COMMUNICATION FROM THE GENERAL EXPERIMENTAL STATION OF THE A.V.R.O.S.

Rubber Series No. 65.

INVESTIGATION INTO THE INFLUENCE OF REACTION OF THE SOIL ON THE DEVELOPMENT OF HEVEA BRASILIENSIS

by

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Introduction.

As mention is made in this publication of reaction of the soil, it is desirable first of all to explain briefly what is understood by the term.

Soil can be acid, neutral or alkaline, that is to say that it can have the same reaction as a weak acid, pure water or diluted alkali, which can be ascertained by various methods. The acidity is designated by figures ; this is usually done by using the hydrogen-exponent (= the negative logarithm of the hydrogenion concentration).

Pure water has a hydrogen-exponent (also called P_H) of 7 ; everything with more acidity has a lower P_H ; an alkaline liquid is evidenced by figures higher than 7.

Alkaline ← Neutral → Acid

← 9 — 8 — 7 — 6 — 5 →

In the following list the more common soil reactions are shown.

P_H 8 — 9	Strong alkaline	P_H 6 — 7	Weak acid
„ 7 — 8	Weak alkaline	„ 5 — 6	Acid
„ 7	Neutral	„ 4 — 5	Strong acid

Many soils have been examined already in *Europe* and very important results have been obtained, although in some cases exaggerations have been made. Generally speaking soils of high acidity yield poor crops, as out of many agricultural crops in Europe the maximum growth takes place upon soil in the region of the figure 7. In Holland especially great success has been obtained in recent times with the application of lime to acid sand-soils.

To give some idea of the soil reaction in the temperate zones a table published by STOKLASA and DOERELL is appended.

P_H 4 — 5	1.68%	of the soils investigated
„ 5 — 6	12.63%	„ „ „ „
„ 6 — 7	42.30%	„ „ „ „
„ 7 — 8	40.03%	„ „ „ „
„ > 8	3.36%	„ „ „ „

From the above it will be seen that the acidity of most of the soils is round about the neutral point, whilst strong acid and alkaline soils are much rarer.

Some years ago Dr. W. BOBILIOFF [1]) investigated the influence of the nutritive substances on the development of Hevea brasiliensis by the aid of water cultures. He arrived at the conclusion that the reaction of the liquid foodstuffs employed is of great significance for the growth of Hevea shoots. It was thus found that a strong acid reaction (P_H = 2.8) was detrimental; the young plants developed badly when they were put in an alkaline surrounding as well. Between P_H 2.8 — 8.0 the growth of the experimental plants was normal, only the extremes both of acidity as well as alkalinity had a detrimental effect.

BOBILIOFF moreover took some samples of soil from good and bad rubber estates and determined the hydrogenion concentration. The figures obtained are not of much significance; thus the samples which showed an alkaline reaction originated from estates where alang-alang was present, so that the bad growth was not necessarily due to the high alkalinity, but most certainly was partly due to the upkeep of the estate. Soils with a lower P_H than 5.6 were not investigated; from the figures obtained not much conclusion can therefore be drawn. An investigation on a large scale will certainly provide more information.

A circular (refer Appendix I) was sent out by the General Experimental Station of the A.V.R.O.S., in March 1928 to the associated estates, with the object of obtaining samples of the soil for an extended research into acidity.

A total of 1260 samples was received, which works out to ± 20 samples per estate. I take this opportunity of expressing my gratitude for the numerous specimens received.

Method of research.

10 grams of air-dried earth were very thoroughly mixed during six hours with 25 c.c. of boiled distilled water and the following day the hydrogenion concentration of the mixture was thereupon electrometically determined. The chinhydron-method of BIILLMAN was used. As a comparing electrode a saturated calomel electrode appeared very suitable, as this maintained a constant value for so long as I used it.

The objection that the chinhydron electrode in alkaline solutions does not give true readings is of minor importance for the East Coast of Sumatra as the majority of the soils have an acid reaction.

Only in a few cases was it necessary to employ the hydrogen electrode as can be seen from the following.

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[1]) Dr. W. BOBILIOFF. The influence of feeding substances on the development of Hevea brasiliensis. Archief voor de Rubbercultuur, Vol. 8, 1924.

P_H	7 — 8	5 estates
„	6 — 7	8 „
„	5 — 6	22 „
„	4 — 5	34 „

After a good mixing machine had been obtained the samples could be examined at a fairly considerable rate, namely 25 — 30 samples per hour.

The apparatus was gauged by a standard buffer solution ; as such, a liquid was employed in which primary and secondary phosphate appeared in varying relationships. The chinhydron method was also compared with the hydrogen electrode.

TABLE I.

Gauging apparatus 28°C.				
Secondary	Primary	P_H chinhydron	P_H hydrogen electrode	Sörensen 18° C.
1 c.c.	9 c.c	5.77	5.76	5.91
5 „	5 „	6.68	6.64	6.81
7 „	3 „	7.01	7.02	7.17
9 „	1 „	7.59	7.59	7.73

The readings obtained with both electrodes only show small differences, both of them however are lower than the values given by SÖRENSEN. The results were taken by me at a temperature of 28° C., whilst those of SÖRENSEN relate to a temperature of 18° C. Dissociation is greater at a higher temperature, whereby more hydrogenions are present in the liquid. By comparing the results taken in India with those of a temperate zone, this factor must be taken into account.

Results of the investigation.

In the majority of cases not the slightest relationship was shown between the acidity and the development of Hevea. When the soils were alkaline however the unfavourable influence of this was clearly to be seen. In the following tables II, III and IV the figures of good and bad soils are produced.

On estate A (table II) the upkeep of the estate was the same on the good as well as the bad part. Vigna was used as ground cover, and the drainage was good. The trees on the alkaline soil were in a very bad condition with many dead branches and yellow leaves ; the bark renewal was practically nill.

TABLE II.

Estate A. Tertiary grey clay soil			
Bad soil		Good soil	
Sample	P_H	Sample	P_H
A1	8.41	E1	4.81
A2	8.28	E2	4.81
B1	8.44	D1	5.46
B2	8.22	D2	5.37

TABLE III.

Estate B. Tertiary grey clay soil		
	Sample	Average P_H
Good soil	G1 — G5	4.75
Bordering between good and bad soil	P3 — P5	6.02
Bad soil	P1 — P2	8.17

On estate B (table III) the trees on the bad soil absolutely will not grow, form very few branches, have thin bark and do not attain a normal girth. The samples G1 — G5 were taken round the part where the trees were good and healthy.

Nurseries, selection garden Soengei Pantjoer.

On the nurseries which were laid out in the previous year was a small part where the seedlings were very backward. From this place and from the same nursery where the plants were good a sample of the soil was taken.

Bad place P_H 8.20

Good place P_H 6.89

Nurseries, Adolina Oeloe Estate.

