

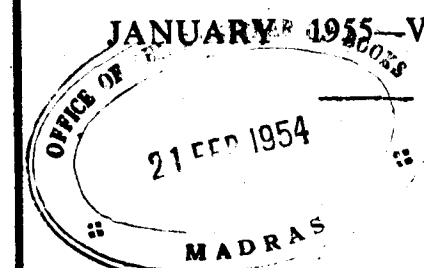
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ARECANUT BULLETIN

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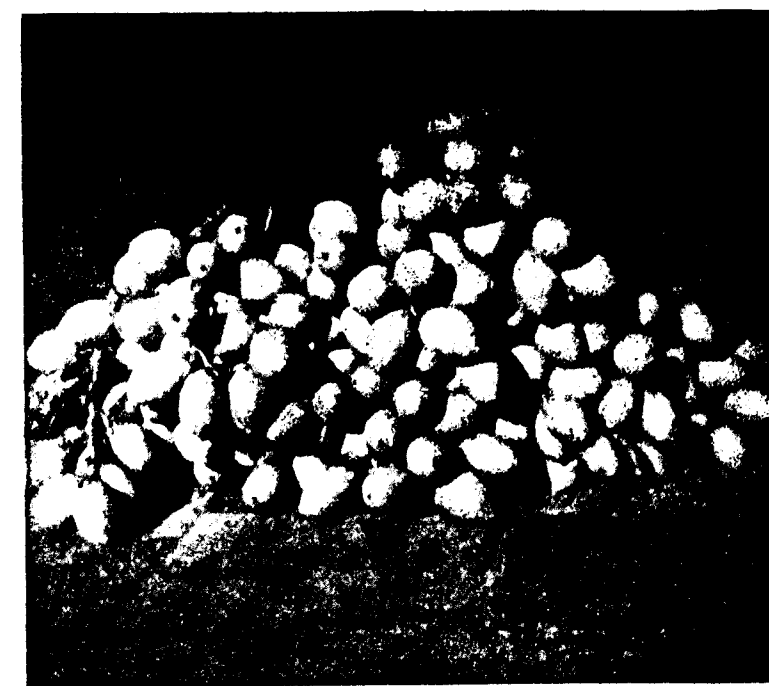


1) Manuring of the Areca Palm.

B. Narasimha Iyengar, B. A., Ph. D.

2) Farms News release (ICAR)

1016
1-55



One good arecanut bunch.

ISSUED BY

THE INDIAN CENTRAL ARECANUT COMMITTEE,
(Under the Ministry of Food & Agriculture, Government of India)

KOZHIKODE, (Malabar.)

Annual Subscription Annas 12.

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As the information in this Bulletin has been collected from various sources, the Indian Central Arecanut Committee cannot take responsibility for its correctness.

"ARECANUTS IN MALAYA"

BY

K. K. NAMBIAR,

Secretary, Indian Central Arecanut Committee,
CALICUT.

A lucid account of the agricultural conditions with
special reference to arecanuts in Malaya & Singapore.

Price As 8 only—Postage extra.

MANURING OF THE ARECA PALM.

(B. Narasimha Iyengar, B.A., Ph. D.)

Retd. Director of Agriculture in Mysore.

The local practice of manuring the areca palm in the malnad or highlands of Mysore is described in detail on pages 10 and 11 of "The cultivation of the Areca Palm in Mysore" by Coleman and Venkata Rao. Experiments with artificial manures were started on the now defunct Martur Farm in 1920 by me as agricultural chemist and continued for over 15 years. Two short accounts of the work done from 1920 to 1927 have already been published in the Journal of the Mysore Agricultural and Experimental Union—vide vol. 5, No. 2 pp. 85-87 and vol. 9 No. 1 pp. 8-11. Since research on areca has now been taken up on an all India basis, the results of work done in Mysore on manuring are now put together to serve as a basis for further investigations of all problems on manuring in the newly established research station near Thirthahalli, Shimoga District.

Ever since work was started in 1920, the whole garden was given a dressing of farm yard manure at 10 to 29 lbs. per tree every year according to the quantity available on the farm unless otherwise stated and covered over with green leaves and twigs according to local practice.

The whole garden, about 4 acres in extent and containing about 1200 trees per acre of all

ages was divided into strips along the rows of trees for different manurial treatments. Each of these variously treated strips had at least 2 rows of trees and there was a check strip after every 2 strips getting artificial manures. Each manurial treatment was repeated on 2 different strips at least.

The various plant foods were supplied at the following doses per tree:—

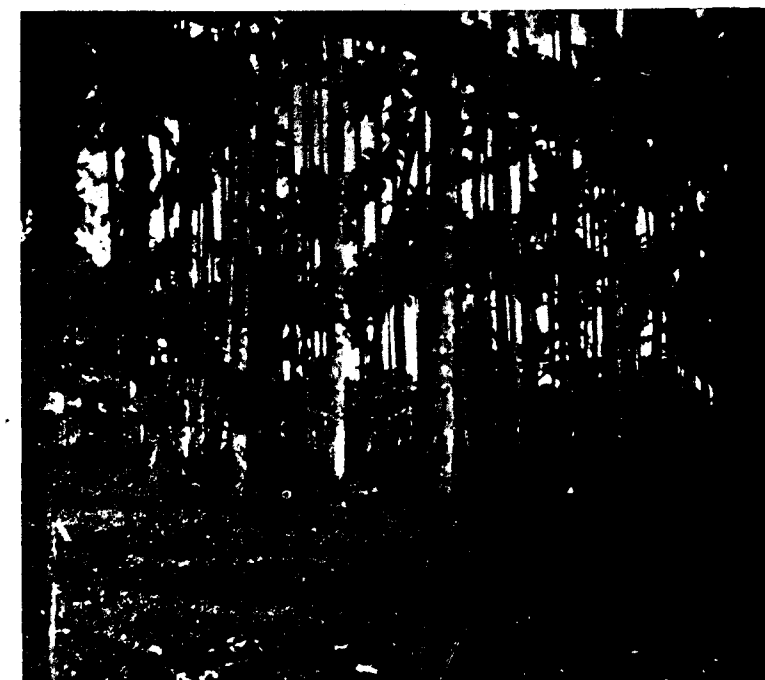
Nitrogen at 0.25 lb. as 31 lbs. of
of ground-nut oil cake or 1.25
lbs of sulphate of ammonia.

