Table 1. BREEDING SYSTEM AND SEED WEIGHT

Name of taxon	Outbreeding self-incompatible populations					Seed weight (mg)	Self-compatible populations				References
	Moist gully	Mallee	Coastal	Montane	Desert	New Zealand					
<i>Senecio latus</i> complex	0.234	0.273	0.295	0.395	0.685			0.639		8	
<i>Potentilla glandulosa</i>			ssp. <i>nevadensis</i> 0.09 (small)				ssp. <i>typica</i> 0.31		ssp. <i>reflexa</i> Large	9	
<i>Papaver</i>		<i>rhoeas</i> (2n = 14) 118.9		<i>dubium</i> (2n = 42) 140.4	Species	<i>hybridum</i> (2n = 14) 126.9			<i>argemone</i> (2n = 42) 158.5	10	
<i>Lotus</i>		<i>pedunculatus</i> 550		<i>tenuis</i> 940		<i>denti- culatus</i> 6,230	<i>micran- thus</i> 2,910	<i>pursh- ianus</i> 4,340	<i>sub- pinnatus</i> 2,100	<i>kyl- ovii</i> 1,650	11

desert species to withstand unfavourable weather conditions.

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in an atmosphere of high humidity. After 5–7 weeks, tiny shoot meristems were observed over the entire leaf surface but especially on the veins (Fig. 1). This phenomenon was also seen on leaves treated in the same manner but with two cuts 1 cm wide made through the main vein. In this case, the neoformed buds were more numerous and more developed around the cut.

The supply of cytokinins to the whole leaf surface could cause an accumulation and retention of nutrient substances³ and/or stimulate the synthesis of nucleic acids in epidermal cells which would bring about their dedifferentiation followed by an intense neoformation of buds. Our experiments seem to implicate a disturbance in the normal equilibrium between nutrient substances and endogenous concentrations of auxins and cytokinins leading to an enhanced capacity to bud. Heide^{4,5} has observed a high endogenous ratio of cytokinin to auxin in leaves of *Begonia* × *cheimanthus* in conditions favourable for neoformation.

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Budding Capacity of Undetached *Begonia rex* Leaves

LEAVES of several species of plants (*Begonia rex*, *Nautilocalyx lynchei*, *Endymion non-scriptus*, *Streptocarpus welandii* and others) have the capacity to form buds *de novo* but, in general, only when detached from the plant. The buds are formed at the proximal pole and often on the main leaf veins.

A few authors have observed budding on undetached leaves at the point of convergence of the leaf veins and the petiole of some varieties of *Begonia rex*, but the incidence is sporadic and the neoformation is subsequent to either an ablation of the terminal apex¹ or to treatment with "columbine"—pigeon excrements in aqueous solution—absorbed by the roots².

Aqueous solutions of 6-(γ,γ-dimethylallylamino)purine (10⁻⁴ M), a natural cytokinin existing in *Corynebacterium fascians*, were sprayed once a week on undetached leaves of *Begonia rex* variety 'President' which were maintained

Fig. 1. Numerous small neoformed meristems on a leaf still attached to the plant.

Rapid Germinability Test with Exudates from Seed

DETERIORATION of seed during storage is a problem for plant breeders, seedsmen and farmers. Various methods have been proposed for testing the viability of crop seeds; these include testing enzyme activities¹, the tetrazolium method² and the X-ray contrast method³. These are comparatively expensive, time consuming and elaborate techniques.

It is known that high temperature and humidity adversely affect the longevity of seed. We carried out experiments with seed of rape, *Brassica napus* L., to find out the relationship between metabolic changes in the seed in various conditions of storage and viability. The most notable biochemical trait to distinguish dead from viable ones was found to be the exudation of sugars when soaked aseptically in distilled water. A simple method of examining the glucose in seed exudate by the use of urine sugar analysis paper will provide plant breeders and seed producers with a feasible method of testing viability. This method, based on the fact that more sugar is exuded from seed as it deteriorates, is supported by evidence from paper chromatography and the anthrone reaction.

Saccharides were extracted from seeds before and after imbibition, using 80 per cent ethanol, and were determined by paper chromatography. For imbibition, the seeds were first sterilized with 0.1 per cent 'Uspulun' and then soaked in sterile water at 30°C for 24 h. The exudates in the