There were also a few bad parts here in the nurseries which otherwise were very good. Just as on Soengei Pantjoer the plants had yellow leaves and badly

Manure	P_H good soil	P_H bad soil
10 G. basic slag 20 G. sulphate of ammonia	6.92	8.15
do.	6.92	8.21
20 G. sulphate of ammonia	6.27	8.00

The cause of these great differences in alkalinity over such a short distance must probably be sought in the fact that after burning the original forest wood the residual ash was not sufficiently spread around. (The soil showed a slight development of carbonic acid after treatment with hydrochloric acid which points to the presence of carbonates which were almost absent with the good soil).

On such neutral or weak acid soils heapings of ash must be prevented as far as possible, as otherwise there is a chance that the soil will become strongly alkaline.

In addition to the above cases a P_H greater than 8 was found in two other cases. Both of the samples originated from a place where the Hevea had a bad growth.

Estate C Red liparite soil $P_H = 8.22$

Estate D Red tertiary soil $P_H = 8.06$

As a pronounced alkalinity could only be shown in a few cases, only a little information could be obtained. I believe however that a boundary line has been found here, the more so as this agrees with the results which Dr. BOBILIOFF obtained with the water cultures.

The boundary appears to be well defined, as with a weaker alkalinity than $P_H = 7.9$ rubber still grows well. What the reason is for the backward growth of Hevea with such an acidity cannot be stated ; finally the P_H is only a secondary question which indicates the presence of soluble substances in definite concentrations in the soil. Just as is the case with some other tropical agricultural vegetations, Hevea appears unable to stand any large quantity of lime or alkalies.

growth connection with the circular a sanitation peat soil w[illegible]ed. It
Borneo, the acidity figures of which are given hereunder.

TABLE V.

Peat soil Borneo			
Good soil		Bad soil	
Sample	P_H	Sample	P_H
G1	2.93	S1	2.90
G2	2.79	S2	3.01
G3	2.98	S3	2.79
G4	2.98	S4	2.87
G5	2.96	S5	3.04

Both the good as well as the bad soils are strongly acid, both series have an average P_H of 2.92.

Only in the region of P_H more than 8 is the acidity the cause of deviations in the growth of Hevea, apart from this the acidity of the soil has no significance for the rubber cultivation. That reaction was the cause of the bad condition of the plantation in such a few cases only, is not to be wondered at. The reaction of the soil is only one of the many factors which influences the growth of the plants ; the cause of the backward condition of certain parts of an estate therefore must generally be sought in another direction.

The above information is of great practical importance in view of manuring with sulphate of ammonia. It is a known fact that this manure has an acidifying effect on the soil, which is the reason for the many warnings against a regular use of the above nitrogenous manure.

Soils with a high interchange acidity namely those which on account of weather conditions and washing away have lost much of their basic material are very sensitive to sulphate of ammonia. By the penetration of this manure the formation of aluminium sulphate occurs, which has an acid reaction on the soil. As such soils are very common in the tropics it is necessary to take precautions and to examine from time to time what the conditions are with regard to the reaction of the soil

With an experiment on Tandjong Garboes Estate, samples could be taken in January of this year in order to investigate the influence of sulphate of ammonia. The experiment consisted of 22 plots half of which had been manured in February 1927 with 2 K.G. sulphate of ammonia per tree, whilst the other half had not been manured and served for control purposes. The manure had been spread round the trees in rings.

TABLE VI.

Manuring experiment Tandjong Garboes			
Manured		Not manured	
Plot	P_H	Plot	P_H
1	5.14	1	6.43
2	5.07	2	6.10
3	5.27	3	5.61
4	5.00	4	5.61
5	5.04	5	5.65
6	4.90	6	6.88
7	5.61	7	5.74
8	4.87	8	5.83
9	4.87	9	6.33
10	5.20	10	5.44
11	4.90	11	7.40

The average P_H of the manured plots is 5.08, whilst that of the unmanured plots is 6.09. By manuring once, the hydrogenion concentration in this soil is increased ten-fold.

Among the estates which sent in samples it appeared that there were some which had also applied manure. The average P_H has been calculated as far as possible for the manured and unmanured places (Table VII).

The figures of the last estates do not give by far such wide differences as those for Tandjong Garboes. According to verbal information from Mr. GRANTHAM, Director of the Plantation Research Department at Kisaran, the differences in the manuring experiments of the H.A.P.M. were also smaller, even

TABLE VII.

Influence of sulphate of ammonia on acidity					
Estate	Quantity per tree	Date of manuring	Date of sampling	Average P_H	Difference in P_H
Soengei Parit	unmanured	—	April '28	6.16	—
	1 K.G.	Febr. '28	„ „	5.90	0.26
	2 „ 1 „	March '26 Febr. '28	„ „	5.33	0.83
Bah Boelian	unmanured	—	March '28	5.39	—
	1.8 K.G.	Febr. '28	„ „	4.74	0.65
Tandj. Pasir	unmanured	—	March '28	4.71	—
	1.1 K.G.	1928	„ „	4.57	0.14
	2.1 „ 2.1 „	1926 1927	„ „	4.46	0.25
Soengei Litoer	unmanured	—	April '28	4 17	—
	1.5 K.G.	Aug. '26	„ „	4.02	0.15

in the plots which from 1920 had been manured with sulphate of ammonia. This will be clear when we take the following into consideration.

The hydrogen exponent of a liquid is synonymous with the negative logarithm of the hydrogenion concentration. In 1 liter of pure water 10^{-7} grams of hydrogenions are present. In order to change the P_H of a liquid by one unit it is necessary to add 9×10^{-7} grams of hydrogenions. If however it is desired to reduce the hydrogen exponent from 4 to 3 then a quantity of 9×10^{-4} is necessary, thus a thousand times as much.

With soil many concurrent reactions set in during titration with acid, for example, adsorption, but we see one actual which is clearly demonstrated by the appended curve which demonstrates the course of the P_H upon the addition of increased quantities of 0.1 normal sulphuric acid.

