outcrops on the hillsides. At such places it could easily be mined as a fertilizer. The analysis shows that its value for this purpose would well repay the cost.

The fact that large beds of this marl underlay all true areas of this soil, and that the soil is derived directly from this material, insures an inexhaustible soil. Instances are

known of fields that have been constantly cultivated for many years with no fertilizer, that are now very productive. This is something unheard of before, except in rich river lands.

As cigar leaf is the most difficult variety of tobacco to grow and handle, it might be well to mention some of the vital points, especially where the Texas growers have made mistakes.

Much confusion has been caused by some planters getting the wrong seed, some even planting the varieties intended for chewing, cigarette, snuff, etc. For these various purposes different varieties of tobacco are used, and one can not be substituted for another. Neither can any one variety be successfully handled in the manner adapted to some other variety.

The planting of the wrong varieties by some of our Texas farmers, and the attempt to put the leaf through the processes of curing intended for cigar leaf, could only result in a worthless product.

Another serious mistake has been made in every attempt to produce cigar leaf in Texas by improper sweating or fermenting.

This process is a trade unto itself, and should never be attempted by the farmer. The practice, so far, in this state has been for each farmer to prepare his own leaf for market, and the result has been that no uniformity existed in the flavor, as no two crops received the same treatment.

This fact is responsible for the present reputation of Texas tobacco, namely, that it possesses some of fine quality, but is not uniform.

This and other mistakes have been made in all attempts to produce tobacco in Texas, but being now perfected and corrected, nothing stands in the way of building up a large and profitable industry.

The development of tobacco growing on a commercial scale means the development also of other industries that go hand in hand with tobacco. There will be large packing houses fermenting, sorting and packing the leaf, where the buyers will prepare their goods for market, and where the cigar manufacturer comes for his raw material. There will be cigar factories for turning out the finished product. There will be factories for making cigar boxes, as we have abundant supply of desirable timber for this purpose. Not only will these numerous industries employ a great many people, but

the farmer himself will employ more labor, for no crop product requires more labor, especially skilled labor, in its production than tobacco.

Where so many people are working for wages the farmer finds his best market for truck and dairy produce, consequently he is encouraged to diversify his crops, which is advantageous to any community of farmers. As the tobacco crop occupies the land only about ten weeks, the farmer has much time left to use both his labor and his soil for other crops, and here again is another chance for diversifying.

For fertilizer, horse stable manure is universally considered the best for tobacco. It is shipped in large quantities from our cities to the tobacco sections, and is even shipped to Cuba for use on the tobacco farms there. Numerous brands of commercial fertilizers are prepared for tobacco, and many of the ingredients of the same are applied unmixed by the farmers who have studied out the combinations best adapted to their individual fields. As only a few fertilizers have been introduced into Texas, and the farmers being comparatively ignorant regarding them and the methods of application, it is not advisable to recommend their use to any great extent at present, especially on certain very rich soils, where but little is needed. It would be well to remember, however, that the "burn," which is one of the important qualities of the leaf, can be greatly improved by an application of sulphate of potash. Care must be taken to avoid the muriate, or chloride, as this is injurious.

Plant beds should be prepared in January. Select a gray sandy loam, fresh land preferred, as weeds will give less trouble. It is advisable to locate the beds near running water for convenience during drouth, being careful to avoid land that overflows. Thoroughly burn the bed with brush and dry wood to destroy weed seeds and to pulverize and warm the soil. Rake off the trash of all kinds, and, with a hoe, stir the soil about two inches deep. Mix the seed with ashes or sand to prevent sowing too thick, putting a tablespoonful to fifty square yards of bed. If rain at once follows, or the bed can be sprayed, no other covering of the bed is needed. If the bed be left dry, roll with a small roller, or tramp in with the feet, cover the bed with cheesecloth, supported about fifteen inches above the ground.

The cultivation of tobacco is very simple, and any good farmer can work a crop after it is once properly set. It is important to have the soil broken deeply and finely pulverized before setting begins.

A shade or tent of cheesecloth is used for the purpose of growing wrapper. This tent raises the temperature and increases the humidity, producing an artificial climate similar to that of the island of Sumatra. This warm, moist atmosphere produces a very thin leaf, but, when grown on proper soil, possesses excellent body. As a pound of this leaf will wrap many more cigars than a pound of sun-grown leaf, it is much more valuable, and we can grow as many in not more, pounds per acre under this tent.

To erect this tent, posts are set in rows fifteen feet apart both ways. Stringers are run across on top of them in one direction, and wire in the other direction. These posts should be nine feet out of the ground, to allow plenty of room for working and for growth of the weed. Common cheesecloth can be used, sewing four yards together for convenience. A thin canvas which is woven twenty-four feet wide, especially for this purpose, is best, and has the advantage of being corded to give it strength. The cloth is sewed to the wires and tacked on to the stringers. The sides of the tent are also walled up with the same material. This tent, when properly built, will be close enough to keep out all insects.

Tobacco grown under these tents is worth from fifty cents to three dollars per pound. An acre should produce at least 800 pounds, worth an average of \$1.50 per pound. The cost of erecting this tent is about \$350 per acre.

Harvesting tobacco requires skill and care. The leaf must be taken at just the right stage of ripeness, as both green and too ripe leaves are inferior. Filler is usually cut, taking the entire stalk at one time, while wrappers are pruned, taking each leaf as it ripens. Care must be taken to prevent tearing or bruising the leaf, or getting dirt on it. Filler tobacco is strung on four-foot lath, putting six to ten stalks, according to size, and hang the lath about eight inches apart on the poles in the barn. Wrappers are strung on cord attached to similar lath; each cord holds about thirty leaves.

Curing must be watched carefully. If the leaf cures too rapidly the fiber will be injured, making a brittle leaf. If, on the other hand, it proceeds too slowly, moulds will set up and spoil the leaf. Consequently, it is necessary in dry weather to open the barn at night and allow the leaf to soften, closing the ventilators during the day to prevent extreme drying. Just the opposite must be done in wet weather, closing the ventilators at night and opening them during the day. It is sometimes necessary to build fires on the

floor of the barn during a wet spell to keep out the mould.

The fact that some skill and care are required to properly produce a crop of tobacco makes the business a prosperous one, for, as a rule, the trade or profession which is so simple that no skill or learning is required for a successful practice seldom brings much profit.

ALFALFA.

By J. H. CONNELL, DALLAS, TEX.

Associate Editor "Texas Farm and Ranch," and President of the Texas Farmers' Congress.

With the exception of cotton, there is no one plant that will thrive in so many counties in Texas as will alfalfa. Its penetrating roots, reaching to a depth of ten or twenty feet, seem specially made for the purpose of probing the dry and porous soils of Texas. The valuable hay growing at the rate of six tons to the acre during a single season gives eloquent testimony of Texas sun and Texas rain when expended upon this plant of continuous growth. The March winds that herald the coming of spring find that alfalfa is ahead of them with tender shoot and verdant leaf, covering the moist soils before the native grass and weeds shoot forth. The frosts of early winter leave alfalfa in possession, with only a leaf chilled here and there, and without discouragement to the live stock that graze across verdant pastures in December.

Without irrigation alfalfa grows apace on all of the fertile lands of Texas. Upon the uplands three tons per acre are secured with certainty. On the lowlands as much as six tons are had during the most favorable seasons. The yield per acre depends somewhat upon the treatment of the crop by the farmer. If the meadows are grazed as well as mowed, the yield of hay will of course be diminished. Winter grazing is most harmful to the yield of hay. On the other hand, the most productive system consists in keeping stock off the fields at all seasons, and cultivating the land with harrow between mowings, in order that the bare and exposed

soil may not have all of its moisture driven from it during hot weather.

The influence of cultivation upon the alfalfa crop is remarkable, but without cultivation or irrigation the yield of hay per acre upon fairly fertile soils exceeds the crops grown upon the irrigated lands of Colorado and Utah. This fact is rendered possible by the long and favorable growing seasons in this lower latitude.

SOME TEXAS SOILS.

Rich alluvial lands lying along the river valleys and the creeks are the best suited to alfalfa, but the heavy black prairies and the chocolate loams of the uplands will maintain alfalfa for many years without re-seeding, and without a shrinkage in the annual crop of hay secured from such soils. The river and valley lands have a compensating disadvantage in that they sometimes overflow to such an extent as to injure the stand, necessitating replanting in spots. In this respect, however, alfalfa is not more sensitive than other crops. It will endure overflow quite as long as will corn or cotton. But we sometimes hear an expression of disappointment because it is not both a drouth-resisting and water-loving plant as well.

