

A FIELD TRIAL OF CERTAIN COIMBATORE CANES IN COMPARISON WITH UBA.

By H. H. DODDS.

In the experiments to be described, certain varieties of the Coimbatore series of sugar canes, Co. 213, 214 and 281, are compared with Uba in field trials under rather severe conditions.

The soil was a heavy clay loam, rather shallow and with a stiff clay subsoil. There was no gradient and drainage qualities were very poor. Consequently the soil was apt to remain waterlogged after heavy rains, and suffered severely in periods of drought.

The soil, however, had improved considerably in character and composition within recent years as a result of suitable cultivation.

A recent test of this soil gave the following figures:—

	Per cent.
Total carbon	1.82
Total nitrogen	0.156
Carbon-nitrogen ratio	11.7
Phosphate (P_2O_5 soluble in 1% citric acid solution)	0.029
Potash (K_2O soluble in 1% citric acid solution)	0.012
Nitrate nitrogen (Al. reduction method), 9.96 parts per million.	
Hydrogen ion concentration (pH), 6.9.	

The cane was planted on November 1st, 1929, there being six replications of each variety; each plot was 0.05 acre in area and of identical dimensions.

Fertilizer was applied in the furrows at the time of planting at the rate of 480 lbs. of superphosphate, 120 lbs. of ammonium sulphate, and 60 lbs. of potassium chloride per acre.

During early stages of growth it was noted that the Co. 281 drew ahead, with Uba and Co. 213 about equal, and Co. 214 making slower growth.

In dry spells Uba was generally the first to show signs of distress, but soon recovered after rain.

The rainfall was very deficient, a total of only 53.36 inches being recorded during the twenty-one months of growth.

The cane was harvested on August 6th, 1931, the following being the results. The analyses are based on the average results of hand mill tests of samples from every plot.

	Uba.	Co. 281.	Co. 214.	Co. 213.
Tons cane per acre	34.11	41.03	20.79	31.66
Purity of juice	82.9	89.2	89.4	83.2
Pol per cent. cane	13.84	14.67	15.28	12.92
Sucrose yield in tons acre	4.74	6.00	3.18	4.05
Ratio to standard (Uba = 100)	100.0	126.6	67.1	85.4

	Uba.	Co. 281.	Co. 214.	Co. 213.
Standard deviation from mean of sucrose yield per acre	0.91	0.60	0.29	0.56
Standard experimental error	0.37	0.24	0.12	0.23
Phosphate (mg. P_2O_5 per 100 ml. of juice)	30.0	26.1	25.6	25.6
Potash (mg. K_2O per 100 ml. of juice)	112.0	135.0	112.0	127.0
Fibre per cent. cane	12.30	13.52	14.80	12.04

Co. 281 proved to be much superior to the Uba standard in every respect except fibre content, yielding 26.6 per cent. more sugar per acre than the Uba. Both of the other Coimbatore varieties were inferior to the Uba, especially the Co. 214, because of its low yield of cane per acre resulting in 32.9 per cent. less sugar per acre than the Uba. The poor growth made by Co. 214 is most unfortunate, since this variety is normally one of the richest in sucrose in our collection; and it is also one of the very few Coimbatore varieties that has consistently given a negative reaction to infection with mosaic disease even under the most severe and prolonged conditions of infection.

Co. 281 is unfortunately somewhat susceptible to infection with mosaic disease under insect chamber conditions, though we have no field cases of mosaic disease on record with this variety; this potential susceptibility to mosaic disease is the only objection to Co. 281 that has hitherto prevented its release for commercial planting.

With increased control of mosaic disease, however, so that it can be eliminated as a serious factor, I believe that Co. 281 will play an important part in sugar cane agriculture in South Africa, as it promises to do in many other countries.

The average dimensions of the canes from the foregoing experiments were as follows:—

	Uba.	Co. 281.	Co. 214.	Co. 213.
Length	70 ins.	69 ins.	46 ins.	52 ins.
Thickness	1.85 cm.	2.28 cm.	1.74 cm.	2.56 cm.
Weight	1.22 lbs.	1.51 lbs.	0.67 lbs.	1.41 lbs.
Length between nodes	2.58 ins.	3.59 ins.	2.29 ins.	2.84 ins.

The periodical analyses of these canes during the few months previous to harvesting were as follows:—

Pol per cent. cane :—

VARIETY.	MARCH.	MAY.	AUGUST.
Co. 214	13.58	13.95	15.28
Co. 281	13.03	13.25	14.67
Co. 213	10.52	12.08	12.93
Uba	9.67	12.06	13.84

Purity of juice :—

VARIETY.	MARCH.	MAY.	AUGUST.
Co. 214	85.6	90.4	89.5
Co. 281	85.5	90.6	89.3
Co. 213	76.5	86.2	83.2
Uba	74.8	84.9	82.9

It is evident that none of these varieties can be regarded as early maturing under the conditions of this experiment. Their relative ranking was maintained almost unchanged throughout the season.

