

SOME OBSERVATIONS ON JUICES OF DISEASED SUGARCANE

It is well known that a considerable drop in juice quality is brought about by cane diseases like red rot (*Colletotricum falcatum*) and Wilt (*Cephalosporium sacchari*) and the juices of such diseased canes are particularly difficult to clarify both in the vacuum and open pan systems of manufacture. Apart from the fall in sucrose and purity per cent. detailed knowledge in respect of non-sugar ingredients (which largely determine clarifying properties) is singularly lacking, being restricted to some casual observations in the literature such as that made by Kortscher (1939) to the effect that in diseased canes, exceptional quantities of gum are apt to occur.

In this note, some preliminary results of interest in respect of juices from red rot and wilt affected canes, originating from different areas in Bihar are briefly reported. In addition to determinations of Brix, Polarisation and Invert Sugars, the following non-sugar ingredients (important from the technological view-point) were also examined in these studies, in accordance with analytical methods indicated against each:—

Total Colloidal Matter (Kharin and Smirnova, 1936), Gums (Ruff and Withrow, 1922), Pectin (Farnell, 1924), Crude Protein (Total Organic Nitrogen $\times 6.25$), Ash and Phosphate contents (Pemberton, 1893, 1894).

Although a number of samples from different localities in Bihar was examined, only typical

cases representing a fairly heavy attack of the two diseases have been shown in Table I. It will be evident from the table that besides the losses in sucrose, increases in invert sugar, colloids (total as also of different categories) and ash contents are occasioned by the red rot disease. The same trend is manifested with regard to changes caused by wilt, although to a much smaller extent. In so far as the present investigations appear to indicate. The highly deleterious effect of large quantities of all these ingredients (except phosphate) on the clarifying properties of juices undoubtedly account for most of the milling difficulties experienced. Further work is in progress.

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1. Farnell, *Internat. Sug. Jour.*, 1924, 25, 480.
2. Kharin and Smirnova, *Ibid.*, 1936, 38, 447, 109.
3. Kortscher, *Hawaii's Planters' Record*, 1939, 43, No. 1 (October).
4. Pemberton, *Jour. Amer. Chem. Soc.*, 1893, 15, 382-95.
5. - , *Ibid.*, 1894, 16, 278-82.
6. Ruff and Withrow, *Ind. Eng. Chem.*, 1922, 14, 12.

TABLE I

Showing changes in Juice Criteria of Red Rot and Wilt Affected Cane

(a) Red Rot
Variety : Co 331

(b) Wilt
Variety : Co 385

Sl. No.	Ingredients*	Healthy	Diseased	Per cent change due to disease	Healthy	Diseased	Per cent. change due to disease
1	Brix	19.90	9.50	-52.3	18.40	12.80	-30.4
2	Polarisation	17.58	4.62	-73.7	15.29	7.30	-52.3
3	Purity	88.50	48.60	-45.1	83.10	57.03	-31.4
4	Invert Sugars	2.46	25.47	+93.54	2.50	12.19	+388.8
5	Total Colloids	2.41	11.16	+362.7	6.40	8.61	+34.6
6	Gums	0.27	1.26	+366.1	0.83	1.25	+51.7
7	Calcium Pectate	0.29	0.88	+198.6	0.12	0.16	+36.7
8	Crude Protein	0.53	1.41	+164.5	2.28	3.72	+63.3
9	Ash	2.01	6.53	+224.4	3.72	7.30	+96.4
10	P ₂ O ₅	0.11	0.18	+61.3	0.13	0.19	+49.6

* Ingredients 4 to 10 are expressed as percents on Total solids.

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