Grapes Unit

The *DefH9-iaaM* in table grape

The use of genetic engineering for grape improvement permits the introduction of useful agronomic traits without altering the features of the cultivar, necessitating the development of *in vitro* systems for the genetic transformation and plant regeneration.

An alternative method useful for both propagation and *Agrobacterium*-mediated genetic transformation of table grape *(V. vinifera*) was recently described (Mezzetti et al., 2002). The method is based on the formation of meristematic bulk (MB) tissue with a high regenerative capacity, using adventitious shoots as a starting material. This procedure has been used to introduce the *DefH9-iaaM* gene (Rotino et al., 1997) into the genome of two table grape cultivars (Silcora and Thompson Seedless) (Fig. 1)

Fig. 1

The promoting effect of auxin in early fruit growth was widely studied in strawberry (Nitsch, 1950, Aharoni et al., 2002; Mezzetti et al., 2004), and was also reported in grapes (Coombe and Hale, 1973; Davis et al., 1997 and 2000), another non climateric fruit. Growth regulator effects on early development of grape berry are up to now widely studied only by the exogenous application of the synthetic phytohormons (mainly auxin, ABA and gibberellins), and are mainly focused to alter the standard ripening processes.

RT-PCR analysis of flower buds from transgenic grape plants. Analysis was performed with single strand cDNA synthesized from mRNA extracted from young flower buds of Thompson Seedless and Silcora control and transgenic plants (Fig. 2).

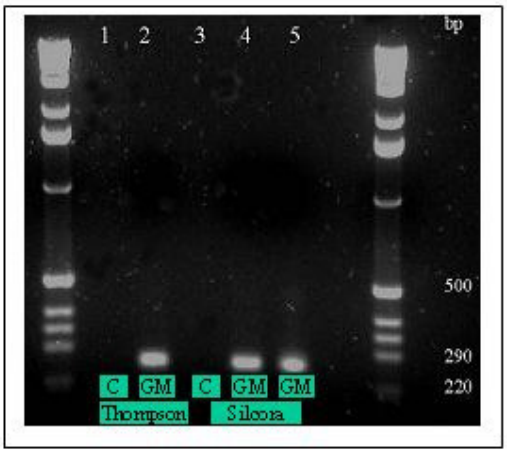

Fig. 2

The amplification product of 266 bp (fig. 2) corresponds to the 5' end of the spliced *DefH9-iaaM* mRNA. Flower buds transgenic for the *DefH9-iaaM* gene had an IAA content higher than controls (data not reported). The *DefH9-iaaM* auxin-synthesizing gene does not however inhibit grape fruit ripening.

Open field evaluations GM Table Grape

In vitro rooted transgenic clones of Thompson seedless and Silcora were grown in greenhouse for acclimatization (30 days) and weaning (60 days) and then transferred to the open field (Fig. 3).

Open field trial was established at the Experimental Farm of the Marche Polytechnic University in March 2001, by following the EC (CE 2001/18) rules for GM plants.

Vines were planted at 2.5 x 1.5 m, pruned leaving 2 long canes (12-13 nodes) and vertical shoot positioned.