Any of the worn or light post oak soils of Texas will grow alfalfa profitably if a crop of cowpeas has been grown upon the land just before seeding the alfalfa. A light application of stable manure will have the same effect.

WHEN TO SOW.

Either fall or spring seeding is successful, provided one sows early enough in fall to permit the plants to harden before winter begins, or sows early enough in spring to permit the plants to harden before the hot summer sun of May and June draws out the surface moisture. September and October are the best months for fall seeding; March and April for spring seeding.

When alfalfa plants first come through the land and try to establish themselves they are very small and tender. At this time they need a good seed bed, moist, porous and cool. It is advisable, therefore, that the land should be plowed and re-plowed, and then harrowed more than once before the seed is put in the ground. Proper seeding is three-fourths of the battle in sowing alfalfa. If well sown, the crop will last for ten, twenty or thirty years. There is

one field of alfalfa in North Texas known to have been seeded thirty years ago, which is still producing hay. When the land has been thoroughly prepared by plowing it from six to fifteen inches deep, the deeper the better for stiff soils, and thoroughly harrowed and when a rain has settled the ground, plant your seed at the rate of fifteen or twenty pounds per acre, broadcasting them over the surface, and cover by harrowing in. If weeds begin to grow freely while the alfalfa is young, mow them down. This will not discourage alfalfa.

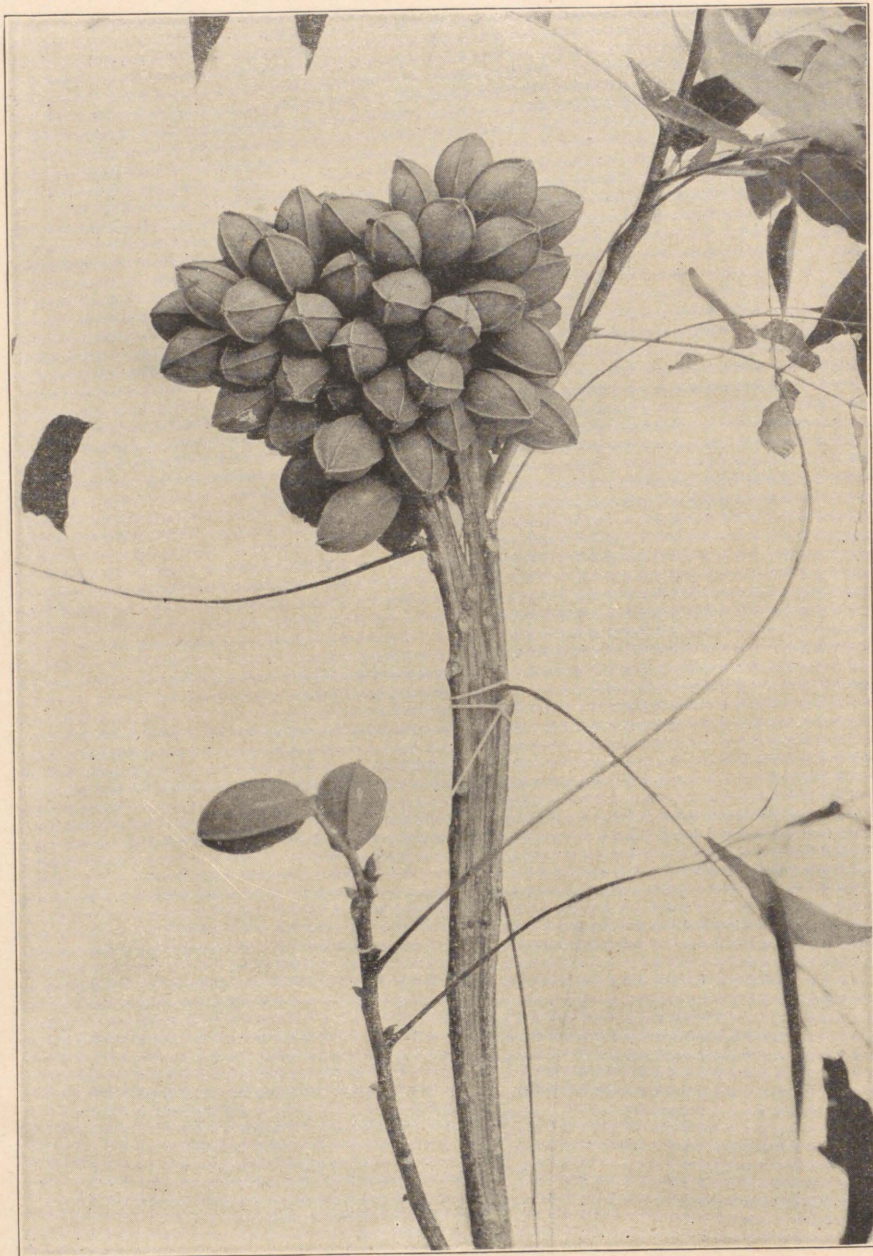
So many people are inclined to plant oats and wheat with alfalfa as a "nurse crop." This is a serious mistake. When grain has been taken off the land in late spring, the hot sun burns the tender alfalfa, the land loses its moisture quickly, and the stand of alfalfa disappears. Alfalfa is good enough to plant alone. It thrives best without a nurse crop, and will richly repay careful plowing and seeding at a seasonable time.

THE VALUE OF ALFALFA.

Work horses and mules have tilled good crops of corn and cotton through an entire spring and summer when fed upon alfalfa alone, without injury to such stock. The leaves are greedily eaten by poultry during the winter time, and the hay, when well cured, is relished by hogs, preventing any necessity for large amounts of grain feed, because of its nourishing qualities. Its purple blooms furnish the richest and most abundant supply of honey during the spring and fall. Its roots subsoil the land, draining it thoroughly in some cases, and furnishing it with a rich supply of fertilizing elements in all instances. The plant feeds upon the air in the soil, as well as upon the soil itself, and in this way stores large amounts of plant food in the land for its own use and for crops that come after it.

Would it not be a great blessing to grow alfalfa extensively upon the valley lands and the worn cotton uplands of Texas, restoring to such soils the plant food lost by years of exposure to washing rains and the repeated removal of crops which have been sold from the cotton plantations of Texas.

The rich soils of Texas will never grow poor if alfalfa is used from time to time as a staple crop in all portions of Texas.



Pecans—Grown by Albert Steves' San Antonio, Texas, on Line SOUTHERN PACIFIC

PECANS.

By MR. E. W. KIRKPATRICK, MCKINNEY, TEX.

President of the Texas Nurserymen's Association.

This nut belongs to the hickory family, and, in its fine thin shell forms, is, by best authorities, considered the finest nut known in commerce.

It is a natural growth of the Southern States, especially those states that touch the Gulf of Mexico.

Texas probably contains more wild trees than all other states combined.

The Texas nuts are famous for their fine quality, thinness of shell, and rich, delicately flavored meat.

Texas furnishes the principal supply of pecans in commerce, averaging from 200 cars to 500 cars annually.

The greater supply appears to come out over the Santa Fe and Southern Pacific railroads, and San Antonio and Brownwood appear to be the larger shipping points.

The future possibilities of improving the pecan and the increase of its supply are unlimited. The demands for this nut in its finer forms are most alluring, and princely fortunes await those who intelligently and persistently pursue this work.

The rich alluvial soil along all Southern streams is the natural home of the pecan. The highlands in many large areas are also well adapted to its growth.

The pecan appears well adapted to soil and climate throughout the Southern states, and as far north as Illinois and Ohio.

It remains in its wild forms without systematic cultivation and improvement, such as has been given the Persian walnuts, chestnuts, and other nuts of commerce.

When the pecan has been carefully improved by selecting the finer varieties, crossing and cultivating and improving for several generations, it will become the leading nut in the world's market.

It will command highest prices and will be used in various ways not now dreamed of. Its limited supply forbids its use in unlimited quantities in the manufacture of highest grade machine oils, butter and rare toilet soaps, and also confectionery and other edible and high priced articles. The oil, the meal and milk manufactured from the

pecan would enter largely in culinary uses and supplant many inferior articles which are now used. The improved pecan nut and its products would constitute the richest, purest and most wholesome of all foods.

