autofluorescence of these cellular components may be clearly distinguished under the microscope, or in color photographs, from the pale green fluorescence due to the labelled antibody-antigen complex. The latter, as shown in Figure 1c, occurs specifically around each starch granule, thus demonstrating the presence of water-soluble proteins in high concentration in this area. The cross sections used as controls (see Table), emitted no fluorescence other than that due to autofluorescence of the grain, as shown in Figure 1d.

Controls used for establishing specificity of staining by the indirect FA procedure

Stain A	Stain B	Result
Saline	Labelled antibody	No green fluorescence
Non-immune serum	Labelled antibody	No green fluorescence
Pre-immune serum	Labelled antibody	No green fluorescence
Specific serum	Labelled antibody	Green fluorescence located around each starch granule
Specific serum absorbed with antigen	Labelled antibody	Green fluorescence markedly reduced

The proteins localized by this technique are probably enzymes associated with starch granule synthesis in the developing grain. It is likely that residues of similar water-soluble, enzymically active proteins, originally associated with storage protein synthesis are located in the matrix between the starch granules. The fact that they have not been detected does not exclude their presence, but suggests that they occur in much lower concentration than those surrounding the starch granules.

Zusammenfassung. Die Anreicherung wasserlöslicher Proteine in Endospermzellen von Weizenkörnern, in der die Stärkegranula umgebenden Zone, konnten mittels der Fluoreszenz-Antikörper-Technik nachgewiesen werden.

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Glycine Seed Germination: Differential Response to Abscisic Acid

The naturally occurring plant hormone, abscisic acid (ABA), has been shown to be a potent inhibitor of numerous growth processes[1,2]. ABA is particularly inhibitory to germination of seeds of many species[2]. Contrary to the usual inhibitory effects, ABA has also been shown to promote several growth phenomena such as soybean cotyledon callus in the presence of kinetin[3], rooting of mung bean cuttings[5] and promotion of callus formation in citrus bud culture[4]. We now report on the differential seed germination responses of several *Glycine max* (L.) Merr. cultivars to ABA.

Methods. Seeds were imbibed in solutions of ABA for 16 h, transferred to water saturated vermiculite and germinated in the dark at 25 $\pm$ 1 °C. For each of 3 experiments 5 dishes containing 10 seeds each were used for each treatment and replicated 5 times. Percentage germination was determined at 24-h-intervals and the data expressed as Σ_3 values according to TIMSON[6].

Results. A differential response to ABA was observed. Seed germination was inhibited in 'Hood' and no significant effect was observed in 'Perry' (Table). In contrast, ABA stimulated seed germination in 'Bragg' at concentrations of $1.5 \times 10^{-7} M$ to $1.5 \times 10^{-5} M$ and did not inhibit germination at $1.5 \times 10^{-4} M$. ABA stimulation of seed germination in 'Bragg' at $1.5 \times 10^{-6} M$ equalled that observed with gibberellin (GA_3) at $1.5 \times 10^{-5} M$. ABA did not reverse cycloheximide (2 µg/ml) induced inhibition. Differences in germination cannot be attributed to differential water or ABA absorption since there were no differences in uptake of water or ^{14}C labelled ABA among the 3 cultivars during the imbibition period.

Differential response of *Glycine* seed to abscisic acid

Concentration	'Bragg'		'Hood'		'Perry'	
(*M*)	Σ_3 [a]	% [b]	Σ_3	%	Σ_3	%
0	122	100	186	100	260	100
1.5×10^{-7}	220	180	110	59	272	105
1.5×10^{-6}	200	164	110	59	256	98
1.5×10^{-5}	168	138	116	62	248	95
1.5×10^{-4}	135	111	52	28	212	81

[a] Germination index according to TIMSON[6]. [b] Percent of control.

Discussion. SLOGER and CALDWELL[7] demonstrated differential sensitivity of *Glycine* cultivars to foliar applied ABA based on inhibition of leaf expansion, shoot extension and induced leaf senescence. We also have found a differential cultivar response to ABA based on seed germination, however, there was not always a strict relationship between the effects of ABA on seed germination and the reported growth effects[7]. While 'Hood' and 'Perry' were considered sensitive to foliar-applied ABA[7], seed germination was not affected in 'Perry' but was inhibited in 'Hood'. Of the non-responsive cultivars, Bragg, Clark, Kent, Semmes[7], ABA promoted seed germination only in 'Bragg'. To our knowledge this is the first report of ABA promotion of seed germination. Our data and those of SLOGER and CALDWELL[7] emphasize the difficulty in extrapolating ABA data from one cultivar to another, and further that the nature of the response for a given cultivar may be related to the parameter being observed[8].

Zusammenfassung. In Keimen von Glycinensamen wurden unterschiedliche Reaktionen der Kulturvarianten (Cultivaren) zur Abscisinsäure (ABA) beobachtet. Die Unterschiede im Keimem können nicht der unterschiedlichen Wasser- oder ABA-Absorption zugeschrieben werden.

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