

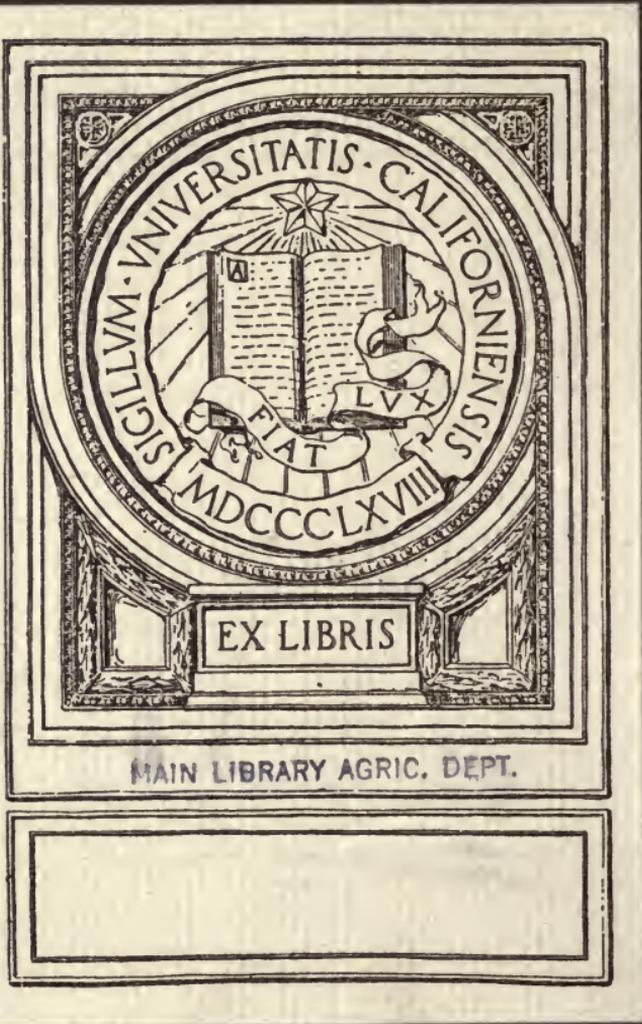
SB
375
B4

UC-NRLF

SB 73 109

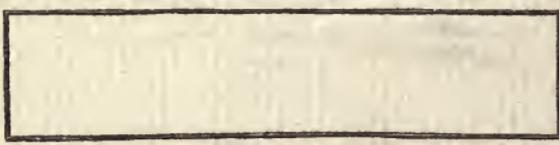


YC 63616



EX LIBRIS

MAIN LIBRARY AGRIC. DEPT.



Pineapple Culture

In South Africa

By R. A. BESTER



PRICE ONE SHILLING

The Specialty Press of S.A. Ltd.

JOHANNESBURG

CAPE TOWN

Reliable South African Publications.

The Principal Orchard Pests and How to Control Them.

By W. F. Schlupp, Entomologist, School of Agriculture, Potchefstroom. A handy little booklet describing and illustrating the principal pests of fruit trees and telling the best measures to be used against them, with directions for making and applying remedies. Price 1/0 post paid.

Diseases of the Apple, Pear and Quince.

By Dr. E. M. Doidge, Mycologist, Department of Agriculture, Pretoria. How to Know and Treat: Bitter Rot, Scab, Bitter Pit, Crown Gall, Canker, Black Rot, Mildew, Die Back, Fruit Rots, etc., etc. With full instructions for preparing remedies. Price 1/6 post paid.

"Olives" in South Africa.

By I. Tribolet, Chief of the Division of Horticulture, Pretoria. A profitable industry awaiting development, and Mr. Tribolet deals conclusively with all its requirements: Climate, Soil, Propagation, Planting, Pruning, Budding, Grafting, Gathering the Fruit, Varieties, Pressing and Pickling, Olive Oil, Pests and Diseases. Price 1/0 post paid.

Some Common Diseases of the Tomato.

By Dr. E. M. Doidge, Mycologist, Department of Agriculture, Pretoria. The loss of fruit from diseases in tomatoes is exceptionally heavy. This booklet tells you how to know and control amongst others:— Leaf Spot, Blossom End Rot, Sleepy Disease, Wilt, Late Blight, Early Blight, etc. Price 1/0 post paid.

Pineapple Culture in South Africa.

By A. E. Bester (late of the Division of Horticulture), Manager, Langholm Estate, Bathurst. Telling exactly the conditions necessary to make pineapple culture a success. Their cultivation, propagation and manurial requirements; methods of marketing—local and export—methods of planting, etc. Price 1/0 post paid.

A South African Fruit Planters Guide.

By R. A. Davis, late Chief, Division of Horticulture. Practical suggestions for the fruit-grower—containing expert information on Soils and their selection, Windbreaks, Stocks, Planting, Cultivation, Fertilisation, Irrigation, Spraying, Marketing, Laying out an Orchard, etc. Price 1/0 post paid.

The SPECIALTY PRESS OF S.A., Ltd.

Box 3958, Johannesburg.

Box 388, Cape Town.

Pineapple Culture in South Africa

INTRODUCTION TO ENGLAND.

England may be looked upon as the best market for the pineapple as it is for other fruits raised in South Africa; it may be well, therefore, to give a short resume of its introduction into that country. It was known as far back as the time of Charles II, and, as far as can be ascertained, was first imported into that country during his reign. Both Buckingham and the first diary diarist, Pepys, make mention of it then. Several of the best varieties have been disseminated from the hot houses of England, and it is only during the last half century that this fruit has been imported in large quantities from other lands, English hot-houses being up to that time the principal source of supply. As the price of the hot-house fruit was anything from 20s. to £5 each, according to size and condition, it will be realised that the demand was somewhat limited.

WHERE THE PINE THRIVES.

Given suitable soil the pineapple may be said to thrive anywhere 25 degrees north or south of the Equator, provided the altitude is not too great and the district free from frost. There are areas beyond those latitudes in which the plant thrives by reason of special local conditions, and in like manner there are areas within those latitudes, which owing, perhaps, to altitude or cold winds coming off high mountains in the neighbourhood, are unsuitable yet the pine will grow and thrive where many other crops are more or less a failure; it will not, however, stand frost.