The keeping qualities of the finer varieties of pecans when stored in dry air and uniform temperature are much in its favor. When trees are grown at proper distances and trained with low heads, the gathering becomes quite easy. When we have produced large quantities of uniform and thin shell nuts, cleaning machinery will be constructed to do the work at a very cheap rate compared with the present practice of hand cleaning.

The pecan can be grown in pasture or meadow land with no injury to the pasture or hog crop. Alfalfa, Bermuda or Johnson grass grows well under the large trees without injury to grass or to the trees.

The trees should be well established first, and then there is no danger of other plants preying upon them.

Pecan growing and live stock farming supplement each other without any additional investment in land.

The model live stock farm in Texas is set with fine grafted paper shell pecan trees, and also to alfalfa and other grasses—part being used for pasture and remainder hogs, thus growing two crops simultaneously upon the same land. The alfalfa will grow the cheapest and finest pork, beef, milk, butter, cheese, honey, fowls, horses, mules, sheep and goats. While the pecan and its manufactured products will furnish the richest, finest and most natural food for mankind.

If the finest and most prolific varieties of pecans are grown, the product of the trees will be more valuable than all of the other crops combined.

Wild trees of the finer types are producing annual crops which will sell for \$25.00 to \$50.00 each at wholesale, whereas if the owner of these trees had sufficient quantity to attract buyers, or if the growers knew how to place these fine pecans on the market, they would often receive more than \$100.00 for the annual product of a single tree of these finer kinds.

The longevity of this tree gives guarantee to perpetuity in all investment, and this fact establishes the superiority of the pecan over all other fruit trees.

Once established, the pecan orchard remains for ages. Many wild trees, supposed to be 500 years of age, are constantly increasing in size and in fruitfulness. Those who delight in permanency, in building for the future, in leav-

ing landmarks to cheer and bless those who are to follow, will find most fascinating employment in planting and improving the pecan.

Mr. Burbank and other high horticultural authorities testify that the improved pecan is the most valuable of all nuts, and that Texas is the favored natural home of the pecan; that the walnuts, the chestnuts or any other nuts can never be competitors with the pecan.

This authority says that "the best and most profitable way of growing walnuts in California is that of cutting away the top of well established wild walnut trees and grafting or budding fine walnuts into the stumps of these wild trees." This same authority gives it as their opinion that the best way for quick and profitable results in Texas will be found by cutting away the tops of wild pecan trees and grafting or budding with the finer sorts.

But it is not a question of opinion longer. We have demonstration in many parts of this country showing both large and small trees converted by budding, and which are now paying the owners handsomely, and these trees are valued at more than \$100.00 each.

The growth of pecan trees in connection with alfalfa or other grass crops increases the fertility of the soil, builds it up and makes it more valuable continually, while the common method of destroying the trees and planting in cotton or grain crops decreases the fertility of the soil, and makes it valueless finally.

One system builds up the soil, the other destroys the soil. With the destruction of the soil goes the destruction of our race, our all.

The system that builds up our soil builds up our race, our institutions, our all.

One system leads to growth and perpetuation, the other to loss and obliteration.

The better system also leads to better annual returns than does the destructive system. The soil and seasons are more generous to those who replenish them than to those who despoil them.

All these statements are verified by the experience of all who are engaged in modern stock farming, or in dairying, as compared with those who raise crops which are sold direct to the market. These statements are also verified in the example of all nations and people who have destroyed the trees and grasses. These nations have dropped out, have vanished, just as we will vanish if we do not change the present destructive tendencies.

The selection of varieties and the methods of propagation of the pecan so as to secure quickest, surest and most remunerative returns are questions of much importance to those who are interested.

Many erroneous statements, misleading and unwarranted, have wide circulation and are a great detriment to the pecan growing business.

Those who wish to avoid disappointment might do well to remember that seeding pecans will not, with any certainty, reproduce themselves. The only way to obtain a uniform grade of pecan nuts, in quantity, is by budding or grafting.

The methods of doing this work are described minutely in government bulletins, in books and in agricultural papers; by making application to the pomological division of state or national government, information can be obtained. Those who have the energy and elements of success will need but little information, especially after they have visited and viewed the successful work of such men as Mr. Sam H. James, Mound, La.; Mr. C. Falkner, Waco, Texas, or Mr. E. E. Risien, San Saba, Texas.

The method of propagation of trees, the locations, the soils, etc., are all small questions as compared with the selection of varieties.

The standard of size, shape, color, quality and flavor, also the thinness of shell of nuts, is yet undetermined.

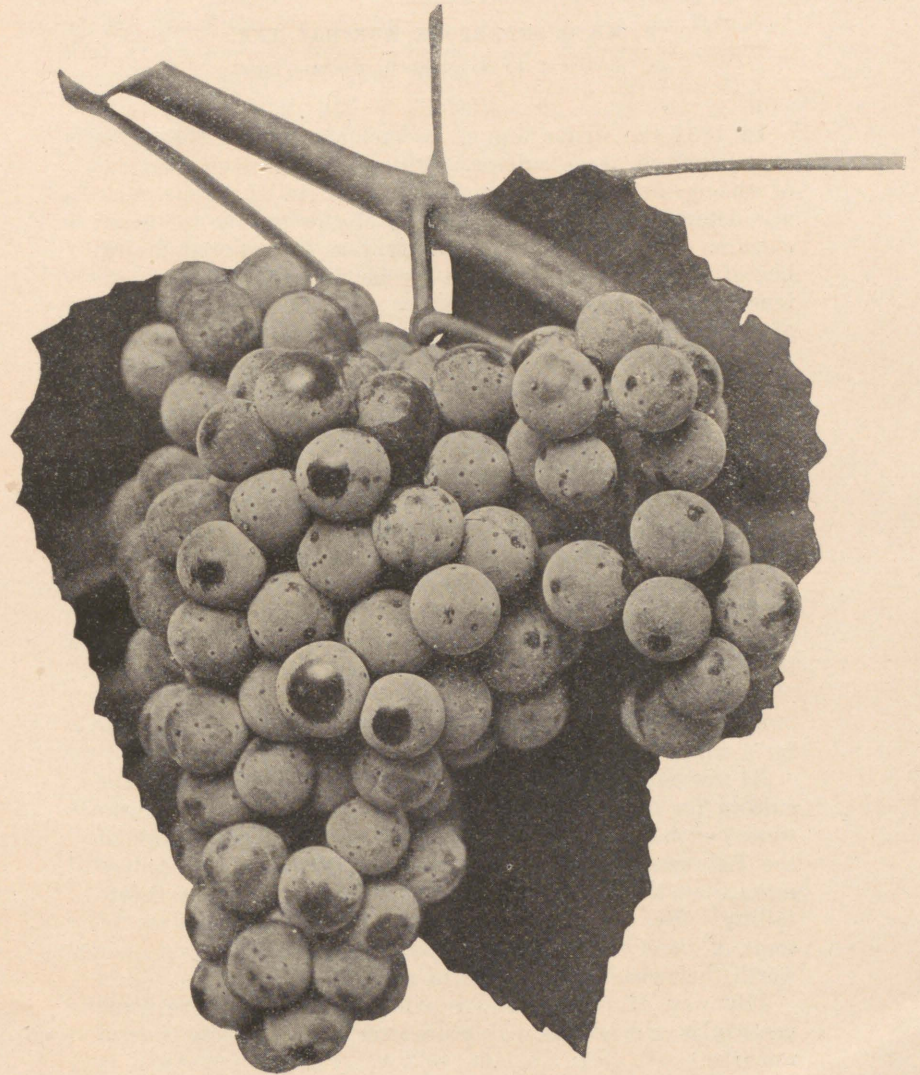
The hardiness, vigor and fruitfulness of tree is also a question for debate. Seeking the most valuable known variety for any given location is of prime importance. Placing a premium for sample of most valuable nuts will often locate trees of great value, trees worthy of propagation.

Trees of the same variety are not generally suited to both moist and dry climates, nor to both cold and hot climates.

The greatest wealth will be derived from varieties yet undiscovered. The work of selection, crossing and cultivation is the most important of all.