Phosphoric acid at 1 lb. as 7 lbs
superphosphate.

Potash at 0.2 lbs. as 0.5 lb sulphate of potash.

The manures were applied either singly or in suitable combinations according to plan of experiments. They were well mixed with the soil round each tree a little distance away from the base to a depth of about 6 inches. About a couple of weeks after the application of artificial manures, cattle manure was applied and the whole thing was covered over with green leaves and twigs according to usual local practice.

Manures were applied for the first time in December 1920 and later on in October-November of every year after the main harvest. As the garden had not been manured at all since 1917, it was manured for 3 years continuously to bring it into good condition as soon as possible. All agricultural operations such as digging, trenching etc. were under the direct



A well manured arecanut garden

control and supervision of the agricultural staff attached to the farm. The application of manures and harvesting operations were supervised by a Senior Assistant Chemist from the chemical section of the Department. The plant pathology section kept the garden free from koleroga by spraying with Bordeaux mixture.

To keep an accurate account of the crop from every tree, all rows and trees in each of the 100 rows were permanently numbered. The weight of green nuts from every tree at each harvest was recorded in a register. The whole crop was then mixed together, shelled, sliced, boiled, coloured and dried to suit the market according to local practice. The ratio of the prepared product to the weight of green nuts was determined, and the yield was calculated for every treatment. According to local practice and experience, though each acre contains 1200 trees of all ages, only 400 of them are considered to be yielding. The yield of dry nuts was calculated on the basis of 400 yielding trees per acre. As every tree was numbered and its yield of green nuts was entered in the register separately, it is quite possible to determine the yield of every tree year by year and according to its age as well.

The first series of experiments was intended to determine the requirements of the areca palm with regard to 3 important plant foods—nitrogen, phosphoric acid and potash. The plan of the experiments as well as crop yields of each year are given in table 1, and only average figures for 3 seasons for each treatment are given below:—

Treatment 1921-23.	Average yield per year in lbs. per acre.	INCREASE percentage over check.
Check or no artificals	590	
Groundnut cake	757	28
Cake and super.	733	24
Cake, super and potash	904	52
Ammonium sulphate	778	30
Sulphate and Super	760	29
Sulphate, super and potash	803	36

Treatment.	No. of trees harvested.		
	1921.	1922.	1923.
Check	733	820	773
Cake only	121	131	121
Cake and super	164	190	174
Cake, super and potash	144	166	150
Ammonium sulphate	123	132	118
Sulphate and super	153	161	156
Sulphate, super and potash	143	161	157
Total no. of trees harvested.	1563	1792	1649

It is seen from the above figures that about 50% of the trees harvested in each year had not received any artificial manures. About a 100 trees at least under each treatment have yielded crop. Even during the first year about 400 trees per acre have given crop while their number is nearly 450 in the second year. As will be seen later on, experiments on manuring in one form or other were conducted for 16 years from 1920 to 1936, but the number of trees harvested each year have not been compiled though they have been recorded in the register kept for the purpose.

The yield of 590 lbs. or slightly over 20 maunds per acre from the check series represents the average yield for the Shimoga District—the locality in which the farm was situated as given on page 2 of the

bulletin already referred to. The percentage increase of crop over the check series due to the addition of one or more plant foods is also given in the above statement.

The maximum average yield of 904 lbs. per acre of 400 bearing trees during the period has been from the series manured with cake, super and potash and represents an increase of more than 50% over the check series.

The effects of potash are clearly seen in the cake series, but not in the sulphate of ammonia series. The simultaneous application of all 3 plant foods in a soluble form in the sulphate series may have brought about some undesirable changes in the concentration of the soil solution making it difficult for the plant to properly assimilate the materials

needed. This point can only be cleared up by applying sulphate of ammonia some time after application of the other two manures.

From figures given above, it is seen that in both the series of experiments the addition of superphosphate alone either to cake or ammonium sulphate has not contributed to any increase in yield. In order to find out the necessity or otherwise of phosphatic manures, the experiments were remodelled in 1924. The former check series were manured as detailed in table 1, and the manured rows were left unmanured to study the residual effects of manures applied for 3 years continuously.

The detailed yields of the new series of experiments for the various years are also found in table 1, and only average yields of 3 seasons are given below:—

Average yield during 1921-23.	Treatment during 1924-26.	Average yield during 1924-25
628	Am. sulphate and potash.	800
518	Sulphate, super and potash.	767
620	Cake and potash	786
588	Cake, super and potash.	787

The fertility of these rows is also indicated by their yields during 1921-23 when they received no artificial manures and were treated as checks. The variations in fertility may not be due to soil conditions alone, for, all the rows do not contain trees of the same age. The presence of these two variable factors makes it rather difficult to accurately judge the effects of manures applied. Moreover, as some trees which existed in the rows and were bearing during 1921-23 fell down during heavy winds of the South West monsoon every year and new ones have also come into bearing in the meanwhile, the interpretation of results becomes much more difficult and complicated. As the harvest each year has been conducted tree by tree, it may be desirable to take the yields of only those trees which have given a crop right through the period of experiments and interpret the results.