To attain an acidity of 2.8 much acid is therefore necessary. We may conclude from this that as a rule it will not be necessary for some time to come to replace sulphate of ammonia by Chili saltpetre for the manuring of Hevea. This is of importance in practice as Chili saltpetre is more expensive in the tropics than sulphate of ammonia, and moreover owing to the higher hygros-

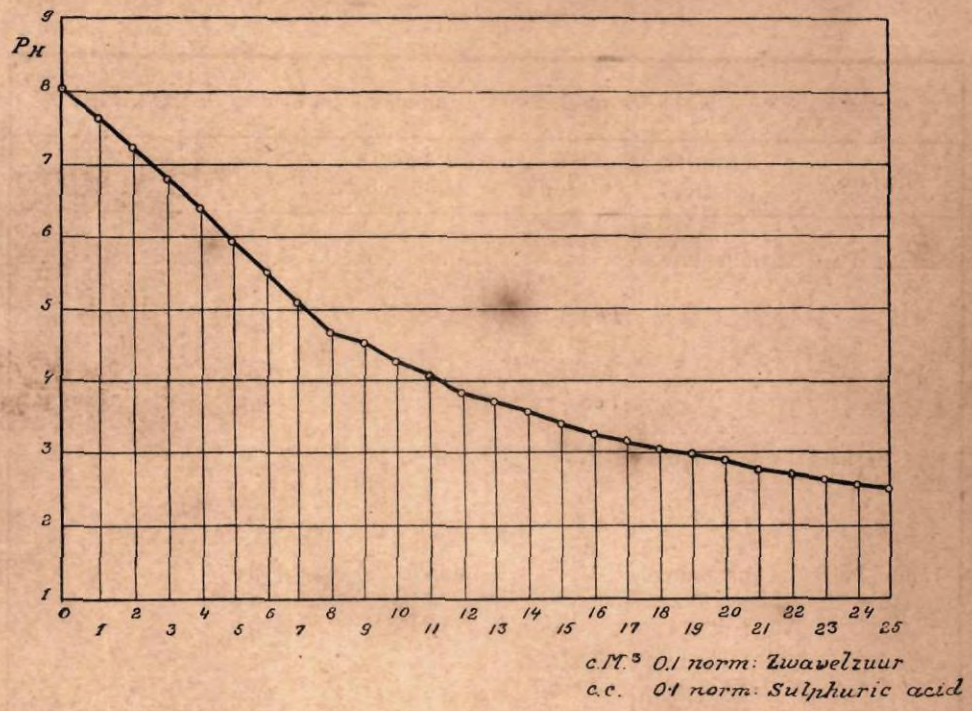

Fig 1. Titration curve of alkaline soil with 0.1 normal Sulphuric acid.

copicity is more difficult to handle ; the danger of being washed away by the heavy tropical rains is also present.

It was also possible for me to study the influence of various other manures as Ir. J. F. SCHMÖLE had commenced a manuring experiment in our experimental garden Polonia for Hevea nurseries. One year after manuring all the places, 65 in totaal, were sampled and the acidity determined.

As in the case with the experiment on Tandjong Garboes the soil had an original hydrogen exponent of approximately 6, and the changes here were also very important. Of the manures used, sulphate of ammonia had the greatest acidifying effect.

To make alkaline oils suitable for rubber cultivation we can also use other manures in place of the above. To combat potato scab, which no longer attacks potatoes at a P_H less than 5.2 treatment with sulphur powder has been applied to the soil to produce more acidity.

Sulphur possesses acid forming properties only and plays no further part in the provision of foodstuffs for the plants. At the most it can only have a disintegrative effect upon minerals that may be present and thereby produce some feeding stuffs for the plants.

When we use sulphate of ammonia for the improvement of the acidity of the soil, then this is probably cheaper and one has the advantage of having given a good nitrogenous manure to backward trees.

TABLE VIII.

Influence of various manures on acidity		
Quantity of manure per plant	Average P_H	Difference
Unmanured	$5.88 \pm \sqrt{0.0082}$	—
20 G. sulphate of ammonia	$4.81 \pm \sqrt{0.0035}$	1.07 ± 0.11
10 G. urea	$5.39 \pm \sqrt{0.0083}$	0.49 ± 0.13
20 G. sulphate of ammonia 10 G. urea	$4.63 \pm \sqrt{0.0083}$	1.25 ± 0.13
27.5 G. double superphosphate	$5.75 \pm \sqrt{0.0063}$	0.13 ± 0.12
2 × 27.5 G. double superphosphate	$5.92 \pm \sqrt{0.0028}$	0.04 ± 0.10
20 G. Diammophos	$5.17 \pm \sqrt{0.0040}$	0.71 ± 0.11
2 × 20 G. Diammophos	$4.83 \pm \sqrt{0.0020}$	1.05 ± 0.10
20 G. Diammophos 15 G. potassium sulphate	$5.39 \pm \sqrt{0.0179}$	0.49 ± 0.19
2 × 20 G. Diammophos 2 × 15 G. potassium sulphate	$4.83 \pm \sqrt{0.0015}$	1.05 ± 0.10

W. H. MATRIN [1]) gives the following data for this.

Influence of sulphur on acidity	
Treatment	Average P_H
Control	6.27
300 lbs sulphur per acre (340 K.G. per H.A.)	6.07
600 „ „ „ „ (680 „ „ „)	5.57
900 „ „ „ „ (1020 „ „ „)	5.25
1200 „ „ „ „ (1360 „ „ „)	5.00

[1]). WILLIAM H. MARTIN. The relation of sulphur to soil acidity. Soil Science 1920.

Summary.

In general the soil on the East Coast of Sumatra possesses strong acidity, in only a few cases could an alkalinity of $P_H > 8$ be shown.

In all probability Hevea is only detrimentally affected by an alkaline reaction, and practically speaking is not sensitive to strong acidity.

That so few cases appeared where the acidity could be held responsible for bad growth points clearly to the fact that the acidity is only one of the many factors which are of importance for a good development of Hevea.

Sulphate of ammonia produces an acid soil, and as a consequence is to be employed to counteract excessive alkalinity. From the figures of various manuring experiments it has appeared that no fear need be attached to the regular use of this manure.

APPENDIX I.

GENERAL EXPERIMENTAL
STATION OF THE A.V.R.O.S.

Medan, 19th March 1928.

Circular No. 72.

SOIL CONDITION.

The Agricultural Department of our Experimental Station is commencing investigations on the acidity of the cultivated soils of Sumatra's Eastcoast, Atchin and Tapanoeli.

Preliminary investigations have led us to believe that in several cases unsatisfactory growth can be attributed to abnormal alkalinity. If part of your plantation shows backwardness of growth and low yield, we shall therefore be obliged if you will send us samples of soil from the poor plot as well as from the adjacent satisfactory plot of apparently the same type of soil. Both kinds of samples should be taken each from at least 5 spots ; the required holes should be evenly distributed over the area. The samples should not be taken too close to a tree, but from the mata lima.

Holes should be made to a depth of $1\frac{1}{2}$', after leaves, green manuring plants or weeds have been removed. The soil which is dug out is to be well mixed and a cigarette tin filled with the mixture. The lid should be thoroughly closed with a string to avoid mixing during transit. The tins are to be plainly marked, e.g. the samples from the poor plot P1, P2, P3, P4 and P5, and from the satisfactory plot G1, G2 ,G3, G4 and G5.

The covering letter should mention :

1. *Outer appearance of the trees* : development and colour of the leaves, bark renewal, symptoms of die back, etc. ;
2. *Upkeep of the soil* : clean weeding, draining, etc. ;
3. *Manuring* : if manured, date of application, kind and quantity of manure and result.

These investigations are not restricted to rubber but also comprise other cultivations such as oilpalms, coconut, tea, coffee and fibre.

Your coperation in this connection will be esteemed a favour.