FREEDOM FROM FROST.

In frost-free climates with a high summer temperature, such as that of the Bahamas, the pineapple produces heavy crops, but as, in most of these tropical or semi-tropical islands, the soil is either very shallow or very sandy, the period over which paying crops can be reaped is a short one, necessitating continuous re-planting or new fields. I shall deal with these matters at a later stage.

PINEAPPLE CULTURE IN SOUTH AFRICA

SOILS SUITABLE FOR PINES.

Provided there is good drainage, pines will thrive on any soil, from almost pure sand to a clayey loam. The quickest returns are realised from a very light soil, but it must be remembered that the life of such a plant will not exceed five or six years at the most, and that its life as a paying proposition will be less than that, unless fertiliser is used in heavy quantities,—in other words, if the food necessary for the production of decent-sized fruit is exhausted, although the plant may grow, the resultant fruit will be too small to pay for marketing. A good deal of the land devoted to pines in Natal is of this light nature, and the life of the plant, even under the high temperature prevailing there, is a short one as compared with that in the richer soils of the Eastern Province of the Cape. Whilst the more forcing climate of Natal produces a somewhat larger fruit, the shipping and eating qualities of the fruit from the latter district are frequently commented on by the market agents in England. That both districts can produce good pineapples I am quite certain, but the treatment of the two soils and methods of growing must vary.

PINES IN CLAYEY SOILS.

Some writers are fond of stating that the pine will only thrive in sandy soils. This is incorrect. They have been, and are grown in Porto Rico on clayey soils, i.e. on loam which contains a large percentage of clay. Although slower in maturing their first crop of fruit, such soils will bear crops regularly and outlast the lighter soils, provided the subsoil drainage is good. It has been found by experiment that the average depth to which the roots penetrate is from 8 to 10 inches. It will be seen, therefore, that other things being suitable, the pineapple may be grown where many other fruit crops would be a failure owing to a shallow surface soil.

LIME IN SOILS.

As no data are available in regard to soils, in the areas in which pineapples are produced or are likely to be produced in South Africa, I have made a résumé of the experiment carried out by the U.S.A. Agricultural Department on the subject of Lime in the soil and its action on the pineapple plant. It is advisable for anyone who may intend to start planting in an area which has not been previously tested, to obtain an analysis of the chemical constituents of the soil, bearing in mind the result of these experiments. These experiments were undertaken owing to large losses which had occurred in Porto Rico through the plants suffering from a complaint known as "Chlorosis".

NOT A DISEASE.

"Chlorosis", or bleaching, is the name applied to that condition of the leaves of plants, which under natural conditions fall

PINEAPPLE CULTURE IN SOUTH AFRICA

to develop the normal amount of colouring; it is better known as "Chlorophyll". The leaves are sickly green or yellow or veined with white, or in very bad cases, absolutely white. This does not apply, of course, to plants which are normally variegated either with white or yellow, as, for instance, the Golden leaved privet, or the silver or golden leaved Euonymus.

THE CAUSE OF CHLOROSIS.

Chlorosis may result from improper nourishment, i.e. lack of the essential plant foods in the soil, or from the presence in the soil of some chemical which prevents the plant from assimilating those foods. It may be the result of a bacterial disease, but it really means that the plant is in an unhealthy state from some cause or another. Exhaustive experiments were conducted in every portion of the Island wherever Chlorosis was present. At first it was suspected that the cause was due to the salt spray, as some of the plants affected were very near the ocean. This idea, was, however, soon abandoned, as many plantations less than 100 yards from the sea had fine healthy green plants, whilst later on Chlorosis was found several miles inland.

METHODS ADOPTED.

The method then adopted to endeavour to discover the cause was that of taking samples of soil from plots where there were affected plants, and soil from the healthy portion of same plantation. In some cases only small patches were suffering, and the rest of the plantation was quite healthy, and in other cases the conditions were reversed, that is, the larger portion of the plants were suffering from Chlorosis whilst isolated patches were quite healthy. The result of the chemical analysis of the soils in every case showed that in portions where Chlorosis was present Carbonate of Lime was found in excessive quantities, varying from 1.86 of the total constituents up to 79.76. This was not considered sufficient test of the cause of Chlorosis, as it was known that some of the keys or Islands, near the coast of Florida where the pine thrives luxuriantly, contained a higher percentage of this Carbonate of Lime.

FLORIDA SOILS.

Many analyses of the soils of the mainland of Florida, made by Miller & Hume and published in the *Florida State Bulletin*, Number 68, prove that the good pineapple soils of that State contain no Carbonate of Lime. It was further shown by these investigations that the type of soil which produced the best pineapples contains less than 20 per cent. of Carbonate of Lime and about 99 per cent. of insoluble matter. Webber further reports

PINEAPPLE CULTURE IN SOUTH AFRICA

that "many plantations have been put out on *Shell* land, but have uniformly failed." As this so-called shell land is largely composed of Carbonate of Lime, this was a further proof of the cause of Chlorosis.

THE SOIL OF THE KEYS.

Samples of soil were then obtained from two of the Keys,—Two from each, Mr. T. J. Johnstone of Planter, whom the writer well remembers as a Pineapple grower over 20 years ago, and Mr. E. Gottfried of Key Largo. All these four samples showed high percentages of lime and extremely high percentages of organic matter. These two Keys are probably the first two on which pineapples were grown for commercial purposes and as pineapples were an unqualified success there, the presence of the Lime in the soils would at first sight appear to upset the theory that lime was the cause of "Chlorosis".

ORGANIC MATTER AND NITROGEN.