Neglecting the fertility figures for 1921-23 and judging only from the results of 1924-26, the necessity for adding phosphate to the manure mixture for areca is not quite clear. The main function of

phosphoric acid in plant life being to stimulate good root growth, uniform stand and ripening of crop, its necessity or otherwise cannot be judged from crop yields alone.

The mixture of cake, super and potash may be said to be very slightly better in its effects than the one containing sulphate of ammonia instead of cake. At any rate, the big difference of 100 lbs. in yield in favour of the cake mixture during 1921-23 has dwindled down to 20 lbs during 1924-26. This may be due partly to the presence of very young trees bearing crop for the first time and also taking the place of mature trees falling down due to winds during the South West Monsoon.

Coming now to the residual effects of manures applied during 1921-23, the average yields during 1924-26 due to various treatments in previous years are given below:

Average yield per acre during 1921-23.	Treatment during 1921-23.	Yields from res. effects in 24-26.
757.	Groundnut cake.	774
733.	Cake and super.	762
904.	Cake, super and potash.	941
778.	Ammonium sulphate.	713
760.	Sulphate and Super.	700
803.	Sulphate, super and potash.	807

N. B. Yields given are in lbs. per acre of 400 trees.

It is seen from above figures that there has not been any falling off in yield and that the cake mixture series is still ahead of sulphate mixture series by 134 lbs. or nearly 5 maunds per acre.

Hence it may safely be said that after a garden has been brought into a good yielding state, the local practice of manuring it once in 3 years by rotation is a fairly sound one.

From 1921 to 1926, very heavy doses of the 3 important plant foods had been applied to get only an indication of their effects on crop yields. From 1927 onwards, new experiments were started to work out an economic dose of N, P and K consistent with good crop yields. Rows treated as checks in 24-26 were taken up for new manurial trials and the manured rows in the same period were left unmanured as checks to study residual effects of previous manuring.

The plan of experiments, details of manuring and crop yields for each year during 27-32 together with average figures for the whole period as well as for the previous one are given in table 2. Details of manuring and average yields only are given below together with average yields for 24-26 for comparison.

1932
3682
N.S.S.

Average yield 24-26.	Treatment 1927-32.	Average yield 27-32.
774.	100 N as cake, 400 P as super and 100 K as sulphate.	714
762.	100 N as cake, 400 P and 200 K.	682
941.	100 N as cake, 150 P and 200 K.	744
713.	50 N as cake, 75 P and 100 K.	786
700.	100 N as nitrolim, 150 P. and 200 K.	736
807.	100 N as Am. sulphate, 150 P and 200 K.	722
N. B. Yields and manures are in lbs. per acre of 400 trees.		

Taking average yields of 1927-32 into consideration, it is seen that the highest yield of 786 lbs. has been with the lowest quantities of manures applied - 50 N as cake, 75P and 100 K-, and the lowest yield of 682 lbs. from the maximum quantities of manures applied 100 N as cake, 400 P and 200 K. Comparing the 3 series in which 100 N in 3 different forms, 150 P and 200 K have been applied, it is seen that oil-cake as source of nitrogen has shown itself better than either sulphate or ammonium or nitrolim.

The yields for 1924-26 given in the above statement are the residual effects of manures applied in 21-23. Except in 2 instances the yields for 1927-32 are lower than those for 24-26. In one instance the yield has fallen from 941 lbs. to 744, in spite of continuous manuring. This can only be attributed to very young trees beginning to give crop in place of good yielding trees which might have fallen down during monsoon winds. Whether it is a fact or not can only be determined after a detailed examination of yields recorded tree by tree in the old registers.

A study of annual yields in all cases as given in tables 1 and 2, whether in the manured series or in the residual effect series of the 3 periods - 1921-23, 24-26 and 27-32 - reveal one strange fact

which is that the highest yield has generally been in the last year of the period. In the manured series at least, this may be attributed to the cumulative effect of manures applied. In the residual effect series this can only be due to the small quantities of cattle manure and leaf and twig covering applied annually. The only exception to this is the residual effect series of 27-32 which had received artificals for 3 years only in 24-26. This seems to indicate that the artificial manures applied had a better cumulative effect than the farm yard manure.

The object of the whole series of experiments from 1921 to 1936 was to find out an economic dose of artificial manures that should be

1921-23		1924-26	
Treatment	Yield	Treatment	Yield
Check.	588	Manured.	760
Manured.	790	Res. effects.	783

In the first set of strips, the yield has fallen from 760 lbs. in 24-26 to 638 during the next 6 years and further down to 618 in the next period of 4 years. The fall in the second set of strips which received manure in 1921-23 and also in 1927-32 i. e., during a period of 9

Year	Yield lbs	Year	Yield lbs
21-22	2720	22-23	2504
25-26	2982	26-27	3482
29-30	2820	30-31	2918
33-34	3737	34-35	2695

added to the gradually decreasing supply of cattle-manure usually available and get good crops. The experiments clearly indicate the possibility of raising the yields from 590 lbs. to 786 lbs.

Average yields for every treatment during the various periods of experiment and also average of manured and unmanured series, during every period are given in table 3. Detailed yields for another period - 1933-36 - when the whole garden was left unmanured to study residual effects and then start further experiments are also given in table 3.

Only average yields from all treatments during every period are given below :—

1927-32		1933-36	
Treatment	Yield	Treatment	Yield
Res. effects.	638	Res. effect.	618
Manured.	730	do	726

years in all, the fall in yield is only from 790 lbs in 1921-23 to 720 lbs. in 1933-36.