The Director of the General
Experimental Station A.V.R.O.S.
Dr. A. W. K. DE JONG.

Sent to all Head-Offices
and Offices of Members.

APPENDIX II. BIJLAGE II.

Onderneming Estate	Cultuur Cultivation	Monster Sample	P_H	Gemiddelde Average P_H
Pirah	Rubber	G1	4,66	
		G2	4,72	
		G3	4,63	4,64
		G4	4,59	
		G5	4,59	
		P1	4,79	
		P2	4,69	
		P3	4,66	4,73
		P4	4,82	
		P5	4,69	
Peureula	Rubber	G1	4,93	
		G2	4,87	
		G3	5,60	4,75
		G4	3,93	
		G5	4,43	
		P1	8,48	
		P2	7,85	
		P3	5,51	6,88
		P4	4,60	
		P5	7,95	
Timbang Langsa	Rubber	1	4,27	
		2	4,41	
		3	4,30	
		4	3,90	
		5	4,14	
		6	4,44	
		7	3,73	
		8	4,14	
		9	4,30	4,33
		10	4,23	
		11	3,37	
		12	4,44	
		13	5,18	
		14	4,44	
		15	4,33	
		16	4,60	
		17	4,41	
		18	4,20	

Onderneming Estate	Cultuur Cultivation	Monster Sample	PH	Gemiddelde Average PH
Timbang Langsa (*vervolg*)	Rubber	19	4,20	
		20	4,33	
		21	4,47	
		22	4,63	
		23	4,20	4,33
		24	4,44	
		25	4,30	
		26	4,10	
Langsa	Rubber	G1	4,03	
		G2	3,91	
		G3	4,03	4,01
		G4	3.97	
		G5	4,10	
		P1	4,24	
		P2	4,18	
		P3	4,08	4,13
		P4	4,18	
		P5	3,99	
Tandjong Semantoh	Rubber	A1	8,41	
		A2	8,28	
		B1	8,44	8,34
		B2	8,22	
		E1	4,81	
		E2	4,81	
		D1	5,46	5,11
		D2	5,37	
Simpang Kanan	Rubber	G1	4,01	
		G2	4,01	
		G3	3,98	3,99
		G4	3,92	
		G5	4,01	
		S1	3,95	
		S2	4,08	
		S3	4,05	4,05
		S4	4,08	
		S5	4,11	
		G1	4,17	
		G2	3,99	4,04
		G3	4,12	

Onderneming Estate	Cultuur Cultivation	Monster Sample	PH	Gemiddelde Average PH
Simpang Kanan (*vervolg*)	Rubber	G4	3,93	
		G5	3,99	4,04
		S1	4,05	
		S2	4,11	
		S3	4,11	4,07
		S4	4,01	
		S5	4,08	
		G1	4,06	
		G2	4,00	
		G3	4,03	4,04
		G4	4,03	
		G5	4,09	
		S1	4,26	
		S2	4,26	
		S3	3,99	4,09
		S4	3,92	
		S5	4,05	
		G1	3,93	
		G2	4,09	
		G3	3,83	4,01
		G4	4,09	
		G5	4,09	
		S1	4,09	
		S2	3,96	
		S3	3,99	4,00
		S4	3,92	
		S5	4,06	
Simpang Kiri	Rubber	S1	4,07	
		S2	4,16	
		S3	4,37	4,21
		S4	4,31	
		S5	4,16	
		G1	4,30	
		G2	4,17	
		G3	4,47	4,32
		G4	4,50	
		G5	4,17	

Onderneming Estate	Cultuur Cultivation	Monster Sample	P_H	Gemiddelde Average P_H
Simpang Kiri *(vervolg)*	Rubber	S1	4,27	
		S2	4,31	
		S3	4,24	4,35
		S4	4,48	
		S5	4,44	
		G1	4,71	
		G2	4,37	
		G3	4,51	4,75
		G4	4,27	
		G5	5,90	
		S1	5,41	
		S2	4,44	
		S3	4,81	4,67
		S4	4,37	
		S5	4,31	
		G1	5,04	
		G2	4,34	
		G3	4,24	4,46
		G4	4,34	
		G5	4,34	
		S1	4,17	
		S2	4,20	
		S3	4,23	4,20
		S4	4,29	
		S5	4,13	
		G1	4,17	
		G2	4,20	
		G3	4,13	4,16
		G4	4,10	
		G5	4,20	
Boekit Sentang	Rubber	S1	4,41	
		S2	4,34	
		S3	4,25	
		S4	4,47	
		S5	4,56	
		S6	5,42	4,65
		S7	4,34	
		S8	4,41	
		S9	5,22	
		S10	5,09	

Onderneming Estate	Cultuur Cultivation	Monster Sample	PH	Gemiddelde Average PH
Boekit Sentang *(vervolg)*	Rubber	G1	6,81	
		G2	4,54	
		G3	4,87	
		G4	5,49	
		G5	4,87	
		G6	5,89	5,38
		G7	5,10	
		G8	4,24	
		G9	5,65	
		G10	6,36	
Padang Toealang	Rubber	1	4,46	
		2	4,52	
		3	4,20	4,35
		4	4,20	
		5	4,32	
		6	4,40	
		7	4,04	4,38
		8	4,75	
		G1	4,37	
		G2	4,27	
		G3	4,14	4,27
		G4	4,18	
		G5	4,37	
		P1	4,18	
		P2	4,18	
		P3	4,14	4,13
		P4	4,21	
		P5	3,96	
		9	4,55	
		10	4,23	
		11	4,15	
		12	4,21	
		13	4,24	
		14	4,21	4,25
		15	4,71	
		16	4,06	
		17	4,08	
		18	4,24	
		19	4,21	
		20	4,08	

Onderneming Estate	Cultuur Cultivation	Monster Sample	PH	Gemiddelde Average PH
Serapoh	Klapper	P1	4,37	
		P2	4,13	4,29
	Coconut	P3	3,95	
		P4	4,69	
		G1	5,09	
		G2	3,90	4,97
		G3	3,90	
		G4	6,97	
Batang Serangan	Rubber	S1	4,78	
		S2	5,01	
		S3	4,99	5,14
		S4	5,82	
		S5	5,10	
Soengei Litoer	Rubber	S1	3,87	
		S2	4,53	
		S3	3,87	4,02
		S4	3,94	
		S5	3,87	
		G1	4,40	
		G2	4,49	
		G3	3,84	4,17
		G4	3,97	
		G5	4,14	
Namoe Oengas	Rubber	S1	4,17	
		S2	4,23	
		S3	4,23	4,21
		S4	4,17	
		S5	4,26	
		G1	4,20	
		G2	4,17	
		G3	4,23	4,21
		G4	4,11	
		G5	4,33	
Tandjong Slamat	Rubber	S1	4,76	
		S2	5,03	
		S3	5,32	5,24
		S4	5,32	
		S5	5,77	