Finding the conditions above-mentioned were not injurious, certain plots were planted in order to determine whether the presence of Organic matter and nitrogen in large proportions would act as an antidote to the excess of lime; at the same time plants were grown in pots with similar soil to that in the field trials. The results conclusively proved that the pineapple will grow in almost any soil, but that the addition of Carbonate of lime, except to soil which has purely organic matter, in every case produced "Chlorosis". In the case of the test of a soil of pure organic matter it was found that an addition of as much as 50 per cent. of Carbonate of Lime was not injurious, but amounts beyond that brought on Chlorosis.

RESULT OF THE TESTS.

The conclusions arrived at from these investigations are, that in a loose sandy soil, the presence of 2 per cent. of Carbonate of Lime renders such soils unfit for pineapple cultivation; possibly if such soils contain at the same time a good proportion of humus, they might produce healthy growth; the danger limit of loamy soils may be a trifle higher. It should be noted that the only loamy soil producing Chlorosis plants contained 4.62 percent of Carbonate of Lime.

TREATMENT ADOPTED.

The only treatment which enabled the plants to regain their normal healthy appearance was the application of iron in liquid or other readily soluble forms, either to the roots or to the vegetative portion of the plant, these experiments however, prove this was not a commercial proposition.

PINEAPPLE CULTURE IN SOUTH AFRICA

IRON NECESSARY TO HEALTHY GROWTH.

This led to the final conclusion that iron is necessary to the health of the plant; it therefore seems that the pineapple growing in a Chlorosis soil, i.e. one which contains an excessive amount of lime, absorbs so much of it that it is unable to absorb the iron constituents, even if same be present in the soil.

IRON IN PLANTS.

Iron is known to exist in all plant organisms, yet, whilst iron is not a constituent of Chlorophyll, it appears to be necessary to the production of Chlorophyll, as plants grown under experiment in soil devoid of iron become bleached or chlorotic.

SITES FOR PINEAPPLES.

The plant, being fortunately of erect, stiff habit, the selection of site, so far as shelter from high winds is concerned, is of small account; very sharp slopes should be avoided, particularly if the soil is of a very light sandy nature, otherwise if fertiliser is used, the lower portion of the slope is likely to receive the benefit, the heavy rains washing down a greater part of it. Flat, poorly drained land should be avoided, or it may be found that the water unable to escape will stagnate and destroy the roots of the plants. The site selected should be, as far as possible, fairly high rolling land with nice even slopes, avoiding anything in the shape of a vlei, remembering always that even in our semi-tropical belts, the vleis, although the hottest in daytime, are the coldest at night; where a hillside may be absolutely free from frost, a hundred feet lower down it may be severe enough to kill all tender vegetation.

A WORD OF CAUTION.

is necessary as regards distance from rail. Plantations should not be laid out at too great a distance from a station or siding. The pineapple is a soft fruit, although it has been, and I fear is, in many cases, still treated more like a stone than a fruit. If the best results are to be obtained, the less handling and jolting it has the better; properly packed it may be carried any distance, but to attempt to cart pines into a packing house 20 or 30 miles away in an open wagon, piled perhaps 20 or more deep, is fatal to good returns.

RAINFALL, ETC.

The pineapples, like all the family Bromilacæ, is not a thirsty plant, and will thrive and produce better fruit so far as carrying

PINEAPPLE CULTURE IN SOUTH AFRICA

properties are concerned, with a rainfall of 26 to 28 inches, than with one of 30 to 40 inches. It may not produce quite as large a fruit, but the pines will be free from Black heart or Heart rot.

Excessive moisture during the ripening period is not good for the fruit, as it tends to produce watery fruit; this is undoubtedly the cause of the unsatisfactory condition in which the Natal pines arrive in England.

INSECT PESTS AND DISEASES.

The pineapple is remarkably free from insect pests and from fungoid and other diseases. Mealy Bug is, practically speaking, the only insect which causes any trouble, and losses on this account are so minute that they are scarcely worth mentioning.

OTHER DISEASES.

Black heart or Rotten core is not, strictly speaking, a disease, but is caused by excess of moisture. The remedy for this is to plant in localities where the moisture is not too excessive.

VARIETIES.

There are two varieties grown in South Africa, viz., the Egyptian Queen, and the Smooth Cayenne. These two varieties are generally described in the Eastern Province as Queens and Cayennes.

NATAL NOMENCLATURE.

Natal has unfortunately for years described them differently, the Egyptian Queen being called the Natal Pine, and the Smooth Cayenne the Queen Pine. A Jamaica authority is reported to have decided that the so-called Natal Pine is the Ripley Queen, and the error is easy to understand. Both Egyptian Queen and Ripley Queen are members of one type of Pine, but the difference when ripened *on the plant* is that the Egyptian Queen is of a bright golden colour, while the Ripley is of a much more ruddy appearance. Egyptian Queen, ripened under artificial conditions, has been found to take on a much redder colouring. By artificial ripening is meant picking before it has become coloured, and ripening on the voyage home.

EGYPTIAN QUEEN.

This variety is largely cultivated both in the Eastern Province and in the coastal districts of Natal, and has so far proved the best for the climate conditions of those areas. It has become thoroughly acclimatised, carries well for long distances. (par-

PINEAPPLE CULTURE IN SOUTH AFRICA

ticularly do those from Bathurst) is of superior quality, and though lacking somewhat in size, this deficiency can be made good by proper methods of cultivation, etc. The future of this particular Pine is assured, not only for export, but for canning purposes, and with the establishment of good factories for that purpose, the grower of these Pines will have a small gold mine in hand. Even with the present methods of railing great quantities in bulk, as many as 1,700 dozen being shipped in a truck without packing of any sort, the growers maintain that the crop pays better than any other raised in the district, and when more up-to-date methods of handling are adopted in these matters, the profits from this business will be materially increased.

SMOOTH CAYENNE—known also as Giant Keir or St. Michael.

Only a limited number of these Pines are grown in South Africa, principally for local markets, yet this is the species grown all through the Azore Islands for the London and Continental markets. It is of very handsome appearance, of a bright red colour, but the segments of the Pine are very flat and bruise with the least pressure; owing to this and the large quantity of moisture it contains this Pine has not carried well when shipped to England from Natal.

