

25 February 1933.

Dr. F.R. Immer,  
Dept. of Agriculture,  
University Farm,  
St. Paul,  
Minnesota, U.S.A.

My dear Immer:

Business first! I think you have that analysis of variance question clear. In your second table the comparison  $n_1 = 66$ ;  $n_2 = 176$  shows that varietal performance varies with place. The comparison  $n_1 = 22$ ,  $n_2 = 66$  shows that the places tested concur in the varieties most successful, sufficiently to show that in the whole region from which they are a random sample, the varieties which have done best in your trial would have done best.

As you see exactly the same comparison is available for years. Supposing now

$$\begin{array}{c} V \rhd V \times Y \rhd V \times Y \times P \\ V \rhd V \times P \rhd V \times Y \times P \end{array} \rhd R$$

you have excluded a lot of possibilities. Differences of performance among varieties would not be independent of year or place, nor of the special circumstances which make a year favourable or unfavourable at particular places; the different

years show enough consistency at different places to prove that certain years have been generally favourable to some varieties; the different places show enough consistency in different years to show that certain places are generally favourable to certain varieties. \* Varietal performance generally has been consistent enough to show that some varieties are to these places the best in most years, and again to show that in these years <sup>some</sup> they are the best in most places. If a lot of varieties had been used I should be tempted to split the degrees of freedom up to see whether possibly some varietal contrasts were constant in time, and others constant in places, but apart from this, results of this kind would give a very clear clue as to what varieties to grow, or to test further.

It would be fine if you could get time to come and work with me again. Hutchinson will be home for a second visit this year before proceeding to a post in India. He is keen to develop genetical methods fit to deal with quantitative inheritance, all economically important characters being really quantitative.

Kind regards to Mrs. Immer.

Yours sincerely,