Onderneming Estate	Cultuur Cultivation	Monster Sample	PH	Gemiddelde Average PH
Tandjong Slamat *(vervolg)*	Rubber	G1	5,67	
		G2	5,16	
		G3	5,48	5,27
		G4	5,16	
		G5	4,88	
Basilam	Rubber	G1	4,43	
		G2	4,41	
		G3	4,11	4,19
		G4	3,96	
		G5	4,05	
		S1	4,31	
		S2	4,19	
		S3	4,16	4,16
		S4	4,10	
		S5	4,02	
		G1	—	
		G2	4,12	
		G3	4,07	4,25
		G4	4,36	
		G5	4,44	
		S1	3,92	
		S2	3,96	
		S3	3,96	3,98
		S4	4,00	
		S5	4,06	
		G1	4,20	
		G2	4.00	
		G3	4,17	4,14
		G4	4,00	
		G5	4,35	
		S1	4,41	
		S2	4,11	
		S3	3,99	4,33
		S4	4,40	
		S5	4,72	
		G1	4,06	
		G2	4,07	
		G3	4,40	4,11
		G4	4,04	
		G5	3,96	

Onderneming Estate	Cultuur Cultivation	Monster Sample	PH	Gemiddelde Average PH
Basilam (*vervolg*)	Rubber	S1	4,10	
		S2	4,05	
		S3	4,65	4,20
		S4	4,05	
		S5	4,13	
		G1	3,92	
		G2	3,89	
		G3	4,04	3,97
		G4	4,05	
		G5	3,96	
		S1	4,01	
		S2	4,05	
		S3	4,08	4,14
		S4	4,08	
		S5	4,50	
		G1	—	
		G2	3,99	
		G3	4,04	4,07
		G4	4,24	
		G5	4,02	
		S1	4,04	
		S2	4,21	
		S3	4,02	4,06
		S4	3,92	
		S5	4,13	
		G1	4,02	
		G2	4,13	
		G3	4,02	4,06
		G4	4,10	
		G5	4,02	
		S1	4,51	
		S2	4,02	
		S3	4,13	4,15
		S4	4,02	
		S5	4,08	
		G1	3,80	
		G2	4,11	
		G3	3,99	3,97
		G4	4,02	
		G5	3,91	

Onderneming Estate	Cultuur Cultivation	Monster Sample	PH	Gemiddelde Average PH
Barsilam (*vervolg*)	Rubber	S1	3,99	
		S2	4,09	
		S3	4,02	4,01
		S4	3,99	
		S5	3,96	
		G1	4,53	
		G2	3,96	
		G3	4,09	4,13
		G4	4,04	
		G5	4,04	
		S1	4,22	
		S2	3,02	
		S3	3,99	4,06
		S4	4,02	
		S5	4,04	
		G1	4,13	
		G2	4,41	
		G3	3,95	4,29
		G4	4,32	
		G5	4,66	
		S1	4,09	
		S2	3,99	
		S3	4,08	4,05
		S4	4,09	
		S5	4,02	
Toerangi	Rubber	P1	5,41	
		P1	8,06	
		P3	5,37	6,11
		P4	6,05	
		P5	5,65	
		G1	5,25	
		G2	6,05	
		G3	5,86	5,58
		G4	5,41	
		G5	5,31	
Terlok	Rubber	G1	4,48	
		G2	4,81	
		G4	4,75	4,69
		G4	4,65	
		G5	4,75	

Onderneming Estate	Cultuur Cultivation	Monster Sample	PH	Gemiddelde Average PH
Terlok (*vervolg*)	Rubber	P1	5,61	
		P2	5,10	
		P3	5,84	5,65
		P4	5,64	
		P5	6,04	
Soengei Pendjara	Rubber	P1	5,46	
		P2	4,64	
		P3	5,46	4,97
		P4	4,64	
		P5	4,64	
		G1	4,80	
		G2	4,66	
		G3	6,06	4,95
		G4	4,45	
		G5	4,79	
Sawit Sebrang	Oliepalm	S1	4,17	
		S2	4,13	
	Oilpalm	S3	4,13	4,08
		S4	4,02	
		S5	3,96	
		G1	4,46	
		G2	4,49	
		G3	4,36	4,45
		G4	4,54	
		G5	4,41	
Soengei Toewan	Klapper	S1	5,44	
		S2	5,72	
	Coconut	S3	5,54	5,65
		S4	5,91	
		S5	5,62	
		G1	5,69	
		G2	5,66	
		G3	5,10	5,34
		G4	4,90	
		G5	5,34	
Limau Moengkoer	Rubber	S1	7,57	
		S2	6,89	
		S3	4,50	6,39
		S4	6,51	
		S5	6,47	

Onderneming Estate	Cultuur Cultivation	Monster Sample	PH	Gemiddelde Average PH
Limau Moengkoer (*vervolg*)	Rubber	G1	6,71	
		G2	7,57	
		G3	6,58	6,98
		G4	6,89	
		G5	7,17	
Melatti	Rubber	S1	6,45	
		S2	5,76	
		S3	6,51	6,32
		S4	4,96	
		S5	6,91	
		G1	5,06	
		G2	5,42	
		G3	5,33	5,48
		G4	5,81	
		G5	5,78	
		S1	4,44	
		S2	4,65	
		S3	4,22	4,85
		S4	4,64	
		S5	6,30	
		G1	4,22	
		G2	5,80	
		G3	6,71	5,47
		G4	5,96	
		G5	4,65	
		S1	5,36	
		S2	6,92	
		S3	6,38	6,17
		S4	5,55	
		S5	6,62	
		G1	5,82	
		G2	5,72	
		G3	—	5,78
		G4	5,15	
		G5	6,42	
		S1	4,14	
		S2	4,65	
		S3	6,20	4,98
		S4	4,62	
		S5	5,29	

Onderneming Estate	Cultuur Cultivation	Monster Sample	PH	Gemiddelde Average PH
Melatti	Rubber	G1	5,02	
		G2	4,96	
		G3	5,45	5,59
		G4	6,86	
		G5	5,65	
		S1	5,33	
		S2	6,31	
		S3	4,95	5,99
		S4	6,88	
		S5	6,48	
		G1	5,49	
		G2	4,56	
		G3	7,66	5,49
		G4	4,68	
		G5	5,05	
		S1	5,31	
		S2	5,93	
		S3	6,23	5,94
		S4	6,98	
		S5	5,26	
		G1	6,57	
		G2	4,71	
		G3	5,71	5,43
		G4	5,06	
		G5	5,09	
Timbang Serdang	Rubber	S1	4,56	
		S2	5,45	
		S3	4,24	4,62
		S4	4,27	
		S5	4,56	
		S1	4,43	
		S2	6,41	
		S3	5,30	5,58
		S4	5,33	
		S5	6,41	
		G1	4,75	
		G2	6,44	
		G3	6,28	5,67
		G4	4,69	
		G5	6,18	