The methods of packing adopted by the growers in the Azores are such that the cubic space occupied by the case containing 5 or 6 Pines, is greater than would be occupied by two dozen or more of the Egyptian Queens. This, with the limited amount of cold storage available on our shipping lines, will deter us from attempting to rival the Azore growers in placing on the London market Pines of this variety. There is little doubt that this and other varieties may be profitably grown, both for local markets and for canning, but until the space available for shipping Home in cold storage is very largely increased, it would be folly to recommend planting such a variety in large areas.

OTHER VARIETIES.

A few other varieties are cultivated in Natal, but none have been propagated to any extent. One variety which would probably pay best of all, when once it becomes acclimatised, is that known as Red Spanish. This fruit is extremely hardy, very prolific, and does not sucker so freely as the Egyptian Queen, as it reproduces itself largely by means of slips. This variety is the main crop both of Florida and the Bahamas, and is largely used in the latter place for canning, whilst in Florida it is mainly produced for shipment to the Northern cities. *I must emphasise* the point that it may take some years before such a variety would become acclimatised.

PINEAPPLE CULTURE IN SOUTH AFRICA

SUITABILITY AND SELECTION.

There is little doubt that selection of varieties suitable to certain areas in this country has simply meant a survival of the fittest for the climatic conditions. This is not the method of selection required now.

FIRST METHOD.

It is an admitted fact that certain plants produce better fruit and less suckers than others, and again some produce medium fruit and a superabundance of weakly suckers. The grower who desires to start right will endeavour by selecting those plants which produce good fruit, and which are not too prone to produce large quantities of suckers, and marking these in his fields, to produce a much superior fruit to that produced by promiscuous planting. It must be borne in mind that this is a question of time.

SECOND METHOD.

In order to avoid the propagation of those Pines which have a tendency to produce an excessive amount of suckers, it is advisable, if planting from an old Pinery, to carefully eliminate such plants, to discard weakly looking suckers. It would obviously be impossible for a man to select sufficient under the first method to plant out, say a hundred or more acres, but he can, by selecting sufficient to plant out ten acres, and rogueing them out as the growth and habits are determined, raise sufficient to plant out in three years another hundred acres, and by this means he will be building up a type, which work so far has never been attempted in this country with the pineapple. It must be borne in mind that pineapples, like all other plants, are liable to variation and such variations, if in the right direction, may frequently be turned to good account. There is no hard and fast rule in plant life. One cannot say that what is a success in Natal will, therefore, be a success in Albany or Bathurst. The soil and climatic conditions vary so considerably that varieties and methods of planting must suit the different conditions.

LARGE VARIETIES.

There are varieties such as Abbaki, Porto Rico, and Enville, which would doubtless succeed well and produce their immense fruit in parts of Natal, but they would take years to acclimatise in the cooler latitudes of the Eastern Province, and even when acclimatised, it might be found that the quality of fruit produced would not compare with the smaller fruits of the Eastern Queen, either in flavour or carrying capabilities.

The best advice that can be given, is to stick to the varieties at present grown in the districts, and, by methods of selection, to build up a superior type of fruit.

PINEAPPLE CULTURE IN SOUTH AFRICA

PREPARATION OF SOIL.

The success of the plantation will largely depend on the thorough preparation of the land. There is an old saying in England that two ploughings are equal to a dose of manure. By this is meant that badly prepared land with a fair dose of manure will only produce a crop equal to the crop produced on the same land without manure, if that land is ploughed and cross-ploughed. If the land has trees or bushes on it, these should all be stubbed up and the large roots removed.

DISC PLOW PREFERABLE.

It is best, if possible, to use a Disc Plow, after the ground has been cleared of all stumps, etc. In this way the remaining roots on bush land will be cut up into short lengths, and the second or cross ploughing will again sever them.

PLOUGHING FOLLOWED BY DISC HARROW.

It is usual to follow each ploughing with a heavy disc harrow, and any roots which may be exposed and are too big for the plough or harrow to sever should be removed or piled in heaps and burnt on the land. Where the closer method of planting, which I shall mention later is adopted, it is best to remove all roots which would be likely to interfere in any way with the subsequent cultivation of the plants. Most of these will be dragged up by the use of a drag or zigzag harrow, and being piled in small heaps on the field, can be burnt and the ashes spread over the land. If planting on the wider system (that is 2 ft. x 4 or 5 ft.) the removal of the long pieces should be sufficient. The main object in removing them from the land is to facilitate cultivation. If lengths of roots of 2 or 3 feet are left just below the surface of the soil, the cultivator is likely to drag them up and, with them, one or more plants.

HUMUS IN SOIL.

The small roots which remain add humus to the soil and, as previously shown, the pineapple is very partial to humus. Humus can also be added before planting by the application of fairly large quantities of Kraal manure. This should be ploughed in or dug in along the rows it is proposed to plant, as the application of Kraal manure after the plants are once set out is a somewhat difficult matter. The preparation of the soil should take place, if possible, six months or more before planting. A further disc harrowing with heavy disc, followed by the drag harrow, will then put the ground into fine condition. If on a slope it is advisable, in preparing the land as above, to omit the

PINEAPPLE CULTURE IN SOUTH AFRICA

drag harrowing after the second or cross ploughing and discing. The land left in a somewhat rough condition is not so liable to wash away if heavy rains set in, and will absorb more moisture than if fined down with the drag harrow. The application of Kraal or artificial manure must depend on the character of the soils. Many soils on which pineapples are grown need little or no feeding, whilst others of the poorer sandy type will not produce a marketable fruit after the first crop unless heavily fertilised.

METHODS OF PLANTING.

