

19th. November, 1929.

Professor Bhai Balmukand,
Agricultural College,
LYALLPUR,
Punjab.

Dear Balmukand,

(i) We often leave paths of 24 or 30 inches between plots, but often also they are grown contiguously. You would doubtless allow more for a bund.

(ii) One can only find the statistical properties of a mixed population from those of its components, if the proportions of the mixture are known. If however we know the proportions $p = q : \dots$ and both the means and the variances of the components we can find the variance of the mixture.

$$px^2 + qy^2 + rz^2 + \dots$$

where $x = a + \xi$, where a is the mean of the first part of the population and ξ is distributed about 0 with variance, u ,

$$\overline{x^2} = a^2 + u^2$$

giving in all

$$p(a^2 + u^2) + q(b^2 + v^2) + r(c^2 + w^2) + \dots$$

$a, b, c,$ being referred to the general mean

$$pa + qb + ve + \dots = 0$$

In most practical cases

$$u = v = w = \dots$$

so we have

$$u^2 + pa^2 + qb^2 + \dots - (pa + qb + \dots)^2$$

the last term serving to reduce $a, b, c,$ to the general mean.

I had not realised that the child record included only dependent children; for a record of ^{affective} fertility of course the whole of the children save those dying in infancy will be required. It may well be that the children of the poorest class are earlier independent of their parents, and this may produce their apparent low fertility. Data for complete families for comparison with your very valuable notes on economic status would I believe supply the material for a satisfactory investigation.

Yours sincerely,