Onderneming Estate	Cultuur Cultivation	Monster Sample	PH	Gemiddelde Average PH
Timbang Serdang (*vervolg*)	Rubber	G1	6,07	
		G2	6,11	
		G3	5,35	5,77
		G4	5,47	
		G5	5,85	
		S1	5,19	
		S2	4,74	
		S3	5,76	5,05
		S4	4,80	
		S5	4,74	
		S1	7,07	
		S2	5,47	
		S3	5,41	5,55
		S4	5,38	
		S5	6,42	
		G1	5,00	
		G2	6,06	
		G3	5,64	5,39
		G4	4,90	
		G5	5,35	
		G1	5,57	
		G2	5,95	
		G3	5,63	5,78
		G4	6,11	
		G5	5,63	
		G1	5,54	
		G2	6,15	
		G3	6,69	6,04
		G4	5,70	
		G5	6,12	
		S1	6,06	
		S2	6,50	
		S3	6,73	6,47
		S4	6,66	
		S5	6,41	
Adolina Oeloe	Rubber	G1	7,67	
		G2	7,70	
		G3	7,67	7,66
		G4	7,57	
		G5	7,70	

Onderneming Estate	Cultuur Cultivation	Monster Sample	P_H	Gemiddelde pH Average
Adolina Oeloe	Rubber	S1	6,95	
		S2	8,22	
		S3	7,57	7,61
		S4	7,63	
		S5	7,70	
		G1	7,95	
		G2	7,58	
		G3	7,89	7,81
		G4	7,75	
		G5	7,89	
		S1	7,20	
		S2	6,85	
		So	6,79	7,12
		S4	7,60	
		S5	7,16	
Poeloe Tagor	Rubber	S1	7,23	
		S2	6,08	
		S3	6,36	6,36
		S4	5,98	
		S5	6,17	
		G1	6,62	
		G2	6,81	
		G3	5,90	6,51
		G4	6,42	
		G5	6,78	
Soengei Poetih	Rubber	S1	6,20	
		S2	6,48	
		S3	6,20	6,06
		S4	6,05	
		S5	5,38	
		G1	5,95	
		G2	5,79	
		G3	5,73	5,61
		G4	5,47	
		G5	5,13	
		S1	5,02	
		S2	6,41	
		S3	5,08	5,29
		S4	4,00	
		S5	5,94	

Onderneming Estate	Cultuur Cultivation	Monster Sample	P_H	Gemiddelde Average P_H
Soengai Poetih *(vervolg)*	Rubber	G1	4,06	
		G2	4,79	
		G3	4,57	5,05
		G4	5,20	
		G5	6,63	
		G1	5,32	
		G2	5,87	
		G3	5,17	5,75
		G4	6,19	
		G5	6,19	
		S1	5,84	
		S2	5,39	
		S3	5,20	5,49
		S4	5,20	
		S5	5,84	
		S1	6,70	
		S2	5,54	
		S3	6,26	6,30
		S4	5,37	
		S5	6,61	
		G1	5,82	
		G2	5,61	
		G3	6,78	5,83
		G4	6,14	
		G5	4,80	
Bandar Kwala	Rubber	S1	5,36	
		S2	5,06	
		S3	7,46	6,30
		S4	6,45	
		S5	7,17	
		G1	5,83	
		G2	6,82	
		G3	7,06	6,65
		G4	6,45	
		G5	7,11	
Bandar Negri	Rubber	G1	6,48	
		G2	6,39	
		G3	6,59	6,41
		G4	6,18	
		G5	6,39	

Onderneming Estate	Cultuur Cultivation	Monster Sample	P_H	Gemiddelde Average P_H
Bandar Negri (*vervolg*)	Rubber	S1	5,30	5,89
		S2	6,42	
		S3	6,18	
		S4	5,71	
		S5	5,84	
		Sa	4,71	
		Sb	5,35	
		Sc	5,67	5,51
		Sd	6,58	
		Se	5,22	
Bah Boelian	Rubber	G1	5,50	
		G2	6,00	
		G3	4,85	5,44
		G4	5,70	
		G5	5,14	
		P1	4,73	
		P2	5,76	
		P3	5,67	5,13
		P4	4,64	
		P5	4,85	
		G1	4,98	
		G2	5,01	
		G3	5,01	5,08
		G4	5,10	
		G5	5,30	
		P1	5,39	
		P2	6,26	
		P3	5,65	5,51
		P4	5,04	
		P5	5,20	
Soengei Rampah	Rubber	G1	4,86	
		G2	5,26	
		G3	4,69	5,47
		G4	6,26	
		G5	6,26	
		S1	6,04	
		S2	4,75	
		S3	5,19	5,23
		S4	4,90	
		S5	5,29	

Onderneming Estate	Cultuur Cultivation	Monster Sample	PH	Gemiddelde Average PH
Soengei Parit	Rubber	S1	6,21	
		S2	5,56	5,84
		S3	4,62	
		S4	6,98	
		G1	5,59	
		G2	5,10	6,01
		G3	6,98	
		G4	6,38	
Simbolon	Thee	G1	4,68	
		G2	5,26	
	Tea	G3	5,26	5,36
		G4	5,41	
		G5	6,18	
		P1	5,29	
		P2	4,81	
		P3	5,75	5,33
		P4	5,58	
		P5	5,23	
		F1	4,77	
		F2	5,38	
		F3	4,58	4,90
		F4	4,85	
		F5	4,91	
		L1	5,81	
		L2	5,29	
		L3	5,35	5,48
		L4	5,95	
		L5	5,01	
Bah Kapoel	Thee	G1	4,53	
		G2	5,77	
	Tea	G3	5,13	4,93
		G4	4,53	
		G5	4,69	
		P1	5,29	
		P1	4,91	
		P3	5,41	5,38
		P4	5,00	
		P5	6,28	

Onderneming Estate	Cultuur Cultivation	Monster Sample	PH	Gemiddelde Average PH
Martoba	Thee	G1	5,56	
		G2	4,65	
	Tea	G3	5,90	5,54
		G4	4,72	
		G5	6,88	
		P1	4,65	
		P2	4,47	
		P3	4,27	4,46
		P4	4,24	
		P5	4,69	
Bah Aliran	Thee	G1	5,00	
		G2	5,04	
	Tea	G3	4,95	4,89
		G4	4,67	
		G5	4,78	
		S1	4,91	
		S2	4,70	
		S3	4,77	4,84
		S4	4,77	
		S5	5,03	
		G1	5,36	
		G2	5,22	
		G3	5,38	5,29
		G4	5,28	
		G5	5,23	
		S1	5,60	
		S2	5,82	
		S3	6,41	5,81
		S4	5,43	
		S5	5,77	
		G1	4,91	
		G2	4,82	
		G3	4,98	4,95
		G4	4,84	
		G5	5,21	
		S1	4,57	
		S2	4,72	
		S3	4,62	4,69
		S4	4,61	
		S5	4,91	