Much diversity of opinion exists as to the best distances to plant, and this diversity is partly due to the varying conditions of soil and climate. On the small islands or Keys of Florida the soil is extremely shallow, overlaid with Coralline rock. The life of the plantation under these conditions does not exceed five to six years, and it is frequently less. In some cases these are planted as close as 18 inches by two feet. On the mainland, where the soil is particularly poor, although of good depth the distance is 2 ft. x 2 ft. In this case heavy applications of fertiliser are needed yearly, and the life of the plantation is considered to be from five to six years. Under these conditions, which may be said to apply largely to the Pine growing areas of Natal, especially those near the coast, this closer planting and short crop method is advisable as giving a greater return per acre, but under other conditions, where the quality of the soil is such that little or no fertiliser is needed, the wider methods adopted in the Eastern Province are undoubtedly more suitable.

THE WIDER PLANTINGS.

These are usually five feet apart from row to row, with plants two feet apart in the row; by this system almost all the cultivation is done with a single horse cultivator, and this in a large pinery considerably reduces the cost of production. The method of planting is to stretch a wire line up to 300 ft. long with a good strong ring attached to each end. This wire has small pieces soldered to it every two feet. Great care must be taken to get this first or base line perfectly straight and true. Now at each end of this, another wire is stretched at right angles to the base line. The method of obtaining a right angle is very simple, and has been described so frequently that it ought to be known to all. In case some of my readers have not seen it described I will repeat it here: From the first solder mark on the base line count off to the 15th mark, i.e., 30 feet, stick in a peg at No. 1, and at No. 15; stretch the second line so that it is as near to a rectangle at number one peg, measure off 40 feet along the second line and mark with a peg number 3,

PINEAPPLE CULTURE IN SOUTH AFRICA

number 1 peg as base. Now if the angle set is a true right angle, the distance between the peg at number 15 mark, and number 3 peg will be 50 feet; if it is more, the second line must be shifted in until it is correct, in other words 3, 4, and 5, or the multiples thereof, will give a true right angle; after this is satisfactorily settled, the other end is treated in the same manner and we now have two parallel lines at 300 feet apart. With a tape measure held by two men, stakes are placed along each of these lines at the distances apart at which it is intended the rows should be,—if 5 ft., then every five feet.—if 2 ft., then every two feet. Two men or more now walk along with spades, and insert same into the ground against each of the solder marks on the first line, and the spade is then pressed away from the line leaving a small opening sufficient to insert the plant. Plants are then inserted and the soil pressed with the feet so as to entirely fill the cavity made; care must be taken not to insert the plant so deep that the soil can be washed into the heart. The line is then shifted over to the next two pegs and planting continued in this manner. Care is taken that the line is always stretched to the same side of the pegs and that the holes are also always made on the same side. Planting is not a slow process if plenty of hands are available. One should remain at each end of the line, three or more should make the holes and a like number plant, with sufficient help to bring along the plants.

WASTAGE OF TIME.

A good deal of time can be saved by having two lines with solder marks on. Thus, whilst the planters are inserting the plants on the first line, the diggers are preparing the holes on the second line, and as soon as the first line is planted the two hands at the end of the line can remove it and stretch it for the third line. In the closer planting, at distances of two feet by two feet, some 18,809 plants can be planted on an acre. This, however, entails considerable difficulty in harvesting the crops in cultivation and the thinning of suckers.

THE SYSTEM MODIFIED.

A modification of this system is sometimes adopted in order to make the handling of the crop an easier matter, viz., the omission of every fifth row. This enables the workers to proceed along such pathways and reach over to the inner row from either side; in other words the bed consists of four rows of plants, with a four feet footpath between each bed. This latter method of planting is advisable in the cases of such Pines as Smooth Cayenne which, owing to the great weight of the fruit, frequently topples over allowing the fruit to become sunburnt

PINEAPPLE CULTURE IN SOUTH AFRICA

on the upper side. If the closer method is adopted, this trouble is largely avoided, as the leaves interlock and plants hold each other up. *If the plants fall on one side*, even if the fruit is protected from sunscald, the top or crown becomes unsightly or twisted in its endeavour to turn upwards. These closer methods of planting are not advocated for large areas, unless it is intended to make a short period crop of it. If it is adopted even on rich land, such close planting naturally soon exhausts the soil, and the difficulty of applying fertiliser in such cases is considerable. Where a grower has only an acre or so to handle, these closer methods are quite permissible, but for large areas, the wider plantings are the best and most economical.

VITALITY RETAINED OVER A LONG PERIOD.

The Pineapple plants retains vitality over a long period, even when removed from the soil. Slips, suckers or old plants, *if properly handled* and sacked, will travel half round the world and still retain sufficient vigour to start into fresh growth. I have known cases in which the old plants have been rooted up and thrown aside, and more than 18 months later they were still alive.

CULTIVATION.

Cultivation of the plants commences as soon as necessary after planting. In the case of virgin soil the crop of weeds is not, as a rule, a serious thing to contend with. In the closer planting, the usual implement employed is a single wheel hand cultivator, and for the first six or nine months this may be used up and down and across the rows. This makes further work unnecessary, it is also used to work in the fertiliser. It must not be forgotten that the Pineapple plant feeds very close to the surface of the soil, so that deep cultivation is not desirable. Cultivation during the first year must be frequent to conserve all the moisture possible; when the plants have grown too large for the cultivator to be used with advantage, it is usual to take a small scuffle hoe, on a good long handle; by the use of this tool, all weeds can be eradicated and the ground left in a nice level condition.

In the cultivation or the wider planting, where the plantings are 2 ft. by 4 ft. or 5 ft. it is customary to use a single animal cultivator; this reduces the amount of hand labour, but hand hoeing has to be carried out between the plants and, as they grow older, alongside each row. Cultivation should be frequent and thorough and should follow each rain, or take place more frequently, if necessary, to prevent the soil from baking or cracking. The Pineapple does not love a close, hard-packed soil, but thrives much better if the ground is loose and friable. Cultivation of the closer plantings ceases, except for the use

PINEAPPLE CULTURE IN SOUTH AFRICA

of the scuffle hoe, after the first 18 months, but with the wider plantings it is consistently carried on, as in the case of other fruits.

PROPAGATION OF THE PINEAPPLE.

Pineapples may be propagated by means of suckers or slips. Some writers describe other methods of propagation, such as by crown or crown slips, or again by discriminating between so-called ratoons and suckers; for practical purposes these are one and the same.