Young men with laudable ambition to become famous and to win distinction for both wealth and honor can find most fruitful opportunity in the work of growing, improving and cultivating the pecan.

This nut is successfully worked or grafted upon the natural hickory of our forest, thus giving unlimited opportunity to easily and cheaply double many times over the value of our hills and valleys.



Grapes as Grown on Line of SOUTHERN PACIFIC—SUNSET ROUTE

GRAPES AND VINEYARDS.

By MR. G. ONDERDONK, NURSERY, TEX.

Ex-President of the Texas State Horticultural Society.

In 1851 the writer began, in Victoria County, Texas, to experiment in grape culture, after some careful observations of the operations of a neighbor's work in that line. He was determined to test the capacity of this section for grape culture. He planted every variety that he believed desirable, after what he had seen in the neighboring vineyard, extending his culture to about sixty varieties, including some of every race of grapes known to viticulture, hoping to find, among the different classes of grapes, a few varieties suited to our conditions, and to the different purposes for which grapes are employed—table use, raisins and wines.

He continued careful experiments for about forty years, carefully adding to his list from time to time as experience and observation suggested. During this period journeys of investigation were made to different portions of Texas in order to become sure as to how far any results might be governed by local conditions, and to become sure how far his results might be expected to be repeated in different parts of Southern Texas. He studied also effects of climate, differences between the Coast Country and our own interior.

He found no permanent success with any of the *vitis vinifera* race, although some of its varieties promised highly for a while.

By the end of the first twenty years his views of grape culture for Southern Texas, and more especially the Southwest, had become quite defined. He was sure that of all of the *Labrusca* varieties, none could be expected to produce more than three crops of grapes in the Coast region before failing. By careful treatment he prolonged the lives of some of them to the age of fifteen years, but they were not worth their room after the third crop.

(By way of parenthesis, I will say that I believe some peninsulas and islands may prove exceptions to these general remarks.)

On the contrary, found the Herbemont to be productive and durable in every kind of soil where any grape ought to be expected to succeed. He also found success with the Lenoir (also called Black Spanish-Jacques and by other names) to be both durable and productive, though not as

reliable as the Herbemont in all situations. He found a number of varieties of similar classification to prove faulty, some in one particular and some in another. But we have always found the Herbemont our "Old Reliable" in Southwest Texas, and the Lenoir generally so. Either one should produce ten pounds of fruit to the plant during the third year from planting, and we calculate on from fifteen to twenty pounds at the fifth year.

In 1887 the United States Department of Agriculture gave the writer a commission "to obtain such information as he saw proper and to take his own way of procuring it." Under that commission was accomplished some traveling study as special agent. The Coast Country was examined from the Buffalo bayou to the Rio Grande, extending also about one hundred miles toward the interior.

This course of study confirmed him in all of the theories that he had formed during his investigations of the previous thirty years.

In the early nineties he planted at Nursery, in Victoria county, another experimental vineyard of twenty varieties of Prof. T. V. Munson's new hybrids, most of which were obtained by him by hybridization upon either indigenous grapes or varieties well adapted to Southern Texas. Of this collection the writer considers the Perry an improvement upon the Herbemont, having only one objection, viz: That it does not propagate well from cuttings. It is essentially a wine grape for Southern Texas, and, like Herbemont, is a good table grape, but neither are good shippers. Munson's Carmen is a good table grape, does well here, and we think it will prove a good shipper.

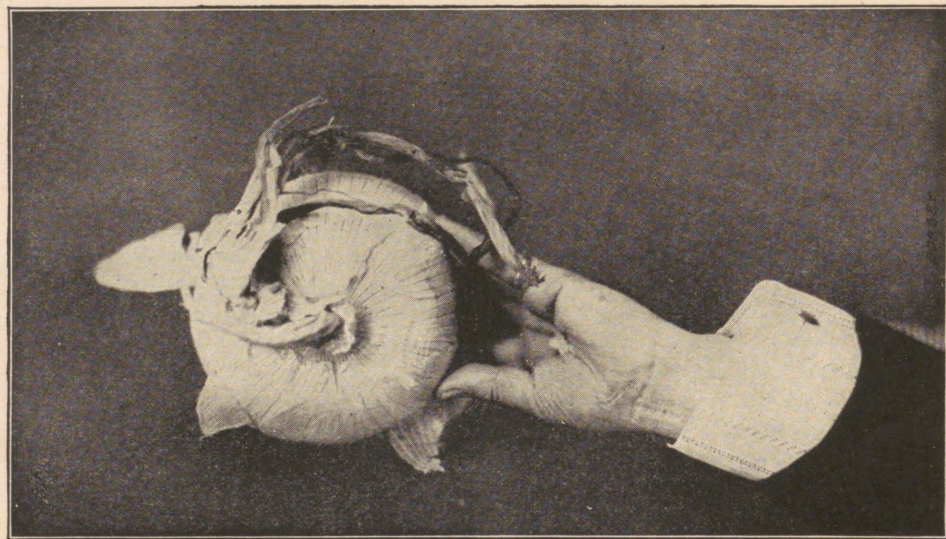
Then we have the Meunch, a good late grape. Others of Munson's New Grapes are well worth planting in the Coast Country, among them the Sweetie for home table use. And this writer believes that if his work had not been cut short by paralysis, he would have found others of Munson's new creations that would prove valuable in the Texas Coast Country.

If the operator brings into the Texas Coast Country his viticulture views belonging to North Texas, or any other regions above our latitude, and tries to put them into practical operation here, it is true that he will learn some things, but he will miserably fail in transplanting Northern viticulture into ultra Southern ground.

But if he comes here to carry on work along lines similar to the one we have indicated in this article, he can hardly fail to find that he can obtain better results in the Texas Coast Country than in any other region upon this continent.



Robert E. Lee Peaches, 40 to the Crate



Bermuda Onion, Six to the Yard. Weight, 39 Ounces.

EARLY FRUIT and VEGETABLES.

By PROF. S. A. McHENRY, CUERO, TEX.

Director of Texas Experiment Stations, Beeville. (Recently Resigned.)

South Texas contains a vast area of land that is especially adapted to fruit and vegetable culture, and this industry is now being rapidly developed in what is known as the Gulf Coast Country. The many advantages as to soils, water supply and climate make it an ideal section for this particular branch of agriculture.

In soils there may be found almost any kind that may be desired or adapted to the growth of the various fruits and vegetables. Small fruits are especially at home in this section, and the fact that the strawberry may be successfully grown and marketed during what is generally termed the winter months makes it one of the most profitable fruits to cultivate.

To those who are only familiar with the growing of this fruit in the North, where the berry season lasts for about three weeks, and where, if a killing frost occurs during the blooming season, means a failure of crop, it may be of interest to know that the bearing season of the strawberry in South Texas lasts about three months, and with some varieties even longer. Also, that should an unusual frost kill the blooms, the plant will put out a new cluster of buds and make a good crop of fruit; so that should an extremely cold spell of weather occur during the blooming season, it only means a later date of maturity, and not a failure of crop.

From small local shipments a few years ago, this industry has grown until now many solid carloads of this luscious fruit are shipped during each season with handsome returns to the grower.

Tree fruits also do well in many sections of the country, and there are now numerous fine orchards of pears, peaches and plums producing fruit that will compare favorably with that of any other section.

Grapes are also at home in this section, and some of the largest vines to be found anywhere are growing wild here.

The state experiment stations are doing some good work in this line, and it may be reasonably hoped that in a short time every progressive farmer will have a general assortment of the best varieties of fruits growing on his place.

The growing of vegetables is now one of the most important, as well as profitable, branches of agriculture in the United States, and it may be safely said that no section offers greater opportunities in this line than does South Texas.

The seasons are such that nearly all vegetables may be successfully grown at a season when they are in demand in the greater portion of the United States. As a result, prices received by the grower for South Texas products are generally better than received for similar products grown where conditions are less favorable.

The principal, or most profitable, crops of vegetables are grown during the winter and early spring, and therefore the grower not only has the advantage of the season at which weed growth is least, but also the advantage of the cooler season in which to do his work.

Being nearer the great markets, as well as having a lower freight rate than is enjoyed by either California or Florida, we have little to fear from these states as competitors in the markets.

During November and December tomatoes, beans, peas and cauliflower are marketed from this section. January, February and March find the alert grower finishing his cauliflower crop, and at the same time marketing cabbage, beets, lettuce, radishes, and, in fact, a general assortment of bunch vegetables.