The total yields of the farm have also been collected as far as available from published annual reports and are given below:—

Year	Yield lbs	Year	Yield lbs
23-24	3145	24-25	3092
27-28	2310	28-29	2655
31-32	3080	32-33	2697
35-36	3970	36-37	4119

The above figures give some idea of variations in yield under actual working conditions. The variations are the combined effects of season, manuring, age and nature of yielding trees and soil variations as well.

The results have been considered from a purely numerical point of view. It may be worthwhile examining all detailed figures available in records from a statistical point of view as well.

It has already been stated that a manurial application of 50 lbs N, 75 lbs P and 100 lbs K has given an yield of 786 lbs. Another important money crop in Kadur and Hassan districts is coffee. From experiments conducted on the coffee research station from 1929 to 1939, the average yield over a period 10 years has worked out to 6.5 cwts or 728 lbs. of coffee and that too with an annual manuring of 50 N, 75 P and 100 K. Planted at a standard distance of 6 feet apart each way, an acre of coffee also contains 1200 plants of all ages in course of time. Just how many of them carry crop every year has not been accurately determined. It is a strange coincidence that both crops have given almost identical yields.

During a tour undertaken in 1911-12, 26 samples of soils were collected from areca gardens. Of these, 6 were from the Martur farm itself and the rest from various localities as given in table 4, which gives information on some of the chemical constituents determined in course of time according to American AOAC methods. The nitrogen content of the 26 samples analysed varies from 0.03 to 0.22%. 11 of these samples have a N content of 0.15%. In 10 samples the N content varies from 0.12 to 0.14%. Taking localities into consideration, the samples from Koppa, Sollebile and Megaravalli seem to be the poorest. The samples from Agumbe which

has the heaviest rainfall in the State are not below the average.

Humus also has been determined in all the samples. In this also there is a wide variation ranging from 0.82 to 2.56%. Here also the samples from Agumbe are not below the average. Generally speaking, samples rich in humus show a good N content also.

Phosphoric acid and lime have been estimated in very few samples and consequently cannot be commented upon.

If samples are now collected from all representative tracts and analysed by improved modern methods, a lot of useful information can be obtained on an all India basis.

Summary and conclusions.

The experiments were carried on for a period of 16 years from 1921 to 1936 divided into 4 periods. During the first 2 periods of 3 years each, the experiments were meant to give a general idea of the manurial requirements of the areca palm. The quantities of manures applied were 100 lbs. nitrogen, 400 lbs. of phosphoric acid, and 80 lbs. of potash per acre of 400 bearing trees, in addition to a general dose of 10 to 20 lbs. of cattle-manure per tree and the usual leaf mulch.

In the first period of 3 years, the cattle-manure series gave an average yield of 590 lbs. of cured nuts per acre while the yield from complete artificial manure series was 904 lbs. or an increase of 52%.

During the second period of 3 years, the artificial manure series were left unmanured to study residual effects and the other series was manured with artificals. The yield from residual effect series increased from 904 to 941 lbs. while the increase in the other series was from 590 to 787 lbs. which meant an increase of 34% nearly.

During the third period of 6 years the previously manured series were left without manure to study residual effects and the other series was manured with varying doses of N, P and K to find out the most economic dose. It was found that

50 lbs N, 75 lbs phosphoric acid and 100 lbs of potash per acre gave the maximum yield of 786 lbs. During the same period, the maximum yield from the residual effect series was 676 lbs.

During the last period of 4 years, the residual effect yield from the previously manured series has been 730 lbs while in the other series the average has come down to 618 lbs.

The indications on the whole are, a garden once brought into good yielding condition may be manured once in 3 years, and that an yield of over 780 lbs. can be obtained by an application of 50 N, 75 P and 100 K using groundnut oil cake as the source of N.

Collecting all facts and figures from publications of the Agricultural Department of Mysore and drawing upon the resources of my memory also the above account has been written 17 years after my retirement from service. If the present staff engaged on areca research has the time and inclination to ransack the various experimental records in the chemical section, some new facts may come to light and a revision of conclusions drawn may also be necessary. I sincerely trust that this account of work done in the past for over 16 years will be of some use to those engaged on the work at present. It is a pity that the old Martur farm has been wound up and valuable plant material with a lot of known information about it has been lost.

Sources of information.

Journal of the Mysore A and E Union Vols. 5 and 9.

Annual Reports of the Dept. of Agriculture, Mysore 33-34 to 36-37.

Review of work on the Coffee Research Station, Balehonnur.

TABLE 1.
TREATMENT & ANNUAL YIELDS FROM 1921 TO 1926.

Treatment 1921-23.	Yield of dry nuts in lbs. per acre.					Treatment 1924-26.			
	1921	1922	1923	1921-23 Average	1924-26 Average				
Check.	569	535	780	628	800	765	748	888	Amm. Sulphate & Potash.
"	448	406	578	518	767	643	804	854	Sulphate, Super & Potash.
"	612	540	713	620	786	707	710	950	Cake and Potash.
"	528	490	731	588	787	681	764	900	Cake, Super & Potash.
Ground nut Cake.	730	686	856	757	774	756	726	840	Residual effects of manures applied during 1921-23.
Cake and Super.	650	697	852	733	762	802	663	821	do
Cake, Super & Potash.	948	822	942	904	941	988	762	1073	do
Sulphate of Ammonia	787	697	850	778	713	716	655	769	do
Sulphate and Super.	727	728	825	760	700	664	659	777	do
Sulphate, Super & Potash.	803	749	856	830	807	896	660	865	do

N. B.—Figures are given for an acre containing 400 bearing trees.

Manures were applied at the rate of 0.25 lbs. nitrogen per tree or 100 lbs per acre as cake or Amm. Sulphate.
1.00 lbs. phosphoric acid per tree or 400 lbs. per acre as Superphosphate.
0.20 lbs. potash per tree or 80 lbs. per acre as Sulphate of Potash.