THE SUCKERS.

The sucker is produced from the parent plant, either above or below the surface, at the juncture of the leaf with the stem. Slips are produced by some varieties at the base of the fruit itself on the fruiting stem.

PREPARATION OF SUCKERS.

The Embryo sucker can be readily seen on the removal of the basal leaf and, where the growth is close, they are apt, as in the case of the Egyptian Queen, to cause a bunchy growth or thin weedy plants, which will only produce poor fruit. In such cases most of the Embryo suckers should be removed at the time of planting; if this is done, much work will be saved later on in thinning the suckers.

SUCKERS FOR PLANTING OUT

should be removed from the parent plant as soon as they are well developed; this, in the case of vigorous plants, means in about six months from their first appearance; they should be broken out at the junction with the parent plant. The basal leaves should be removed and the heel cut with a sharp knife. Many do not remove the heel, but this is a mistake, as the sucker will send out roots from the lower portion if cut, as well as the sides, and these downward roots tend to keep the plant erect when high winds are prevalent. The remaining leaves of the sucker should be reduced to about half their length.

REMOVE THE BASAL LEAVES.

If the basal leaves are not removed, it will be found that the roots cannot penetrate the tough fibrous leaves, and will simply form a whorl of roots, which will wind round the stem, one consequence being that the plant will only *exist*, until such time as the leaves decay, after which it will probably thrive. As the leaf of the Pineapple is largely composed of a flax-like fibre, the time taken for this decay of the leaves is, during wet weather, as long as six months or more, and in dry weather, perhaps double as long. It will be readily seen, therefore that failure

PINEAPPLE CULTURE IN SOUTH AFRICA

to remove the lower or basal leaves correspondingly lengthens the period before the first crop will mature. The sucker will, under tropical conditions, produce its first crop in from 12 to 18 months, and in a cooler temperature will take from two to three years,—the shorter period with the stronger and more vigorous plants and the longer with the weaker ones. If a plantation is being broken up, the simpler way is to remove the plants and cart them over to the new site, when the best of the suckers can be selected and any doubtful ones discarded. My previous remarks on the selection of plants for their fruiting and freedom from excessive suckering must be borne in mind. Slips are prepared in the same manner as that described for the sucker, except that they are removed from the stalk at the same time as the crop is harvested. As at such a time most of the hands are too busy with the crop to undertake any fresh planting, the slips are thrown into a shed and allowed to remain there until such time as the land is ready or the hands are free. There is more difficulty in handling slips for planting than suckers, as in many cases they are very short, and are difficult to firm in the ground, particularly if the ground is of a loose, sandy nature.

ROTTING OF SLIPS FROM SAND.

Owing to the shortness of the individual leaves, the cup-like formation of the centre or heart of the slip, it is not unusual to find after a heavy rain, (if the soil is of a sandy nature), that the centre is filled up with sand; this, unless removed, is likely to cause rot of the heart of the plant, which may finally destroy it during its first year of existence. In order to avoid this, it is the custom in some parts of Florida to drop a small quantity of cotton seedmeal into the heart; this meal becomes a congealed mass; as soon as the first rain falls, the young leaves as they grow push the ball so formed out of the plant, and by the time this occurs the danger from the sand is a thing of the past. If this method is not adopted, it may be necessary to wash out the sand by pouring water from the spout of a can, with sufficient force to wash out the sand. As a general rule the time taken for the slip or crown of the plant to develop fruit is from 6 months to a year longer than in the case of the sucker. It must be remembered that the Pineapple, being largely of the nature of an air plant, can thrive on a much smaller rainfall than many other crops; the formation of the leaves assists in carrying all the moisture which falls or settles on them, down to the base of the plant; the leaves acting as channels is of great assistance to the plant, especially in districts where the rainfall is comparatively light, but in which owing to other conditions, heavy dews or mists are frequent; every drop which settles on the leaves is in this way conveyed to the roots.

PINEAPPLE CULTURE IN SOUTH AFRICA

THINNING OF SUCKERS TO PRODUCE BETTER FRUIT.

The number of suckers allowed to remain on the plant may be briefly as follows:—

After the first plant has developed fruit, not more than two, in the closer planting, should be allowed to remain for fruiting the following season,—and three in the wider ones; the following season two of each fruiting plant will give four in the closer planted, and six in the wider. By the next season these allowed at the same rate will give 8 and 12 respectively, which in both cases is too many. Six should be the limit in the closer, and 10 the limit in the wider plantings. All the rest should be removed from the plant as soon as they are large enough to handle. It is important to note that removal should take place as soon as it is possible (unless plants are needed for extension of planting), before they have a chance to sap the vigour from the parent plant. If this course is followed, there will be a marked improvement in the size and quality of the fruit. The suckers to remove are those nearest the top, not those which are coming from the base, or below the soil level. This applies particularly to such varieties as Smooth Cayenne, which, owing to its weight, must have as much support as possible, and if suckers are allowed to remain well up the original stem, they may thrive and do well until fruit appears, after which, having no fresh root hold, they are liable to topple over and in many cases break right off, leaving the grower to mourn the loss of his fruit.

FERTILISERS OR MANURES.

The application of fertiliser must depend to a very large extent on the system of planting adopted, the richness or otherwise of the land, and the age of the plantation. If the closer planting of 2 by 2, whether in block or bed form, is adopted and the soil is poor, lacking in nitrogen and potash, it is advisable to apply a fertiliser containing a high percentage of the former as soon after planting as the roots commence to develop. A good start means as much to the Pine plantation as to other plant life. The system on very poor soil, found to answer best, is the application at the rate of half a ton to the acre of a fertiliser containing a fairly high percentage of potash, about two months after planting. It is sown along each side of the row and worked in with a single wheel planet junior, or similar hoe, and cultivator, using the cultivating teeth. The following year a ton to the acre is applied of a fertiliser containing a small percentage of ammonia and high percentage of potash, worked in the same way, and a yearly application of this follows. The working, however in subsequent years is by means of the scuffle hoe. The application takes place just at the commencement of a rainy season. This applies to both

PINEAPPLE CULTURE IN SOUTH AFRICA

methods of planting; many soils suitable for Pineapples will require only small amounts of these particular chemicals, but that is purely a matter of investigation on the part of the grower. After a plantation has produced several crops of fruit, it should receive fertiliser, even if planted on the wider plan, no matter how rich the soil may be at the time of planting; cropping continuously with the same crop, is bound to reduce the amount of available plant food. In most cases the reduction of these foods is shown by a decrease in the vigour of plants, as well as in the quality and size of fruit.