During April and May the cabbage crop is usually finished, and the marketing of potatoes, onions, beans, tomatoes, egg-plant and other vegetables occupies the time of the truck farmers. These are closely followed during June and July by carloads of cantaloupes and numerous trainloads of water-melons. Thus it will be seen that the harvest time of a truck and fruit farmer in the Gulf Coast region lasts about nine months in the year. The advantage in this will be readily appreciated by those who live in a country where there is but one planting season and one harvest time, and where a single failure means the entire year lost.

In the Coast Country there are so many different crops that should a crop fail from any cause a second crop may be planted on the same land, and but little loss be sustained in the use of the land. It is not unusual to grow three crops during a year on the same land.

Tropical fruits are grown in limited quantities in some sections, and from the writer's observation it is his opinion that such fruit as oranges, bananas and pineapples can be successfully grown in many portions of South Texas by using similar methods and the care and precaution that are used

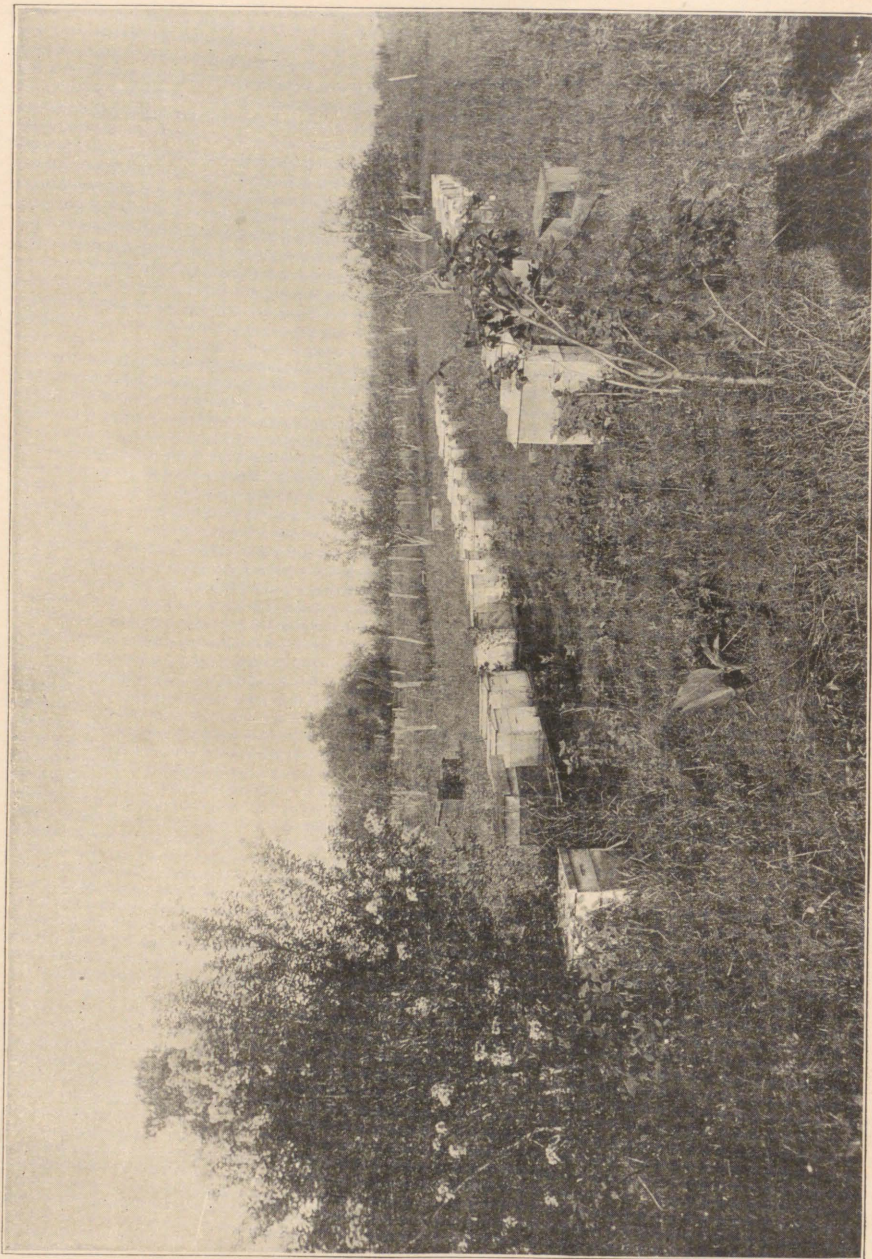
in sections now making a success of growing these fruits. What the industry now needs is capital and push to develop the natural resources and reap the reward that awaits the successful parties who embark in this branch of horticulture.

The Coast Country, besides being well watered by a number of good streams, such as the Rio Grande, Nueces, San Antonio, Guadalupe, Colorado and Sabine rivers, is well supplied in many sections with an unlimited supply of artesian water. In sections where artesian wells are as yet unknown, there may be had an ample supply of water for irrigation purposes by sinking surface wells.

All three of these sources are being utilized for irrigation purposes, and some very extensive fruit and truck farms are being irrigated from the rivers and flowing wells.

The expense of sinking wells and pumping with gasoline power is so small and such a success that the country is being rapidly dotted with irrigation plants of this kind.





AN APIARY—BEE CULTURE IN UVALDE COUNTY.

BEE KEEPING.

By MR. UDO TOPPERWEIN, SAN ANTONIO, TEX.

A Prominent Member of the Texas Bee Keepers' Association.

An advancing civilization and increasing population make their demands upon the natural productiveness of the earth; we who are informed stand amazed at the natural resources of that great empire known as the state of Texas. Oil in inexhaustible quantities has awaited for centuries the magic touch of the driller's wand to burst forth to fill the multifarious channels of its usefulness. Gold, silver, iron, zinc, lead, and nearly all other metals known to science, have been discovered within our confines; and they only await the necessary preparation for their extraction to enrich the world. The virgin soil of our northern tier of counties only needs the plowshare's tickling process to yield of all the known cereals a quantity sufficient to support a population as dense as that which finds a livelihood in Europe's most favored section. The southern part is composed of soil that will produce rice enough to feed more people than at present call themselves Americans, while the cotton that comes from this same section is more than is needed to clothe them.

The statements are simply those of facts, and it is a source of great pride to us that we are thus supplied with all the staples of life. In fact, such a condition may be regarded as the sure foundation for any exultation we may feel when our attention is called to the possibilities of our state as a producer of any article or commodity that may be classed among the luxuries. Especially is this true when one of those luxuries may be produced in such abundance as to be entitled to classification among our staple products; and this may be said of honey. Demonstrated results have already placed it almost in a class by itself, while the possibilities of its development promise to make of it one of our chief sources of revenue. Indeed and in truth is Texas like the Canaan of old, a land that flows with milk and honey.

The vast number of wild bees that were found in Texas attracted the attention of naturalists from very early days, but the raising of bees and the harvesting of honey on scientific principles is of recent inauguration. The importation of the large Italian bee, that seems to have found

its natural home in Texas, was an experiment that has proved a blessing. Her product probably is not superior to that of the native little black bee, but it is greater in quantity, and she is found to adapt herself more readily to domestication and improved methods for saving the result of her tireless energy. The result has been that nearly all of those who have made bee-keeping a business have the best bees, and have prepared themselves to conduct their business in order to reap the greatest financial benefit from it, and their success has been greater than they anticipated. As evidence of this, it may be stated that according to the most recent and most reliable statistics, in fact, nothing less than the last Federal census, Texas produced during 1899 nearly \$500,000.00 worth of honey, taking the first place in the sisterhood of states as a producer of that very necessary as well as luxurious adjunct of a well regulated menu.

The above figures are nearly four years old, and since that date bee-keeping has kept on developing at a rate that makes it safe to say that the value of the product for 1903 will be over \$1,000,000.00, and promises to progress until it becomes one of the chief industries of the state, rivaling in its financial returns any of the staples of which we boast so much.