Onderneming Estate	Cultuur Cultivation	Monster Sample	PH	Gemiddelde Average PH
Bah Aliran (*vervolg*)	Thee Tea	G1	4,82	
		G2	4,90	
		G3	4,94	4,87
		G4	4,84	
		G5	4,85	
		S1	4,71	
		S2	4,69	
		S3	4,59	4,63
		S4	4,60	
		S5	4,57	
		G1	4,91	
		G2	4,66	
		G3	4,66	4,75
		G4	4,69	
		G5	4,82	
		S1	4,54	
		S2	4,54	
		S3	4,42	4,58
		S4	4,76	
		S5	4,66	
		G1	5,46	
		G2	5,55	
		G3	5,10	5,62
		G4	5,55	
		G5	6,42	
		S1	6,49	
		S2	7,00	
		S3	6,36	6,70
		S4	6,42	
		S5	7,25	
		G1	5,40	
		G2	5,30	
		G3	5,81	5,41
		G4	5,36	
		G5	5,19	
		S1	5,43	
		S2	5,33	
		S3	5,75	5,40
		S4	5,81	
		S5	4,69	

Onderneming Estate	Cultuur Cultivation	Monster Sample	PH	Gemiddelde Average pH
Bah Biroeng Oeloe	Thee	G1	4,72	
		G2	4,59	
	Tea	G3	4,82	4,55
		G4	4,31	
		G5	4,31	
		S1	4,31	
		S2	4,37	
		S3	4,21	4,24
		S4	4,25	
		S5	4,05	
Hilang Oeloe	Thee	1	4,19	
		2	4,53	
	Tea	3	4,67	4,53
		4	4,70	
		5	4,55	
Permanangan	Thee	G1	5,04	
		G2	5,00	
	Tea	G3	4,82	4,99
		G4	4,91	
		G5	5,16	
		S1	4,54	
		S2	5,06	
		S3	4,73	4,73
		S4	4,51	
		S5	4,79	
		G1	4,81	
		G2	4,85	
		G3	5,15	4,92
		G4	4,78	
		G5	5,00	
		S1	4,50	
		S2	4,75	
		S3	4,53	4,54
		S4	4,53	
		S5	4,37	
		G1	4,82	
		G2	4,48	
		G3	4,79	4,71
		G4	4,72	
		G5	4,76	

Onderneming Estate	Cultuur Cultivation	Monster Sample	PH	Gemiddelde PH Average
Permanangan *(vervolg)*		S1	4,82	
		S2	4,61	
		S3	4,73	4,69
		S4	4,51	
		S5	4,79	
		G1	3,97	
		G2	4,75	
		G3	4,85	4,64
		G4	4,69	
		G5	4,93	
		S1	4,69	
		S2	4,75	
		S3	4,45	4,73
		S4	4,57	
		S5	5,21	
		G1	4,53	
		G2	4,45	
		G3	4.64	4,44
		G4	4,25	
		G5	4,33	
		S1	4,69	
		S2	4,59	
		S3	4,13	4,53
		S4	4,69	
		S5	4,53	
Kerasaan	Rubber	G1	7,25	
		G2	7,04	
		G3	7,65	6,78
		G4	5,55	
		G5	6,43	
		P1	7,07	
		P2	7,01	
		P3	7,62	7,20
		P4	6,59	
		P5	7,71	
Bah Bajoe	Rubber	1	7,61	
		2	7,10	
		3	7,07	7,07
		4	6,38	
		5	7,20	

Onderneming Estate	Cultuur Cultivation	Monster Sample	PH	Gemiddelde Average PH
Bah Bajoe (*vervolg*)	Rubber	6	7,13	
		7	6,41	
		8	7,37	6,84
		9	5,64	
		10	7,67	
Majang	Getah pertja Guttah-percha	G1	8,25	
		G2	6,52	
		G3	6,19	7,13
		G4	7,26	
		G5	7,42	
		S1	6,84	
		S2	7,81	
		S3	8,22	7,76
		S4	8,00	
		S5	7,91	
Lima Poeloeh	Rubber	S1	4,78	
		S2	5,51	
		S3	5,51	5,54
		S4	5,61	
		S5	6,31	
		S1	4,60	
		S2	4,63	
		S3	3,82	4,24
		S4	3,95	
		S5	4,20	
		G1	5,06	
		G2	5,74	
		G3	5,48	4,87
		G4	4,01	
		G5	4,07	
Liberta	Rubber	S1	4,68	
		S2	4,72	
		S3	4,54	4,66
		S4	4,62	
		S5	4,72	
		G1	5,77	
		G2	4,86	
		G3	4,78	5,03
		G4	4,65	
		G5	5,07	

Onderneming Estate	Cultuur Cultivation	Monster Sample	PH	Gemiddelde Average PH
Bah Moekka	Koffie	G1	7,75	
		G2	7,54	
	Coffee	G3	7,54	7,69
		G4	7,86	
		G5	7,75	
		S1	7,52	
		S2	7,42	
		S3	7,52	7,49
		S4	7,59	
		S5	7,44	
Petatel	Rubber	G1	5,01	
		G2	5,04	
		G3	5,63	5,39
		G4	5,01	
		G5	6,27	
		P1	4,94	
		P2	6,22	
		P3	4,16	5,04
		P4	4,52	
		P5	5,35	
		P1	5,20	
		P2	4,73	
		P3	5,17	5,01
		P4	4,89	
		P5	5,04	
		G1	5,47	
		G2	4,60	
		G3	4,57	5,20
		G4	4,60	
		G5	6,77	
		P1	6,19	
		P2	5,44	
		P3	5,76	5,52
		P4	5,00	
		P5	5,22	
		G1	5,10	
		G2	4,19	
		G3	4,03	3,94
		G4	3,13	
		G5	3,26	

Onderneming Estate	Cultuur Cultivation	Monster Sample	PH	Gemiddelde Average PH
Soengei Bedjankar	Rubber	G1	4,22	
		G2	4,16	
		G3	4,19	4,26
		G4	4,34	
		G5	4,37	
		P1	4,44	
		P2	4,44	
		P3	4,64	4,46
		P4	4,30	
		P5	4,47	
		O1	4,16	
		O2	4,16	
		O3	4,53	4,65
		O4	5,93	
		O5	4,47	
		N1	5,65	
		N1	6,30	
		N3	5,79	6,34
		N4	6,77	
		N5	7,18	
Silau Toewa	Rubber	S1	5,24	
		S2	5,38	
		S3	5,93	5,39
		S4	4,62	
		S5	5,79	
		G1	5,38	
		G2	5,69	
		G3	7,42	6,44
		G4	6,63	
		G5	7,07	
Ambaloetoe	Rubber	G1	5,44	
		G2	5,83	
		G3	5,89	5,83
		G4	5,86	
		G5	6,12	
		S1	5,83	
		S2	5,86	
		S3	5,70	6,02
		S4	6,28	
		S5	6,44	