SOIL DEPLETED OF CERTAIN FOODS.

The food of which the soils are depleted will mostly be found to be nitrogen and potash, and applications of fertilisers containing these ingredients are essential, if the quality and size of the fruit are to be maintained. The Pineapple plant is not inclined to send out its roots a great distance in search of food.

PICKING AND PACKING.

Careful handling of the fruit is essential, if the best results are to be obtained. The usual method is to cut the stalk 3 or 4 inches below the fruit. The fruit should be well coloured before despatching to the packing shed. In Cuba it used to be the custom to pack in barrels, into which good-sized holes were bored all round to prevent fermentation. This system has little to recommend it, and properly constructed fruit cases to hold the fruit in single layers, are much better for the purpose, both for Local and Export purposes. A question has developed in this country of shipping pines loose in trucks for the Local markets, and whilst this continues low prices are bound to be the result. The problem of the use to which small-sized fruit can be put, instead of glutting the Local markets, must be solved by the erection of canning factories in those districts in which large quantities of Pineapples and other fruit are grown.

HARVESTING THE CROP.

Harvesting the crop takes place, so far as the bulk is concerned, during two periods, although in a large field there is scarcely a day on which some may not be cut. January to March, and June and July are the main seasons with the larger bulk. Unfortunately up to the present, except in some few cases, the handling of the crop has been crude, and has tended to great loss. The fruit, although to all outward appearances capable of standing rough handling, is really as delicate as the apple, although pressure on the Pine does not show so readily as on the latter. Rough handling is bound to show before the fruit reaches the market; some will come through undamaged, but the sample lot may be spoilt, and only those who have

PINEAPPLE CULTURE IN SOUTH AFRICA

experience of the big markets, not only of this country but abroad, can realise how a few bad fruit in a consignment affects the prices offered for the remainder. I do not mean the retail prices, but those which the wholesale buyer is prepared to give. The wholesale buyer argues that if some of a consignment have gone wrong on the journey, he is in no position to judge whether the remainder are going to keep for a few days,—for all he knows, they may be bruised and start going off as soon as they become exposed. He therefore has to allow a big margin for possible losses, with the result that the grower obtains the minimum price. The system of placing fruit in a truck without any packing material to prevent bruising, is against all the best interests of the industry.

1,700 DOZEN IN ONE TRUCK.

That number has actually been placed in a truck and consigned to Cape Town or Johannesburg! Can anyone imagine that the lower layers of fruit arrived in good condition? Could half of them arrive in decent condition? The whole system is just playing into the hands of the coolie. Does your reputable man go and wait for a market agent to sell these off in dozens?—and then have to go and buy a box to cart them away in? No! The coolie, or the Malay with his dirty cart, is the man who purchases these, and at rock bottom prices, for even he is not going to pay a decent price for stuff which may go wrong in a day or so. It is high time this method of shipment ceased: With the establishment of canning factories, doubtless it will do so, because it will pay the grower better to take that type of fruit to the factory, rather than risk obtaining such prices as he does under these conditions. Further, he is spoiling the market for his good fruit. Growers must realise that a market glutted with poor fruit has a very adverse effect on the prices realised for good fruit.

PROPER METHODS FOR LOCAL MARKETS.

There is only one way to harvest and market a crop, and that is the right way. The fruit must be handled carefully, not thrown into baskets, and then dumped into a cart; boxes are better than baskets for gathering. I say advisedly gathering. If the crop is being sent to a local market, cutting the stem is not necessary, unless it is of very high quality, in which case I should imagine the fruit would be intended for export. In that case fruit for export should be *cut with at least 3 to 4 inches* of stalk. The fruit sent to the local markets may be broken off with a twisting motion, and each one should be carefully placed in the big box and should not leave that box until they arrive at the packing shed,—the less handling the better. These boxes will hold from two to three dozen fruit, according to size.

PINEAPPLE CULTURE IN SOUTH AFRICA

If the journey to the packing shed is a long one, and over rough roads, a layer of grass should be placed in the bottom of the box. The first layer of pines on this must all head one way and the second layer head the other way, and so on. By this means the fruit will not be pressing on each other, but on the top or crown. Pines, even for Local markets, are better packed in single layer boxes. This I am aware, at the present price of box-material, may not be feasible, but under no circumstances should they be packed with more than three layers, and the method of packing should be such that no two Pines touch each other, either hay or mealie husks should be used to keep them apart. They should be fully coloured before gathering. Investigations carried out in recent years have demonstrated that practically all the sugar contents of the Pineapple are developed in the short period of ripening on the plant. Pineapples picked or cut when fully developed, before the ripening process has commenced, do not develop any further sugar, in fact, they lose a certain amount; in other words although the fruit apparently passes through the same ripening and colouring process, as when left on the plant, the tissues soften, but no sugar is developed in the process as in other fruits.

GRADING.

Whether for Local or for Export markets growers must realise that it pays to grade their fruit; it is useless to pack a box or crate of three dozen Pines of two or three grades or sizes; the fruit must be packed, as far as possible, of one size. This entails more trouble in the packing house, but fruit packed in first and second sizes and all well coloured will realise better prices than those mixed indiscriminately. This applies to all fruit. Half the cause of low prices realised on our local markets is the bad packing and indiscriminate mixing of all sizes and qualities of fruit in the same package. As mentioned before, not only do those particular packages realise low prices, but they spoil the market of the better grades.