TABLE 2.
TREATMENT AND ANNUAL YIELDS DURING 1927-32.

Treatment during 1924-26.	Yield of dry nuts in lbs. per acre of 400 bearing trees.							Treatment during 1927-32.
	1924-26 average	1927-32 average	1927	1928	1929	1930	1931 1932	
Am. Sulphate & Potash.	...	800	603	682	612	591	543 580 609	Residual effects of
do do & Super	...	767	641	773	641	624	506 687 614	manures applied
Cake and Potash	...	786	630	685	669	565	637 567 659	during 1924-26
do do & Super.	...	787	676	778	643	630	597 748 661	
Residual effects of manures applied during 1921-23	...	774	714	600	674	745	752 860 830	100 lbs. N as cake, 400 lbs P ₂ O ₅ as super & 100 lbs K ₂ O as sulphate.
	...	762	682	540	673	745	691 640 802	100 N, 400 P ₂ O ₅ and 200 K ₂ O
	941	744	594	720	753	862	749 784	100 N, 150 P ₂ O ₅ and 200 K ₂ O
	713	786	682	761	787	834	781 873	50 N, 75 P ₂ O ₅ and 100 K ₂ O
	700	736	583	662	807	809	740 814	100 N as nitrolim, 150 P ₂ O ₅ and 200 K ₂ O
	807	722	640	710	797	724	720 739	100 N as Am. Sulphate, 150 P ₂ O ₅ and 200 K ₂ O

TABLE 3.

TREATMENT AND AVERAGE YIELDS DURING VARIOUS PERIODS OF EXPERIMENT.

Period 1921-23.			Period 1924-26.		Period 1927-32.		Period 1933-36.	
Treatment.	Crop lbs/acre.	Treatment.	Crop lbs/acre.	Treatment.	Crop lbs/acre.	Treatment.	Crop lbs/acre.	
Check.	628	Am. Sulphate & Potash.	800	Residual effects.	603	Residual effects.		
do	518	N, K and Phosphate.	767	do	641	do		
do	620	Cake and Potash.	786	do	630	do		
do	588	N, K. and Phosphate.	787	do	676	do		
Average.	588		760		638		618	
Groundnut Cake.	757	Residual effects.	774	100 N (cake), 400 P, 100 K.	714	Residual effects.	674	
Cake and Super	733	do	762	100 N, 400 P, 200 K.	682	do	769	
N, P and Potash.	904	do	941	100 N, 150 P and 200 K.	744	do	768	
Amm. Sulphate.	778	do	713	50 N (cake), 75 P and 100 K	786	do	730	
do and Super.	760	do	700	100 N (nitrolim) 150 P, 200 K.	736	do	690	
N, P and Potash.	803	do	807	100 N (Am Sulphate) 150 P, 200 K	722	do	725	
Average.	790		783				726	

- 169 -

TABLE 4.

COMPOSITION OF SOILS FROM ARECA GARDENS.

Reg. No.	Locality.	Description.	Nitrogen %	Humus %	Phosphoric acid %	Lime %
809	Martur Farm.	From plot manured in 1912.	0.185	2.56	0.12	0.27
810	do	do	0.120	1.48	trace	0.13
811	do	do	0.134	1.57	do	
812	do	From unmanured plots.	0.170	2.32		
813	do	do	0.155	2.12		
814	do	do	0.160	2.04		
884	Koppa.	From plot manured 3 years ago.	0.120	1.41		
885	do	4 years ago.	0.050	1.23		
886	Sollebile.	From abandoned garden.	0.050	1.18		
887	do	From plot manured 3 years ago.	0.11	1.75		
888	Agumbe.	Ghat Garden.	0.14	2.30		
889	do	From plot manured a year ago.	0.16	2.94		
890	do	2 years ago.	0.134	2.32		
891	Megaravalli.	" a year ago.	0.030	0.82		
892	do	do	0.060	0.84		
893	Yedur.	4 years ago.	0.160	2.35		
894	do	6 years ago.	0.150	2.33		
895	do	1 year ago.	0.170	2.50		
896	do	3 years ago.	0.150	1.97		
897	do	2 years ago.	0.170	2.50		
898	Hulimane.	2 years ago.	0.220	Not		
899	do	3 years ago.	0.140	deter-		
900	Nisrani.	2 years ago.	0.125	mined		
901	do	1 year ago.	0.120	2.58		
902	Nadhalli.	2 years ago.	0.210	2.60		
903	do	2 years ago.	0.140	2.25		

- 170 -

INDIAN COUNCIL OF AGRICULTURAL
RESEARCH, NEW DELHI.

Farm News Release No. 2.

DUCKS AS DISEASE
CONTROLLERS.

Check Infection of Internal
Parasites.

New Delhi: The rearing of ducks on farms, apart from bringing any additional income to farmers also has proved to be one way of reducing the incidence of internal parasites of domestic animals.

Ducks have been found to eliminate snails from water sources and other places on the farm. These snails are carriers of internal parasites like flukes, liver flukes, and blood flukes which attack farm animals.

Observations made at the Helminthological Research Centre in Madras showed that when ducks were reared, the snail population went down. Hitherto removal by hand and application of chemicals were the only two ways for destroying the snails.

Farm News Release No. 3.

JOWAR BORER CAN BE
CONTROLLED

Easy methods Suggested.

