medicagini var. pinodella grown on potato dextrose agar containing this compound. Future studies are planned to map this gene and further quantify the concentration and chemical properties of this pigment.

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THE EFFECT OF THE GENOTYPE ON IN VITRO ROOTING OF PEA SH00TS

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In order to investigate the effect of the genotype on in vitro rooting ability in peas an experiment was performed using nine genotypes showing wide variability for growth behavior in vivo.

Shoots were obtained by culturing the buds of the cotyledonary node as described earlier (3); the production of shoots was examined every week. The number of transplantable shoots (i.e. 10-15 mm long) produced per bud and the rate of production varied widely in the genotypes tested. P. fulvum (JI 224) did not produce any transplantable shoots. Shoots were induced to form roots on Murisighe Skoog half strength, sucrose 10g/l, activated charcoal 2g/l, CaCl2 220 mg/1, agar 8g/l, pH 5.7-5.8 (3) in a growth chamber at 24C and I6h light. The formation of roots, number of roots formed per shoot, and shoot length were scored after five weeks.

A significant effect of the genotype ($X = 48.26$ $P<0.001$) on the percentage of rooted shoots was found (Table 1). The rooting ability of pea shoots seemed to decrease progressively in those regenerated from buds cultured for a longer time, probably as a consequence of the residual effect of IBA present at high concentration (5mg/l v. lmg/1 of IBA) in the medium we used for bud culture. These results agree with those reported by other authors (4,5). Moreover, it is noteworthy that in other experiments performed in our laboratory the cuttings obtained in absence of any hormone always rooted much more easily.

Table 1. In *vitro* rooting ability of different genotypes

Genotype	Number of shoots analyzed	% of rooted shoots[1/]	No. of roots on rooted shoots[2]	Length (mm) of roots on rooted shoots[3/]
Imposant	36	33.3	2.1 ± 1.2	34.4 ± 38.9
P. abyssinicum A-10	146	15.8	1.3 ± 0.5	5.1 ± 4.5
L 5075	26	11.5	1.7 ± 0.6	5.7 ± 4.5
L 5071	15	20.0	7.0 ± 7.9	117.7 ± 101.1
L 19 (*fas*)	23	60.9	2.4 ± 2.5	33.3 ± 35.5
Proteo	33	57.6	2.0 ± 0.8	43.3 ± 63.0
L 14 (*af*)	120	35.8	2.4 ± 2.0	28.1 ± 44.3
L 1 (*Arg*)	86	43.0	1.5 ± 0.7	24.5 ± 31.0

1/ X^2 = 48.26 $P<0.001$

2/Both principal and lateral roots were considered

3/ Mean +/- S.D.

As concerns the number of roots per shoot, and their length, a very high variability within genotype was found (Table 1) and it was still present when a separate analysis within each week of bud culture was performed for every genotype (Tables 2,3). As far as the number of roots formed in each pea cutting is concerned, other authors also reported a considerable variation (1,2). An effect of the duration of bud culture was not found for either trait (Tables 2,3).

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Table 2. Number of roots in rooted shoots (mean - S.D.).

Weeks of culture of buds 1/	Genotypes					
	Imposant	P.abyssinicum	L 19	Proteo	L 14	L 1
2	-	1.1 ± 0.3	-	-	-	-
3	2.0 ± 1.1	-	-	-	2.0 ± 1.0	-
4	-	1.4 ± 0.5	-	1.9 ± 0.9	3.0 ± 1.0	1.4 ± 0.5
7	-	-	-	-	1.3 ± 0.5	-
9	-	-	-	2.1 ± 0.6	2.5 ± 1.8	1.5 ± 0.5
10	-	-	4.4 ± 3.4	-	-	-
14	-	-	-	-	-	1.5 ± 0.8

1/ Only the weeks in which it was possible to analyze at least five shoots per genotype are reported.

Table 3. Length of roots (in mm) in rooted shoots (Mean - S.D.).

Weeks of culture of buds 1/	Genotypes					
	Imposant	P.abyssinicum	L 19	Proteo	L 14	L 1
2		5.0 ± 3.6	-	-	-	-
3	35.8 ± 39.6	-	-	-	25.9 ± 38.7	-
4	-	4.6 ± 3.0	-	44.9 ± 79.4	9.2 ± 3.4	15.2 ± 21.6
7	-	-	-	-	3.8 ± 4.2	-
9	-	-	-	41.9 ± 48.3	34.8 ± 50.5	11.5 ± 18.7
10	-	-	43.6 ± 45.1	-	-	-
14	-	-	-	-	-	33.3 ± 42.2

1/ Only the weeks in which it was possible to analyze at least five shoots per genotype are reported.