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CALCUTTA-35

Prof. T.A. Davis,  
Crop Science Unit.

28 December 1964.

Dr. Grote Reber,  
'Stowell', Stowell Avenue,  
HOBART, Tasmania,  
Australia.

Dear Dr. Reber,

I thank you for your letter of December 14, 1964. Yes, I saw the Nature communication by Satyabalan et al, and my rejoinder also appeared in the Oct.31 issue of Nature, copy of which is enclosed in case it escaped your notice. While I do not claim that my finding will be universal, inspite of favourable results from the Trust Territory of Pacific Is., I do not fully believe the figures given by my critics. About their work, Prof. J.B.S. Haldane, FRS, who unfortunately died on the first of this month wrote thus ..."I have been visiting agricultural and horticultural research stations where genetical work was undertaken from time to time for the last 38 years. Of these, Kasaragod, which I visited in 1959 is incomparably the worst. ... I should not be at all surprised if a number of trees, for reasons no doubt satisfactory to Satyabalan, had been omitted from his record.

I saw your article in J. Genet. and quoted the same in my letter. Please send me a reprint if one can be spared.

Your interest in my studies on the palms encourages me very much. Two of the four papers I presented at the beginning of this month for the F.A.O. Coconut meetings at Colombo are enclosed. I am sure the one on 'Possible geo-physical influence on asymmetry in Coconut and other plants' will interest you. As you will find from it that you are the sole cause for much of my current investigation on asymmetry. Please do not hesitate to criticise me or correct me. If you think any of the different aspects mentioned in this paper after elaboration will be suitable for publication in a standard journal, please suggest me. I am biding my time to get a chance to visit other countries for collecting data for the present study.

I wish you a brighter New Year.

Yours sincerely,

T. A. Davis  
(T. A. Davis)<sup>28/12/64</sup>

## Leaf Spiral and Yield in Coconuts

THIS communication refers to the recent article by Satyabalan, Ninan and Krishna Marar<sup>1</sup>, who perhaps unconsciously give more publicity to my findings relating to foliar asymmetry in the coconut palm<sup>2-4</sup>. The very first line of their statement, referring to the work of Petch<sup>5</sup>, is misleading. Petch did not deal with leaf spirals of coconut in his paper and, in fact, there is no mention of leaf or foliar spiral, or the arrangement of leaves along five spirals in a clockwise or anti-clockwise direction as reported. Presumably Petch's article was not available to the above authors. Petch explained the structure of the fibres in the coconut stem. Neglecting the outer rind, he found in a stem the vascular bundles sloping to the left in the outer 3.5 cm, followed by an abrupt reversal of direction for the next 3.5 cm. This was again followed by another reversal to the original left in the remaining inner core of the stem. In another stem, the condition was reversed; the same three regions were present, but in the outer the bundles sloped up to the right, in the intermediate to the left, and in the inner to the right again. These two types of palms were regarded by Petch as right- and left-handed coconut trees.

Quotations from, and reference to, my work cover about a third of Satyabalan and others' communication. But if they had given due importance to the following sentence of my paper given within brackets ("My yield data relate to a small locality in Kerala and I do not claim that this will be the situation elsewhere."), much of their criticism could have been spared. My figures on the nut-production were from Kayangulam, a small town in central Kerala. In one part of their communication, the foregoing authors isolate this locality as "a place affected by a devastating virus disease of coconuts", but later on claim that Kayangulam and Kasaragod (extreme north-west of Kerala, about 500 km away from Kayangulam) have the same variety of palms "growing under almost identical climatic and soil conditions".

I am trying to obtain from India and abroad yield data on the two types of coconuts as well as other plants which show asymmetry of the stem, leaves or flowers. Through the kindness of Dr. M. N. Sproat, director of agriculture, Trust Territory of the Pacific Islands, kernel yields from 100 left-handed and an equal number of right-handed coconut palms on Ponape Island for the year 1963 were weighed. The left-right difference of kernel yield is quite high, being 13.48 per cent (that is, 31.24-27.53 lb. of kernel/tree/year) and this fact substantiates my findings. The repeat experiments of Reber's<sup>6,7</sup> reversed beans confirmed the production of a greater weight of beans and an increase in weight ratio of beans to shucks. The flowers of Malvaceae and Bombacaceae are asymmetric<sup>8,9</sup> and the capsules developed from the left-handed *Bombax ceiba* flowers produced a slight excess of developed seeds. Of the 200 fruits gathered from known flowers of *Hibiscus esculentus*, those from left-handed flowers bore, on an average, 5.27 per cent more seeds, although the difference is not statistically significant.

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<sup>1</sup> Satyabalan, K., Ninan, C. A., and Krishna Marar, M. M., *Nature*, **202**, 927 (1964).

<sup>2</sup> Davis, T. A., *J. Genet.*, **53**, 42 (1962).

<sup>3</sup> Davis, T. A., *Experientia*, **18**, 321 (1962).

<sup>4</sup> Davis, T. A., *J. Genet.*, **53**, 128 (1963).

<sup>5</sup> Petch, T., *Ann. Roy. Bot. Gard. Peradeniya*, **5**, 538 (1911).

<sup>6</sup> Reber, G., *Castanea*, **25**, 122 (1960).

<sup>7</sup> Reber, G., *J. Genet.*, **59** (1964).

<sup>8</sup> Davis, T. A., *Nature*, **201**, 515 (1964).

<sup>9</sup> Davis, T. A., and Selvaraj, C., *J. Bombay Nat. Hist. Soc.*, **61**(1964).