New Delhi: The common stem borer, generally found damaging both *jowar* and maize plants, can be checked by putting into effect some simple remedial measures.

The pest with which all *jowar* and maize growers are familiar, attacks all parts of the plant excepting the roots. The caterpillars of the pest bore into the stems and sometimes into the cobs. Pest-attacked plants generally die, and when young plants are attacked, they show a dried up central shoot.

To control the pest, experts recommend that all stubbles left in the field after the crop is harvested are dug out and destroyed. These stubbles harbour the borer caterpillars and will, if undisturbed, infest the next crop of *jowar* or maize.

If the area under the crop is small, farmers are advised to look out for dried up shoots and destroy them whenever found.

In case of severe infestation of the pest light traps can also be used with good effect to trap and destroy the pests.

Farm News Release No. 6.

WHEAT HARVEST
MADE EASY.

Bullock-drawn Machine
proves popular.

New Delhi: A bullock-drawn disk harrow type thresher, known by the name of Olpad thresher is becoming popular with farmers for threshing wheat.

The machine takes half the time required for threshing wheat by the usual method of bullock threshing. Unlike the traditional method it is not fatiguing to work this machine. It also provides the additional weight required to get a finer type of *bhusa* and helps to crush the nodes of the straw.

The thresher can be pulled over the ordinary threshing floor by a pair of bullocks. The machine, together with a wooden frame, costs Rs. 150.

Farm News Release No. 7.

TREATING HIDES
AND SKINS.

Effective control of
leather Beetle.

New Delhi: Research has shown an effective way of protecting hides and skins in store from damage caused by the leather beetle.

Annually, the hides and skins trade loses enormous amount of money because of the beetles

damaging the hides and skins store and reducing their market value.

The method of treatment is not only effective but also cheap. Gammexane powder at 2.5 per cent in talc powder dusted to form a thin film on the fleshy side of hides and skins infested with the leather beetle killed 85 to 90 per cent of the pests. The dusting repeated after 10 days, protects the skins and hides from re-infestation.

Four ounces of Gammexane powder mixed in talc is considered to be enough for dusting about six cow or ox hides or about 15 goat hides. Treating 100 hides or double the number of skins will cost about rupees four.

'Wet curing' of raw stock with an adequate quantity of common salt, proper aeration and periodic exposures to daylight also go a long way in preventing the beetle attack.

Farm News Release No. 8.

LITCHIS FOR THE
OFF-SEASON.

Simple method of drying
the Fruit.

New Delhi: *Litchis*, the delicious fruit of North India, can be had for consumption out of season if it is dried and stored. The fruit is usually available in the months of May and June. A trial at the Indian Agricultural Research Institute showed that *Litchis*, if dried properly, could be stored without fear of spoilage.

The method of drying is simple. All damaged and overripe fruits are removed. Those which are covered with syrup from bad fruits are wiped with a wet cloth.

The fruits are then spread out on a stringed *charpai* with an open mesh. This allows free play of air from above and below. The *charpai* legs are put in earthen bowls of water to prevent ants reaching the fruit. The fruit is kept in the open air and in the sun for nearly two weeks. A fine muslin sheet should be spread over the fruit to prevent attacks from birds, squirrels, bees and wasps.

The dried fruit should not show much of shrivelling in the outer skin but the colour will be brown rather than red. The inside pulp shows good shrinkage and a dark brown to black colour. The fruit develops a very pleasant flavour.

The dried fruits are stored in air-tight tins and aired occasionally. Even after a year they may not spoil.

Farm News Release No. 9.

SELECTING A DAIRY COW.
Points to be remembered.

New Delhi: In selecting a cow for milk production the milk record of her mother and the kind of bull to which she is born are the factors which should receive attention. When these are not known, however, the farmer will have to look to certain physical points which will enable him to say whether the cow is going to be a good yielder or not.

A dairy cow should have an attractive general appearance, show vigour and a graceful gait. The head should be comparatively small. The body should be well-formed with no excessive fat and having a wedge-shaped appearance with the greatest width between the hips and with the apex at the point of the withers.

The udder should be well-developed, extending well forward with the rear attachment high and wide. The quarters of the udder should be evenly balanced, symmetrical and free from lumps of hard tissue. The teats should be uniform, of convenient length and size, well-apart and squarely placed. The udder veins should be long tortuous, prominent and branching. The udder should shrink after milking.

The skin should be of medium thickness, loose, pliable and having fine hair over it.

Farm News Release No. 10.

FEEDING FOR MILK.

Dairy Cows need proper
Rations.

New Delhi: Dairy experts point out that proper feeding is one important factor in increasing milk yield in cows. Many good cows remain poor producers, they say, because of the poor feed given.

Fixing up the feed requirements of a milch cow depends upon her needs for maintenance and milk production. But generally speaking, a seer of grain mixture (equal parts of crushed grams, oil cakes and wheat bran) is enough for maintenance. An extra amount of half a seer for every seer of milk yield is considered sufficient. The total quantity, however, should be adjusted to what the cow can actually consume and digest.

Heifers should get two to four pounds of grain mixture from one year onwards, in addition to the green fodder given to them. If the fodder is of an ordinary quality, the grain can be increased by one to two pounds. Those that calve

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Secretary,

INDIAN CENTRAL ARECANUT COMMITTEE.

Post Box No. 14, Kozhikode.

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NST-5-11

NEWS AND NOTES.

early should be fed more liberally during their first lactation so that their growth may not be affected.

Pregnant animals should be given an additional half a seer of grain to help them nourish the unborn calf.