The charm of the proposition, to go into the bee business is the fact that it requires very little capital, and the further fact that the application of the most scientific methods really requires but very little time of the farmer who is sufficiently up to date to take advantage of every means to enhance his income, and at the same time diversify his sources of revenue to such an extent that he has no fear that his farm will fail to reward him for his labors from year to year. All he has to do is to furnish his numberless little workers with a properly equipped home; they will board themselves while hoarding up a valuable store for their owner. Every bud in this flower-bedecked region is dripping with nectar awaiting the busy bee in order to be saved for man's benefit. The time will never come when there will be enough of the energetic workers to put a stop to this waste; and there will never come a time when the supply furnished forth by these dew-kissed blossoms will be of such magnitude as to preclude the possibility of a good price being paid for the delightful fruit of the efforts of the unselfish little laborers. Probably the story of bee-keeping, its prospects, and the present advantages it offers, could best be told by one actually engaged in the business. I therefore take the liberty of quoting largely from a friend

with whom I had a conversation the other day. He is a man who has had wide experience in the business. He is, too, a man of close observation and of most excellent business judgment. He was quick to recognize the profit promised in the culture of bees, and the natural advantages that were plainly to be seen on every hand. My own experience warrants me in indorsing every word that I have seen proper to quote from him. He said:

"Beekeeping is developing very rapidly in Texas, and it is owing to the fact that this state appears to be the natural home of the honey bee. Nearly every plant that we lay our eyes upon produces nectar, and there is no time of the year, from February to December, even during drouths, when the ground is not practically covered with flowers; and in the winters, which are always mild in Southern Texas, there is scarcely a day when bees are not busily engaged in their store-gathering. The attention of every passenger who has ever rode on the Southern Pacific in its course through South Texas has been attracted by the variegated beds of flowers as they stretch out mile after mile; and those who are familiar with the sound recognize at once the hum of the bees whenever a stop is made at any station. The question is natural: 'Where do all these bees come from?' and the answer is truthfully made: 'The woods are full of them.' There is hardly a hollow tree or cave in all this section that has not its colony of bees; and I have oftentimes seen bees building long combs and rearing their broods on limbs of trees. It is nothing unusual to find caves with several barrels of snow-white honey stored in them. Kendall, Kerr, Bandera, Edwards, and a number of other counties are noted for their bee caves, and hunters have great sport in locating and robbing them. These facts have attracted attention, and the number of people who are going into the business in a scientific way is daily increasing; and yet, in the light of present conditions, it is safe to say that it is utterly impossible for there to be too many bees, or that the supply of honey will be greater than the demand for it. As it now stands, there are hundreds of carloads of the delicate food going to waste every year, which could be saved and marketed at a good price if the number of high class bees were increased and received the proper attention.

"Uvalde is now shipping honey by the trainload, and the bee-keepers there, as well as in a number of neighboring counties, are actually getting rich at the business. It will not be many years before all the hollow trees are cut, the

caves are robbed and the bees put into up-to-date hives; and then we may expect the producing of honey to be one of our chief industries. It may surprise some to know that even now there are in Texas bee-keepers who own over a thousand colonies of bees. Within a few years such a number will not be an unusual thing.

"It may be asked, how is the market for honey, and what about freight rates on supplies. These are natural questions, and were anticipated so long ago that they have been satisfactorily settled to meet present conditions; and that very fact has assisted materially in developing the business to its present proportions. There are several large honey buyers in the state, and they pay a good price for all the honey that is offered, and they in turn ship it to distant markets. We raise what we call bulk comb honey. This is simply comb honey packed in cans and extracted honey poured over it to fill the space. We use three, six and twelve-pound friction top cans and sixty-pound square cans. The friction top cans are round in shape, and twenty three-pound cans are placed in a case, while ten of the six and twelve-pound cans and two of the sixty-pound cans constitute a case. The friction top cans make very nice shelf packages, and are becoming very popular. We honey dealers contract our whole crop in the winter and early spring at the following prices, f. o. b. our nearest railroad station: The sixty-pound cans, 8 1-2 cents; twelve-pound cans, 9 1-4 cents; six-pound cans, 10 cents; three-pound cans, 10 1-2 cents. All we have to do is to haul the honey to the depot, take the bill of lading to the bank and get the cash.

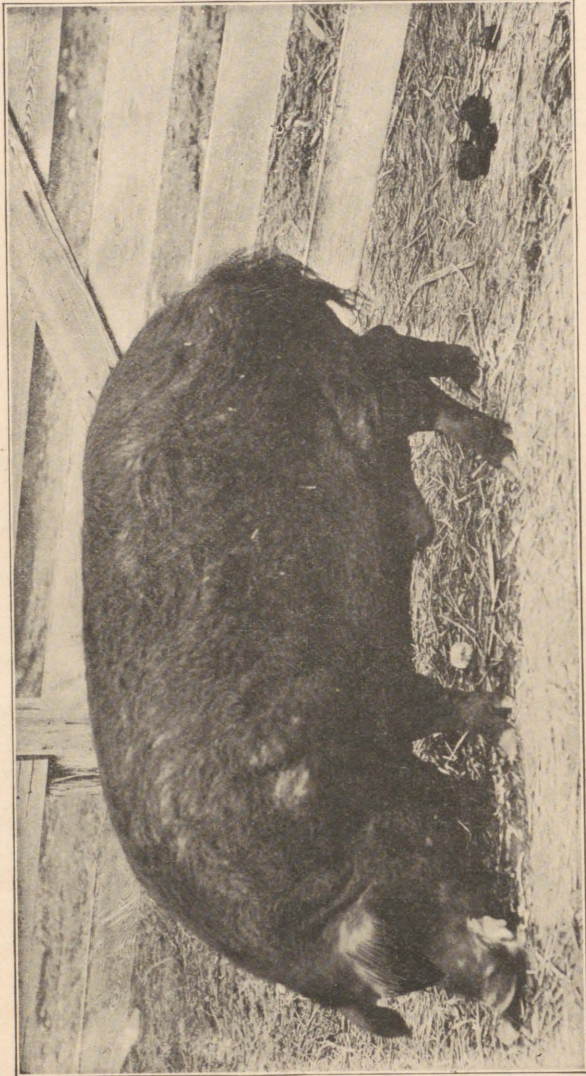
"In the matter of supplies, it will be gratifying news to all those interested in the business to know that the A. I. Root Company have established a large branch house in San Antonio, where they will sell everything a bee-keeper needs at factory prices.

"As those who are informed know, according to the last census, Texas is the leading State in the production of honey and the value of apiarian products. In 1899 there were produced here 4,780,254 pounds of honey, and 159,690 pounds of beeswax, valued at \$468,527.60. We produce nearly a million more pounds of honey than any other state, and bee-keepers from other sections, who are aware of our advantages, are locating every year in our midst. In nearly every portion of Texas bee-keeping pays, but it finds its best place in South and Southwest Texas, where the flora is so extensive and so well adapted to the production of honey. Texas has never known an entire failure of the honey crop,

which is something that can not be said of any other state in the Union. For these reasons I believe South and Southwest Texas to be the best bee country in the world, and a section in which entire confidence can be placed in the production of a honey crop every year, thus making it a staple and certain source of revenue to those engaged in it. As yet there are millions of acres in this section where no bee has ever yet made its appearance, and the opportunities and prospects for developing are unlimited."

The above conversation proved very interesting to me, and, as can be easily imagined, I took copious notes of it for future reference, and they have herein served me a good purpose. I have very little to add to it. I will state, however, that while bee-keeping is remunerative, it is at the same time very interesting, and it costs very little time and money to conduct it, even where it is depended upon for a livelihood. While you are resting or asleep your thousands of little workers are busy in your interest, and all they ask is to be let alone in their determination to serve you. Their hives can be left on the summer stands the whole winter through and chaff hives are unknown to the Texas bee. The fields from which they reap are co-extensive with the power of their flight, and hardly a plant grows in Texas that does not yield nectar fit for the gods to sup. For this reason I will not undertake to name those that are best adapted for honey-making; the list of those plants not laid under tribute by the bees would be short indeed as compared with that of those that almost drip with honey throughout the year.

Indeed and in truth is Texas a thrice blessed state. The husbandman has only to tickle the surface of the earth to reap his reward; the miner goes down but a few feet to be paid in the gushing stream of oil, or to bring forth the valuable metals; while the bee-keeper has only to make a few inexpensive preparations to find a flow of honey in sufficient quantities to fill his stomach, clothe his back and furnish all the other necessities of life. Allow me to repeat, Texas is the promised land, and, like the Canaan of old, a land that flows with milk and honey.



