A STANDARD FOR SPOT SEEDING

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The tables presented here have been constructed for use with spot seeding where the object is to deposit at least one or more viable tree seeds on each small spot selected for sowing. As seed lots vary in viability, it is desirable to know the minimum number of seeds per spot required at different viabilities to provide each spot with a specified number of potentially productive seeds.

Table 1 shows, for selected viabilities, the number of seeds that should be deposited on each spot so that no fewer than the minimum number of viable

TABLE 1.
TOTAL NUMBER OF SEEDS REQUIRED PER SPOT TO
PROVIDE MINIMUM VIABLE SPECIFIED

Minimum number of viable seeds per spot ²	Viability of seed lot in per cent									
	100	90	80	70	60	50	40	30	20	10
	Total number of seeds per spot									
1	1	2	3	4	6	7	10	13	21	
2	2	4	5	7	8	11	14	20		
3	3	5	7	9	11	14	18	25		
4	4	7	9	11	13	17	21	over 25		
5	5	8	10	12	15	19	25	seeds		
								per spot		

seeds indicated in the left-hand column may be expected on at least 99 out of 100 spots. The table is based on the theory of probability expressed by the expansion of the binominal $(q+p)^n$. Here the values of the successive terms give the likelihood of 0, 1, 2, 3, . . . n viable seeds being present in n seeds taken from a seed lot whose proportion of viable seeds is p, and of non-viable seeds is q.

It should be emphasized that the proportion of viable seeds deposited on any one spot will not necessarily be the same as or even closely approximate that which exists in the seed lot. If this were the case, each spot would receive about the average number of viable seeds (total number of seeds per spot x viable proportion of seed lot). Based on this assumption and on the figures in Table 1, the average number of viable seeds on each seed spot would be as shown in Table 2. These figures, however, do not apply to individual spots but

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² Probability of 99 per cent or more.

are the average of a large number of spots. The difference between the average and the minimum number of viable seeds that may be expected on any one spot is apparent.

The application of Table 1 ensures the productive utilization of all seed spots with a minimum quantity of seed. The result is a more efficient and economical seeding operation for both commercial and experimental work. For the application of Table 1, seed spot failures in excess of one per cent should be attributed to unfavorable field conditions rather than the viability at time of seeding. Such conditions would also result in fewer germinants per spot than the corresponding number of viable seeds shown in Table 2.

TABLE 2
AVERAGE NUMBER OF VIABLE SEEDS PER SPOT
CORRESPONDING TO TOTAL IN TABLE I

Minimum number of viable seeds per spot	Viability of seed lot in per cent									
	100	90	80	70	60	50	40	30	20	10
	Average number of viable seeds per spot									
1	1	1.8	2.4	2.8	3.6	3.5	4.0	3.9	4.2	
2	2	3.6	4.0	4.9	4.8	5.5	5.6	6.0		
3	3	4.5	5.6	6.3	6.6	7.0	7.2	7.5		
4	4	6.3	7.2	7.7	7.8	8.5	8.8			
5	5	7.2	8.0	8.4	9.0	9.5	10.0			