The addition of an ounce of common salt per day to the feed given is also essential. A liberal supply of clean water given three times a day, and more frequently during the hot season, is also a necessity.

Farm News Release No. 11.

'PLACEMENT' OF FERTILIZERS.

Better results with crops than Broadcasting.

Extensive experiments conducted in many parts of the world with the mode of application of fertilizers to various crop have shown that increased yields are obtained if the fertilisers are 'placed' at a suitable distance from the seed. On the other hand, phosphatic fertilizers give good results when placed close to the seed. Legumes do not like the fertilizers to be too close to them. For quick-growing, shallow-rooted short duration crops, applying the fertilizer in side bands, and for deep-rooted ones directly below the seed are best. For long duration and deep-rooted crops, however broadcasting the fertilizers as farmers generally do is found satisfactory.

Placement of fertilizer has been found particularly beneficial in soils of poor fertility.

Farms News Release No. 12.

COWPEA AS FODDER.

For increasing milk production in dairy cows.

New Delhi: Cowpea (*Lobia*) has been found to be a highly

1. Import Policy for Arecanuts.

The import policy for betelnuts for the period from January to June 1955 has been announced by the Government of India. Betelnuts are included in the list of items which are not considered necessary to have detailed quantitative restrictions and hence the import has been liberalised. Established importers will be granted licences for reasonable amounts and licences will be issued liberally to actual users also. The validity of licences will be for six months only and the licensing authorities are the import trade controllers at the ports including Saurashtra and Bhuj.

2. Co-operative Marketing.

The Secretary, Indian Central Arecanut Committee, accompanied

nutritious fodder, increasing the flow of milk in dairy cows, especially when fed in the green pod stage.

The crop can be grown pure in the early summer, or mixed with non-legumes like maize *jowar* in the main summer season. It can either be fed green or converted into silage.

Cowpea is especially useful when green forage is generally scanty. It is quick-growing and likes a hot and humid climate. It grows up well on medium to fertile loamy soils. All types of soils excepting sandy or dry soils, if well-drained, can be used for growing cowpea.

Seed is sown in plough furrows with 1 to 1½ ft spacing. Ten to 15 seers of seed will be required for sowing. The crop will be ready for forage in 60 to 80 days and given an acre-yield of 300 maunds of green stuff.

by the Marketing Officer of the Mysore State and the Co-operative Marketing Officer of this Committee, visited the important arecanut producing areas of Mysore State with a view to explore possibilities for improving arecanut marketing in those regions on co-operative basis. Discussions were held with the office bearers of the following societies:—

(i) Areca Marketing Co-operative Society, Arkalgud;

(ii) Malnad Areca Marketing Cooperative Society Ltd., Shimoga;

(iii) Shimoga Regulated Market Committee, Shimoga;

(iv) Sree Gopalakrishnaswami Co-operative Society Limited, Kyatsandra;

(v) Tumkur Regulated Market Committee, Tumkur;

(vi) Tumkur Taluk Multipurpose co-operative Society Ltd., Tumkur.

3. Exhibition.

The Indian Central Arecanut Committee has furnished a number of exhibits to the Publicity Section of the Government of India in the Ministry of Food and Agriculture, who are participating in the All India Exhibition organised in Madras to coincide with the annual session of the Indian National Congress. The Committee has also participated during this month in another exhibition organised by the South Malabar Athletic Association at Mookkuthala High School in Ponnani Taluk, South Malabar.

4. Statistical Adviser.

Dr. V. G. Panse, Statistical Adviser to the Indian Council of Agricultural Research, visited the office of the Indian Central Arecanut Committee and held discussions with the Secretary, Indian Central Arecanut Committee, on the details regarding a pilot survey scheme for determining the cost of cultivation of arecanut.

MARKET REPORTS

Average Weekly Prices of Arecanut during the month of January 1955.
(Price in Rupees per Maund of 82-2/7 Lbs.)

I. At SHIMOGA Market in MYSORE STATE.

Name of quality	WEEK ENDING				
	1st	8th	15th	22nd	29th
	Rs.	Rs.	Rs.	Rs.	Rs.
Phetton	140 11	140 11	140 11	141 2	
Deshawaram	140 11	140 11	140 11	140 11	
Rajalu	133 5	133 5	133 5	133 5	
Vanti Bette	107 13	107 0	107 13	107 13	
Gorabalu	60 14	63 6	63 6	62 9	

II. At BOMBAY Market in BOMBAY STATE.

Name of quality.	WEEK ENDING				
	1st	8th	15th	22nd	29th
	Rs.	Rs.	Rs.	Rs.	Rs.
Mangalore Navi Vachar					
Best	105 0	105 0	105 0	100 0	100 0
Sirsi Toanchi	225 0	225 0	225 0	225 0	217 8
Sirsi Safed	N. A.	N. A.	N. A.	N. A.	N. A.
Ceylon Nuts	105 0	105 0	105 0	N. A.	N. A.
Singapore nuts	100 0	100 0	100 0	N. A.	N. A.

III. At CALCUTTA Market in WEST BENGAL STATE.

Name of quality	WEEK ENDING			
	6th	13th	20th	27th
	Rs.	Rs.	Rs.	
Sundried (sliced)	100 0	100 0	100 0	
Ceylon nuts	116 0	116 0	116 0	
Singapore nuts	110 0	110 0	110 0	
Penang Nuts	110 0	109 0	109 0	

IV. In TRAVANCORE—COCHIN STATE.

Name of market	Name of Quality	WEEK ENDING				
		1st	8th	15th	22nd	29th
		Rs.	Rs.	Rs.	Rs.	
Trichur	Erasal.	160 4	160 4	170 2		
	Iylon.	150 5	150 5	150 5		
	Choor.	156 4	156 4	158 4		
Alleppey	Assorted	72 0	72 0	73 8	77 2	
	Garbled	73 8	74 15	88 3	89 10	

V. In HINDUPUR Market in ANDHRA STATE.

Name of quality	WEEK ENDING				
	1st	8th	15th	22nd	29th
	Rs.	Rs.	Rs.		
Billa	145 11	150 14	150 14		
Churu	146 9	140 9	156 0		
Podi	82 5	89 2	89 2		

VI AVERAGE WEEKLY PRICES OF ARECANUT DURING THE MONTH OF DECEMBER 1954 IN MADRAS STATE.