HOG AS RAISED ON LINE OF SOUTHERN PACIFIC—SUNSET ROUTE.

HOG RAISING.

By MR. H. E. SINGLETON, MCKINNEY, TEX.

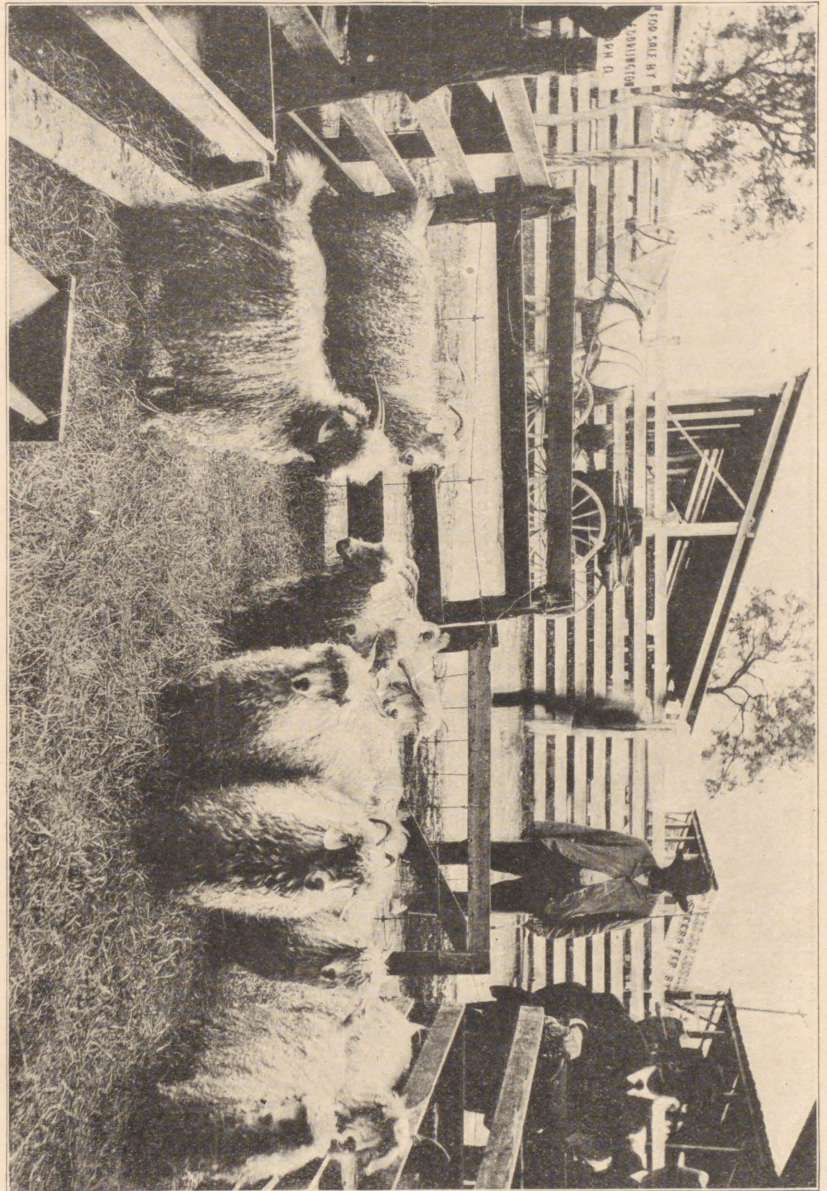
President of the Texas Swine Breeders' Association.

Texas, the Empire state, is peculiarly blessed in natural advantages. In the olden times it was Texas cattle, Texas horses, Texas sheep—yes, and Texas razorbacks. These were grown to perfection of the kind, with apparently no effort on the part of the owner; the climate, the soil, water and all other conditions were favorable to the perfect development of these animals. With the advent of the railroads came new energy, new life, a new people, filled with new ideas, antagonistic to those of the old ranchero, who was satisfied to let his cattle, horses, sheep and goats graze upon a thousand hills, and his hogs to grow fat upon the rich pecan "mast" that is produced so abundantly on the bottom lands all over the state. To him this was a paradise. He is still to be found in some sections of the State, but the agriculturist is gradually encroaching upon his domain, making a greater profit, by availing himself of the natural advantages offered and putting them to the best use, from fifty to a hundred acres than the other with his ten thousand and twenty thousand acres under the old regime.

The growing of pork in Texas is an industry that is receiving considerable attention of latter years. The producer of pork in Texas is like unto the Texas growers of tomatoes and Elberta peaches, for the early markets of the North; or the Texas rice growers, for the markets of the world; he has a field all to himself, for nowhere in the United States—and when it comes to pork production, that means the world—can be found growing, almost side by side, corn producing forty to sixty bushels per acre, oats forty to one hundred bushels per acre, wheat from eighteen to thirty bushels, flouring mills looming majestically side by side with the world's greatest rice and sugar mills; each furnishing a bi-product so admirably suited to the cheap production of pork. From east to west and north to south, all over this broad empire, in the bottoms, in the valleys, on the hillside, on the summit, can be found the king of forage plants, alfalfa, fattening hogs, almost for the slaughter, and producing from two to six tons of cured hay without irrigation.

In the drier sections of the state Kaffir corn and milo maize, yielding from fifty to eighty bushels per acre, and nearly the equal of Indian corn in feeding value; on the lighter soil stock peas are grown to perfection, and peanuts make a yield of from one hundred to three hundred bushels per acre. These require no harvesting and have a high feeding value, much greater than corn to the acre on the best corn lands of the United States. With this great variety of feed-stuffs, and many others that might be mentioned, all produced at the feeder's door, the rearing of two litters of pigs a year is easily accomplished, with mild, pleasant winters and green pastures the year round, immunity from disease, cholera not being known, only where introduced by the importation of animals from other states, and then spends its force where introduced, and rarely spreads to adjoining farms.

Millions of dollars are invested in packing houses in San Antonio, Houston, Waco, Dallas, Fort Worth, Gainesville and other points. Railroads traversing the state in every direction bring the feeder in close touch with foreign and all markets, through the deep water ports of New Orleans and Galveston, insuring the highest market price for the product. Verily a paradise for the porcine, and a haven of rest for the weary and finger "benumbed" feeder of more rigorous and less fortunate localities.



Angora goats as Raised on Line of SOUTHERN PACIFIC—SUNSET ROUTE

ANGORA GOATS.

By MR. HOWARD LACEY, KERRVILLE, TEX.

Importer and Breeder of Thoroughbred Angora Goats.

There is so much interesting and reliable information already published concerning the history of the Angora Goat and its introduction to this country that it is unnecessary to go deeply into that part of the subject; possibly as old as the oldest civilization, it has furnished meat and clothing to those who have taken care of it for untold centuries. Abel may have been sacrificing a specimen of the breed when Cain perpetrated the first murder, and it was possibly the principal ingredient of the savory mess that Jacob made for his father.

Angoras were first introduced to America by Dr. J. B. Davis of South Carolina, who, in 1849, brought over with him from Turkey two bucks and seven does of pure blood, and a small number of graded does. A few other importations were made, and by 1870 the industry had a hold in several states, particularly in California and Texas. During the last ten years the interest in the Angora has increased by leaps and bounds, and several associations have been organized, uniting in registration and placing the whole industry on a firm foundation.

RANGE.

With proper attention the Angora will thrive in almost any country, but without doubt he loves the mountain better than the plain, and a dry, rocky foothold better than a rich alluvial soil. All kinds of brush seem to be acceptable to him, and he seems to prefer bushes to the very best of grass. He is very dainty, and, although he will eat almost anything in the vegetable world, he won't touch soiled food, and he likes what water he drinks pure and clean, and if possible running.

There are millions of acres in the western part of Texas that were apparently created for the Angora goat; dense thickets of chaparral brush in the valleys, where he can get a different taste in his mouth with every bite he takes; scrub oaks on the hills loaded in the autumn with the acorn that he loves, and that makes him so fat that he can hardly feel the northers when they come, and plenty of rough broken

ground where he can and natural shelter if the northers are severe and searching.