Onderneming Estate	Cultuur Cultivation	Monster Sample	PH	Gemiddelde PH Average
Poelau Mandi	Rubber	S1	6,13	
		S2	7,20	
		S3	4,98	6,06
		S4	5,82	
		S5	6,16	
		G1	6,13	
		G2	5,38	
		G3	6,07	5,36
		G4	4,98	
		G5	4,23	
Soengei Kopas	Rubber	S1	6,06	
		S2	6,44	
		S3	6,53	6,51
		S4	6,40	
		S5	7,14	
		G1	7,14	
		G2	6,79	
		G3	7,11	6,67
		G4	6,10	
		G5	6,19	
Soengei Dadap	Rubber	S1	4,16	
		S2	4,25	
		S3	4,16	4,20
		S4	4,25	
		S5	4,16	
		G1	4,25	
		G2	4,68	
		G3	4,28	4,34
		G4	4,17	
		G5	4,31	
Soengei Radja	Klapper	S1	5,31	
		S2	4,62	5,30
	Coconut	S3	5,25	
		S4	6,11	
		G1	4,62	
		G2	4,27	
		G3	4,65	5,64
		G4	6,25	
		G5	7,00	
		G6	7,03	

Onderneming Estate	Cultuur Cultivation	Monster Sample	PH	Gemiddelde Average PH
Goenoeng Malajoe	Gambir	G1	4,07	
		G2	4,57	
		G3	4,44	4,26
		G4	4,13	
		G5	4,10	
		S1	3,64	
		S2	4,07	
		S3	4,13	3,91
		S4	3,70	
		S5	4,03	
Negaga	Gambir	S1	3,61	
		S2	4,91	
		S3	3,99	
		S4	4,11	
		S5	3,64	
		S6	3,41	4,20
		S7	3,73	
		S8	3,70	
		S9	4,69	
		S10	6,22	
		G1	3,83	
		G2	3,15	
		G3	3,24	
		G4	3,44	
		G5	4,46	
		G6	4,98	
		G7	4,13	
		G8	3,53	
		G9	4,04	
		G10	3,37	3,83
		G11	4,37	
		G12	3,44	
		G13	4,12	
		G14	3,34	
		G15	4,23	
		G16	4,16	
		G17	4,26	
		S11	4,17	
		S12	4,27	
		S13	4,43	
		S14	4,59	4,44
		S15	4,76	
		S16	4,41	

Onderneming Estate	Cultuur Cultivation	Monster Sample	PH	Gemiddelde Average PH
Bandar Poelau	Rubber	S1	4,90	
		S2	4,96	
		S3	4,96	5,05
		S4	4,96	
		S5	5,49	
		G1	4,56	
		G2	4,93	
		G3	5,16	4,91
		G4	4,90	
		G5	4,99	
Kanopan Oeloe	Rubber	G1	4,23	
		G2	4,33	
		G3	4,65	4,43
		G4	4,49	
		G5	4,43	
		S1	5,30	
		S2	5,30	
		S3	5,80	5,55
		S4	5,65	
		S5	5,71	
Membang Moeda	Rubber	S1	4,54	
		S2	4,51	
		S3	4,54	4,54
		S4	4,25	
		S5	4,87	
		G1	4,15	
		G2	4,51	
		G3	4,96	4,79
		G4	5,55	
		G5	4,80	
Tandjong Pasir	Rubber	G1	4,46	
		G2	4,55	
		G3	4,59	4,55
		G4	4,38	
		G5	4,75	
		P1	4,72	
		P2	4,52	
		P3	4,81	4,71
		P4	4,75	
		P5	4,75	

Onderneming Estate	Cultuur Cultivation	Monster Sample	PH	Gemiddelde Average PH
Panigoran	Rubber	P1	6,44	
		P2	6,38	
		P3	6,72	6,09
		P4	5,08	
		P5	5,81	
		G1	—	
		G2	5,26	
		G3	6,72	5,98
		G4	5,63	
		G5	6,31	
		G1	5,47	
		G2	6,39	
		G3	4,89	5,32
		G4	5,14	
		G5	4,69	
		G1	4,31	
		G2	4,21	
		G3	4,28	4,21
		G4	4,12	
		G5	4,12	
		P1	4,28	
		P2	5,89	
		P3	5,71	5,04
		P4	4,46	
		P5	4,84	
		P1	4,69	
		P2	4,66	
		P3	4,49	5,24
		P4	5,38	
		P5	7,00	
		P1	5,44	
		P2	4,40	
		P3	4,59	
		P4	4,75	
		P5	6,56	
		P6	5,04	5,28
		P7	5,35	
		P8	5,41	
		P9	4,72	
		P10	6,50	

Onderneming Estate	Cultuur Cultivasion	Monster Sample	P_H	Gemiddelde Average P_H
Padang Halaban	Oliepalm	P1	5,65	
		P2	5,23	
	Oilpalm	P3	5,77	5,34
		P4	5,04	
		P5	5,01	
		G1	6,91	
		G2	6,21	
		G3	5,65	6,11
		G4	5,84	
		G5	5,96	
Brussel	Rubber	G1	6,76	
		G2	6,64	
		G3	6,04	6,59
		G4	7,10	
		G5	6,39	
		S1	5,55	
		S2	5,94	
		S3	4,69	5,72
		S4	6,22	
		S5	6,20	
Pernantian	Rubber	G1	6,17	
		G2	6,78	
		G3	4,76	5,76
		G4	6,50	
		G5	4,59	
		S1	4,90	
		S2	5,91	
		S3	4,56	5,10
		S4	4,66	
		S5	5,45	
Milano	Rubber	G1	4,37	
		G2	4,63	
		G3	4,74	4,38
		G4	4,07	
		G5	4,07	
		S1	4,34	
		S2	4,44	
		S3	4,49	4,46
		S4	4,60	
		S5	4,42	

Onderneming Estate	Cultuur Cultivation	Monster Sample	P_H	Gemiddelde Average P_H
Aek Boeroe	Rubber	P1	4,53	
		P2	6,16	
		P3	4,39	4,74
		P4	4,33	
		P5	4,27	
		G1	4,62	
		G2	5,33	
		G3	4,90	4,78
		G4	4,46	
		G5	4,59	
Soemoet	Vezel (sisal) Fibre	S1	4,24	
		S2	4,37	
		S3	4,52	4,37
		S4	4,37	
		S5	4,34	
		G1	4,54	
		G2	4,73	
		G3	5,01	4,68
		G4	4,58	
		G5	4,54	
Batang Sepongol	Rubber	P1	4,86	
		P2	4,46	
		P3	4,65	4,97
		P4	6,36	
		P5	4,52	
		G1	4,58	
		G2	5,34	
		G3	4,32	4,64
		G4	4,46	
		G5	4,52	