Name of market	Name of variety	WEEK ENDING				
		4th	11th	18th	25th	31st
		Rs.	Rs.	Rs.	Rs.	Rs.
Mangalore	Supari New	88 3	94 7	93 5	99 9	94 13
	Supari Old	113 14	112 13	115 12	117 9	117 9
	Koka		No Quotation.			
Madras	Singapore nuts	115 3	115 3	115 3	115 3	115 3
	Colombo nuts	118 8	118 8	118 8	118 8	118 3

There was no report regarding the prices of arecanut at Palghat market for the entire month.

Average fortnightly prices of arecanut during the months of November and December 1954 in Madurai market. In MADRAS STATE.

Fortnight ending dated	Colombo arecanuts				Palai arecanuts				Trichur Arecanuts
	Sithanam	Udutharam	Vettai	Whole	Sithanam	Udutharam	Vettai		
15-11-54	164 9	N.S.	124 10	110 11	163 12	134 5	113 7		154 11
30-11-54	172 13	151 2	129 5	112 10	174 10	151 2	117 9		167 14
15-12-54	174 7	155 5	128 2	110 3	176 5	155 5	116 6		164 9
31-12-54	176 15	159 9	126 6	110 3	178 0	157 14	115 3		164 9

FOREIGN MARKETS

I. Average weekly prices of arecanut in Colombo Market in Ceylon during January 1955.

(Price in Indian Rupees per Maund of 82-2/7 lbs.)

Name of quality.	WEEK ENDING				
	1st	8th	15th	22nd	29th
<i>A. Whole arecanuts.</i>					
Average quality.	15 7	15 7	15 7		
Whole No. 5.	19 2	19 2	19 2		
Whole No. 6.	18 0	17 4	17 4		
Whole No. 7.	18 0	17 4	17 4		
Vedial.	1 13	1 13	1 13		
<i>B. Split arecanuts.</i>					
1st Grade	86 5	86 5	86 5		
2nd Grade	64 5	64 5	64 5		
3rd Grade	45 15	45 15	45 15		
Vettai 4A	23 14	23 14	23 14		
Vettai 4B	16 8	16 8	16 8		

II. Fortnightly prices of arecanut in Singapore during December 1954.

Name of variety: Split Bukit Batu.

Price in Dollars per picul.

Date	Price in dollars.
1-12-1954.	21.00
15-12-1954.	21.00
31-12-1954.	22.00

(1 picul = 133½ lbs. and 1 Malayan dollar = 1.54 Indian Rupees)

III. Malayan Import and Export of arecanut during the month of August 1954.

During August 1954, 3,602 tons of arecanut valued at 9,37,396 Malayan dollars were imported into Malaya, of which imports from Indonesia accounted for 2,910 tons valued at 8,06,461 Malayan Dollars and those from Thailand accounted for 694 tons valued at 1,23,028 Malayan dollars.

Malaya's Export of arecanuts during the same month were as follows:

	Quantity (tons)	Value (Malayan Dollars)
(a) to India	2,075	9,04,810
(b) to Burma	385	1,61,692
(c) to Indo-China	420	3,13,365

IV. Monthly prices of arecanut in Thailand:—

During the month of May 1954, 15,000 kgms. of arecanut were exported to Burma and 40,352 kgms. to Penang from Thailand. There were no exports during the period June to September 1954. During October 1954, 6,000 kgms. of arecanut were exported to Penang from Thailand. The average monthly export price of arecanut from Thailand during May 1954 and October 1954 were 157.87 Tcs. and 126.36 Tcs. per picul.

V. Monthly prices of arecanut during the months of November 1954 in INDONESIA.

Name of town.	Price in Rupiahs per 100 Kgs.
Djakarta.	337.50
Makassar	200.00

1 Indian Rupee - 2.4 Indonesian Rupiahs.

7,64,840 Kgs. valued at 8,69,333 Rupiahs were exported from Indonesia during October 1954, while the exports during November 1954 were 1,236,840 Kgs. valued at 1,289,935 Rupiahs.

Statement showing the quantities of arecanut (betelnut)
imported into different ports in India and their value
during the month of December 1954.

Ports to which imported	Places from which imported							
	CEYLON		SINGAPORE		Federated Malaya States		TOTAL	
	Quantity cwts.	Value Rs.	Quantity cwts.	Value Rs.	Quantity cwts.	Value Rs.	Quantity cwts.	Value Rs.
Bombay	810	31,330	14,430	4,65,290	228	7,764	15,468	5,04,384
Calcutta								
Madras	3,013	1,91,337	2,862	1,06,411	1,169	32,628	7,044	3,30,376
Total								

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SECRETARY,
INDIAN CENTRAL ARECANUT COMMITTEE.
P. B. No. 14, KOZHICODE--I.



ARECANUT CROP IN INDIAN UNION

By Sri. K. Kunhikannan Nambiar, B. Sc. (ag.)
Secretary, Indian Central Arecanut Committee, Calicut.
Price Re. 1/-, Postage As. 9/- extra.

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