The goat industry is non longer in its infancy here, but is robust and flourishing, and bids fair in the near future to be one of the greatest enterprises of the greatest state. Already on thousands of picturesque, but until recently almost worthless, hillsides, the little brush croppers are letting in the daylight, giving the grass a chance to grow, and also giving it something to grow upon, and at the same time piling up for their owners a good balance at the bank.

In choosing a range for goats one should make sure that there is plenty of live oak and other evergreen brush to afford green food throughout the winter. Almost any range will do for them in spring and summer, as they thrive on nearly anything that is green. Poisonous plants, as a rule, do them little harm, as they browse from bush to bush, taking a bite here and a bite there, and seldom taking many mouthfuls from any one shrub. In early spring they sometimes get sick from eating the leaves of a plant allied to the hyacinth (locally called crow poison); it seldom proves fatal, however.

KIDDING.

The bucks should be turned into the flock toward the end of October; this brings the kids at the end of March, by which time there is plenty of fresh green food for the does. It is well to feed the bucks a little grain for a month or so before turning them out with the flock. During the time that they are kidding the does require a good deal of attention, as some of them, particularly the younger ones, will not always own their kids. The goats that kid during the day should always be brought in with their kids before night, and all the kids should be kept in the pen until they are about six weeks old, by which time they are strong enough to go out with their mothers. The little fellows can stand a good deal of dry cold, but a cold rain chills them through in a very short time, and it is quite necessary to provide some sort of a shelter for them in case of wet weather. This shelter should be roomy enough for all, as otherwise they will crowd on each other, and the weaker ones will be smothered.

SHEARING.

Angora goats are sheared twice a year in Texas, and, of course, for some time after losing their heavy coats are very

FISH AND OYSTER INDUSTRY.

By L. SEABROOK, PORT LAVACA, TEX.

One of the Best Authorities on Fish and Oysters on the Texas Coast.



Fish and Oyster Exhibit

Every intelligent citizen of the country is well informed as to the extent and rapidly spreading use of the oyster as an article of food. They know that oysters are commonly found on every hotel and restaurant table, and are in demand at countless homes over the land. It is one of the regular foods of a great and prosperous people, and has become as staple and necessary as the products of the farm, the orchard or the range. It will be almost as useless to dwell at length upon the magnitude of the business of oyster culture and shipping, and upon the extent of oyster consumption, as to attempt to further enlighten the reader upon the importance of the cotton or corn crop of the United States. It will be sufficient to cite that in the single state of Maryland this toothsome shell fish gives employment to 45,000 men, and in and immediately about the great city of New York 100,000 people find employment and profit in handling it in the various ways, according to the late press reports, and furthermore, that we here find the foundation of the growth and prosperity of the large city of Baltimore, the world's leading canning center. In Maryland millions of capital are afforded employment, and like millions are invested in the oyster pursuit in other states of the Atlantic seaboard. These facts must be accepted, and the object of this article is to briefly show the investor, or the man seeking employment for his time and energy, the extent of the Texas oyster waters, the practical meaning of the new laws passed by the Legislature, and the profit he can, as a grower, expect. The question is now commonly asked: "How can I engage in oyster culture in Texas?" "On what terms can I lease a location?" The pointed reply is as follows:

1st. You can get a claim under the new Mitchell law, which has been amended somewhat to better suit the public.

2nd. You do not secure merely a lease that expires in time. You obtain in reality a fee simple title, as good as that from a warranty deed, and your claim, so called, is your property as long as you pay the annual lease money, in reality a police tax.

3rd. The claim, no matter how valuable it may become from your labors, is not placed as property on the regular assessment rolls, and pays no value tax in addition to the lease or police tax, as in other oyster states. In states that can be named, cultivated oyster waters are valued for taxes at from \$100.00 to \$800.00 per acre. In Texas you escape this burden entirely, and here police tax is very much less than in the oyster states on the Atlantic coast.

4th. The prime object of the Texas law is to supplement the supplies of the natural reefs, by inducing oyster culture, and the individual is allowed to take up as much as fifty (50) acres for planting, and a syndicate or company 640 acres.

5th. The police tax paid to the commissioner and his deputies for the state under the present amended law is 15 cents per acre for the first year, 25 cents for the succeeding four years, and \$1.00 per acre yearly thereafter. Claims are subject to transfer, the same as farm land or any class of realty. It is discretionary with the grower as to number of acres on his claim he plants. The inspection fee on each fifty (50) acre claim is \$10.00. Surveying the same about \$10.00; staking, \$2.50; recording instrument, \$1.00.

Now that it has been shown in a succinct manner how to secure a fifty (50) acre claim—the smallest claim being taken as an example, the expense of getting it and what it signifies in a property or speculative sense, the seeker for investment in a new field or one wanting an opportunity to make his time and labor count, will naturally want to know what it will cost him to put his little water farm in cultivation, and what he can expect when he commences to get crop returns. The proposition will be taken from the standpoint of the investor who hires all the work done. A liberal estimate for the preparation of the ground and seeding will be \$45.00 per acre, total for claim \$2,250.00, which, added to other expenses enumerated, will make his outlay for the first year \$2,281.00. At a very conservative estimate, the lowest made, in fact, he can expect two hundred (200) barrels per acre in the third year; the boatman will pay him 25 cents per barrel on the reef, leaving him \$50.00 per acre. There will be no additional expense after the planting, except the annual police tax. The lowest figures on the output of oysters have been given, and it is no wild estimate to say that five hundred (500) barrels per acre are probable. To make the departure still more encouraging and remain within the bounds of facts, it can be stated that the grower can tong his own oysters and deliver to the wholesale houses

in person and receive \$1.00 per barrel for his crop, vastly increasing his income. So to the man who will do his own planting and harvesting, there is no land crop that will make this showing, and the day is near at hand when the holder of the fifty acre oyster farm in Texas waters will not care to swap it for the best one hundred acre fruit farm in America. The yield from the planted beds gets better each year and the income increases, and the oyster crop is far more profitable than growing grain, cotton or fruits on the country's best lands. The reports of the United States government experts quoted show that the oyster makes much more rapid growth in the Texas waters than along the North Atlantic. Owing to the mild winters, growth continues the year round, and the farmer for this reason gets quicker returns for his time and outlay. The same federal reports can be cited to prove that while the danger from freshets is no greater, the Texas oyster is far less liable to harm from the starfish and borer than the bivalve of the Northern waters, and yet oyster claims in the Chesapeake and further north have been sold as high as \$200.00 per acre. What fruit land on the continent can bring this high figure? These are plain facts, easy of substantiation, that give the claim seeker an idea of what he can depend upon. The Texas water donation is better than a federal land claim in Oklahoma or elsewhere, and the time is at hand when good locations will be in active demand. Many thousands will engage in the business of growing and shipping, canning factories will be built, and we shall have flourishing towns and cities that boast of being oyster centers.

Below we give a list of the Texas inland bays suitable for oyster culture, and the extent of them. It is taken from the United States Coast Survey, and many of the smaller bays, having valuable locations, are left out entirely:

	Square Miles.
Sabine Lake.....	94
Galveston Bay and tributaries.....	565
Matagorda Bay and tributaries.....	440
San Antonio Bay and tributaries.....	129
Mesquite Bay and tributaries.....	23
Aransas Bay and tributaries.....	163
Corpus Christi Bay and tributaries.....	185
Laguna Madre Bay and tributaries.....	81
Total.....	1741

Port Lavaca, the headquarters of the State Fish and Oyster Commissioner, is the leading oyster shipping point on the coast, but much business is also done at Rockport, Corpus Christi, Galveston, Sabine Pass and other points. From the best obtainable estimates, we have the following figures showing the extent of the natural reefs not subject to locations:

	Square Miles.
Sabine Lake.....	1
Galveston Bay.....	50
Matagorda Bay.....	45
San Antonio Bay.....	1
Espiritu Santo Bay.....	6
Mesquite Bay.....	3
Aransas Bay.....	15
Corpus Christi Bay.....	13
Laguna Madre Bay.....	3
Total.....	137

The 137 square miles mean about 88,000 acres, and it can be seen readily that there is abundant room for development by planting. Texas has more oyster water than any state in the Union, and offers the best terms to the grower, and that the industry will develop along her three hundred miles of coast is now certain, and the early bird will get the best locations. For further facts about the business, those wanting claims can address State Fish and Oyster Commissioner, Port Lavaca, Texas, and they will receive the official reports and other information.

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