STANDARD SIZES FOR EXPORT ARE AS FOLLOWS.

<i>Queens Extra Selected.</i>	<i>Selected.</i>	<i>Graded.</i>
Weight not less than 1½ lbs.	Weight not less than 1¼ lbs.	Weight less than 1¼ lbs.
<i>Cayenne.</i>	<i>Selected.</i>	<i>Graded.</i>
Weight not less than 4 lbs.	Weight not less than 2½ lbs.	Weight less than 2½ lbs.

FRUIT FOR EXPORT.

The fruit of the Queen variety desired for export is one weighing 1½ lbs. to 2 lbs. or thereabouts. If the process of selection advocated in a previous portion of this book is carried out, it

PINEAPPLE CULTURE IN SOUTH AFRICA

will not be many years before we see such Pines the general rule.—At present the bulk of the Pines are under weight.

CUTTING FOR EXPORT.

The Pineapple for export must be fully coloured, and *must* be cut with a stalk of from three to four inches in length. Each fruit must be carefully handled, and *only perfect shaped fruit* with single heads or crowns should be exported. A mistaken idea prevails here, that the English buyers think a Pine is not good if the crown is not set on straight. The English buyer thinks nothing of the kind; what he does think and know, is that most consumers in England place the Pineapple as a sort of centre piece in the dessert dish, and if the crown is all twisted or bent over the effect is quite spoilt. The business of the grower in this country is to produce the article in the form it is wanted on the market at Home. It is no use trying to teach the buyer in England that a Pine with a crooked crown is just as good eating, he knows that, but it is not what he requires and the aim of growers in this country must be to produce it in the desired form. The buyers in England (I do not mean the consumers) have been long enough at their business to know the requirements of the consumer, and it is useless for people in this country to try and teach them.

EACH PINE WRAPPED.

Each fruit should be wrapped in tissue paper, and, to prevent any shifting, coarse wool or mealie husks should be used; only one layer of Pines in each box is permissible. The packing for export should be done as near to the field as possible, in order to avoid any damage to the fruit through transit over rough roads. When once the box is properly packed, with all intervening spaces filled up with packing material and the lid nailed, the damage which might otherwise be caused in transit is reduced to nil, that is, provided the boxes are of good strong material. Sides, tops and bottoms should not be less than a quarter inch in thickness with seven-eighths inch ends and centres; lighter material than this is likely to be the cause of considerable loss.

Cold storage is the only method by which Pines can be safely exported. The fruit should not be placed in the cool chamber or refrigerator truck straight from the field, but should be cooled down gradually. Too sudden a drop in temperature is not good for any fruit. The agents overseas have had experience of this by now, and know that it does not pay to bring fruit out of the cool chamber of a ship and put it suddenly into a temperature, perhaps 20 degrees, or more, higher than it has been in for the previous three weeks, and the same applies to this end.

PINEAPPLE CULTURE IN SOUTH AFRICA

THE FUTURE OF THE PINEAPPLE

is a very rosy one. There is no doubt that with the resumption of a normal state of things after the war, the export business, which at present is retarded owing to lack of shipping accommodation, will be put on a more satisfactory footing. With the great increase which is taking place in the production of both soft and citrus fruits, as well as the opening up of such a new export as meat, the requirements of this country will demand a better service. The fruit industry is becoming daily stronger and stronger. By a combination of all these interests much can be done; I confidently expect within the course of the next few years to see a line of special fruit boats, sailing between South Africa and England, the cargo of which will be principally fruit. Our surplus, be they Pineapples and other fruits will be canned, dried or preserved, so that instead of depending, as we do largely to-day, on imported goods, we shall produce and export our own.

Three Reference Books you need.

The S.A. Poultry Annual. (1917-18 edition, and 1919-20 edition).

The most complete Poultry Book of Reference ever published in S.A. Giving concise but complete information on: Chicken Raising, Housing of Birds, Feeding of Poultry, Treatment of Diseases, Table Poultry, Egg Production, etc., etc. 275 pages. 50 illustrations. Price 4/0 post paid.

The Fruit Growers' and Smallholders' Year Book. (1919-20 Edition).

Compiled to help Beginners make profit from the land. Containing articles by Experts on Dairying, Bee-keeping, Vegetable Growing, Fruit Growing, Cheese-making, Poultry-keeping, etc. 134 pages. Profusely illustrated. Price 3/6 post paid.

The S.A. Garden Annual. (New edition in preparation 1919-20).

Last edition sold out. 1919-20 edition in preparation. Get your name on our waiting list. Orders executed on publication in order received. It will tell you amongst other things:— When to sow seeds in all parts of S.A., Plant diseases and pests and how to destroy them, How to increase plants, How to make insecticides and manures, How to plant and prune.

The SPECIALTY PRESS OF S.A., Ltd.

Box 3958, Johannesburg.

Box 388, Cape Town.

THIS BOOK IS DUE ON THE LAST DATE
STAMPED BELOW

AN INITIAL FINE OF 25 CENTS
WILL BE ASSESSED FOR FAILURE TO RETURN
THIS BOOK ON THE DATE DUE. THE PENALTY
WILL INCREASE TO 50 CENTS ON THE FOURTH
DAY AND TO \$1.00 ON THE SEVENTH DAY
OVERDUE.

OCT 21 1932

18 Oct '52 RW

OCT 6 1952 LU

LIBRARY USE

JUL 21 1955

JUL 21 1955 LU

AUG - 2 1981

RETD DEC 15 1981

LD 21-50m-8,32

description
lists of native and imported
Profusely illustrated. 7/6 post free.

S.A. Insect Pests of Man and Animals.

A book that should be in every household. Describes and
illustrates all our worst pests, giving life history, and methods of
destruction. Fully Illustrated. Price 3/6 post paid.

The SPECIALTY PRESS OF S.A., Ltd.

Box 3958, Johannesburg.

Box 388, Cape Town.

763375

SB375

B4

YC 63616

UNIVERSITY OF CALIFORNIA LIBRARY