Summary and Conclusions.

A field trial (Series "C" of this experiment station) is described of Co. 281, 214 and 213 and Uba canes in a heavy clay loam soil with stiff clay subsoil having poor drainage qualities and very subject to drought.

Co. 281 showed a marked superiority to Uba over the plant cane results, yielding 26.6 per cent. more sugar to the acre than Uba cane.

Co. 214 and Co. 213 were both inferior to Uba under the conditions of this experiment.

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CHAIRMAN: There are certain figures I want to draw your attention to here. On the second page of the first paper the fibre per cent. cane is given. This is going to bring us to a very important question which this Association or somebody has to tackle in the near future, and that is the classification of these canes, as to whether they are hard or soft. Soft canes fetch a higher price than hard canes, but no differentiation has ever been laid down as to what is what. Figures of this sort will have to be increased or amplified and some decision taken as to what is soft cane. From these figures, there is little doubt that P.O.J. cane may be considered as soft cane. But what of the Co. canes? The time will come very soon when this will have to be put to practical test.

Mr. BOOTH: Regarding these analyses of P.O.J. 2725, on the first page you quote analyses, and in the paper "Varieties of Sugar Cane" you also give analyses. Are these the same figures or separate analyses?

Mr. FOWLIE: The figures given in the experiments are separate, and I do not think they are included in the other figures, which are more from series of tests carried out on certain fields at different times. The results taken at harvesting are not always included in these tables. Looking through the August figures for

P.O.J. 2725, I don't know whether the five figures given represent the individual analyses from which these averages are made up or not. I am not in a position to day.

Mr. BOOTH: Why I asked the question is that in the "Notes on Varieties" the analyses are extraordinary; in fact, they appear too good to be true, and it would be very pleasing to know that we have confirmation of them.

Mr. ASKEW: I would like to know whether Mr. Fowlie considers P.O.J. 2714 would be a better cane than Co. 290.

Mr. FOWLIE: I am not in a position to say which will be the better cane at the moment, even generally, but certainly in particular conditions one would want to know what these conditions were before expressing an opinion. Taking the Industry generally, I do not think I need have any hesitation in saying that at present I consider Co. 290 a more promising cane than P.O.J. 2714.

Dr. HEDLEY: In answer to Mr. Booth's question, I can only say that Mr. Dodds wrote this paper out, and I knew nothing about it really until I saw it in print. He was rather rushed in his work before he left, and consequently we had no opportunity of discussing the figures. But I think it is unlikely that these figures are like the figures we get in the general analysis. Attention has been drawn to the very low fibre shown for Uba in the second paper. I have no reason to think that is wrong, but it may be a misprint. The figure given is, of course, very low for Uba. We get an average of 14 at the Station.

Mr. BOOTH: I was worrying about the P.O.J. 2725 analyses really. They are so consistent throughout the year.

Dr. HEDLEY: I think you can take that as correct. It is wonderful how that cane looks good and keeps steady to its figures practically throughout.

CHAIRMAN: This brings our proceedings to an end. On behalf of Mr. Watson and this Association, I thank you all for your attendance. The attendance during the first two days has thoroughly confounded the pessimists, of whom I am afraid I was one. We felt we would not get a good attendance, but we have had a meeting well up to the standard we have set ourselves in the past. It is a lesson to us not to be downhearted, but to tackle these jobs when times are bad just as when they are good.

Mr. ASKEW: First I should like to say I think you were very wise in deciding to hold this Congress, for the reasons already expressed. I want to say, for myself and others, that I have never enjoyed a Congress so much as this. I have got a lot of information and instruction to carry me quite a long way. To me per-

sonally, it has been quite an education. I believe others will testify to the same extent. We are very much indebted to all those who have written these papers. I should also like to move, on behalf of the meeting, a vote of thanks to you and to the Chairman and everybody who has taken part. (Loud applause.)

SECRETARY: Might I just say that, in connection with the vote of thanks to the Chairman, that Mr. Dymond asked to be conveyed through the Congress to Mr. Moberly his appreciation of the work he has done as Acting Chairman of the Congress, owing to Mr. Dymond's absence in Porto Rico. I have the same message from Mr. Watson, who is the Vice-Chairman, and who in the ordinary course would have acted for Mr. Dymond, but owing to health reasons he has not

been able to give that expression to his views and to take part as Chairman in the way he would have been only too happy to do, and therefore he wants his thanks also to be expressed to Mr. Moberly for the work he has done on his behalf. I wish to second Mr. Askew's proposition of a vote of thanks to the Chairman. (Loud applause.)

Mr. JACOBS: There is another small detail. I would like to express on behalf of members their appreciation of the work of the Publication Committee, and particularly Mr. Moberly, for the efficient way in which the papers have been put together this year, and bound in a form which has made it easy to follow and carry out the work of this Congress. (Applause.)

