



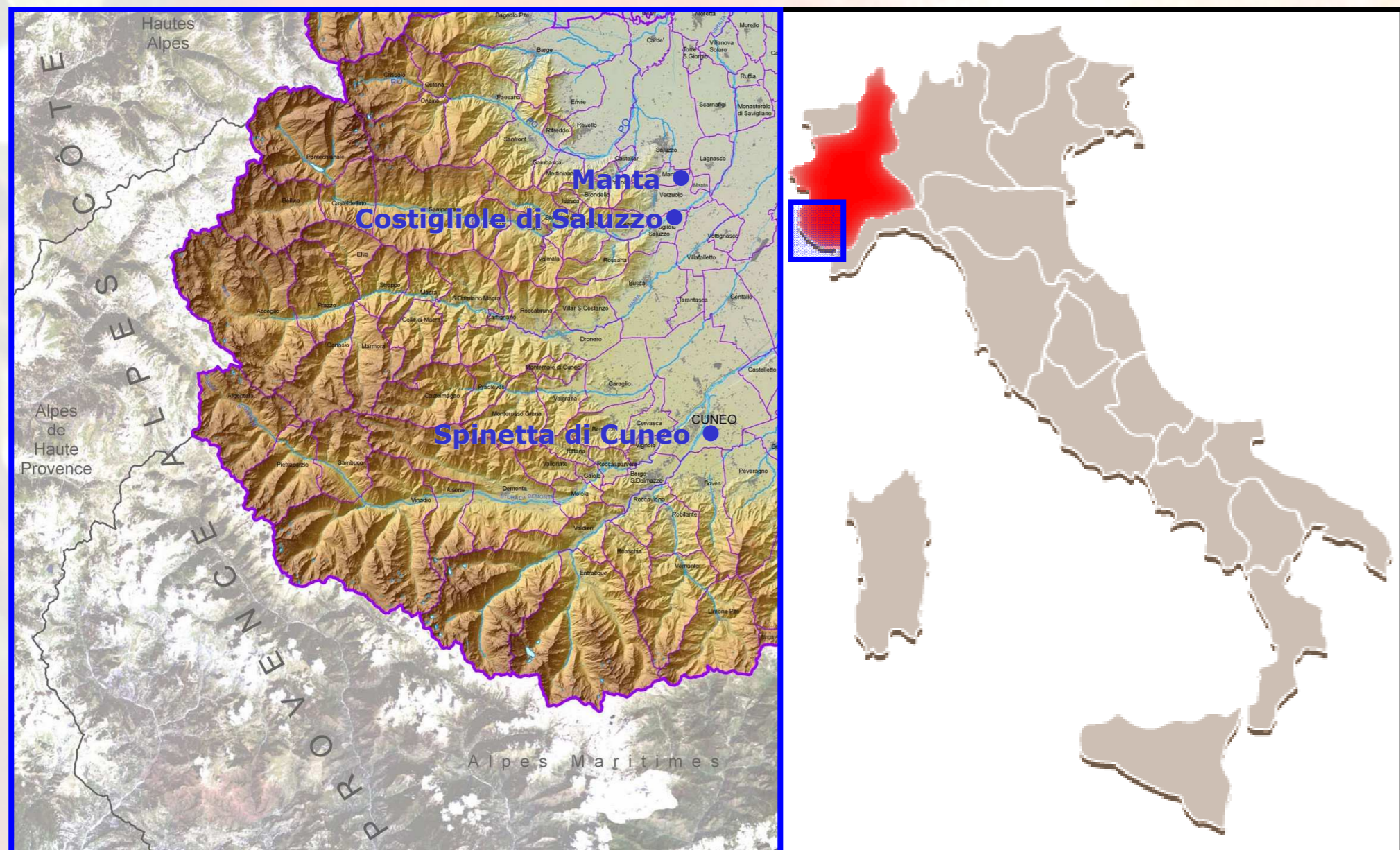
POLLINATION REQUIREMENTS OF APRICOT: TEN YEARS RESEARCH IN PIEDMONT (ITALY)



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The three localities in the province of Cuneo (Piedmont, Italy) where the trials were carried out.

Apricot (*Prunus armeniaca* L.) is usually auto-compatible, while lately some auto-incompatible cultivars have spread because of their quality excellence. The introduction of new cultivars needs therefore the evaluation, besides of agronomic and productive requirements, also of the necessity of insect pollination so to adopt adequate planting and control strategies compatible with the accomplishment of the pollination service.

Observation and test were carried out on 25 newly established cultivars in three localities of the province of Cuneo (north-western Italy): the CReSO Experimental Stations of Spinetta di Cuneo (2000-2004) and Manta (since 2008) and the fruit-growing farm Quaranta of Costigliole di Saluzzo in 2005. In any case there were a lot of plants supplying compatible pollen, and beehives were placed close to the experimental orchards in order to grant adequate insect pollination.

For each cultivar and year, 3-5 trees were selected. On each tree 2 fruit-bearing branches of similar size were chosen; one of them was isolated with a net mesh sufficient to prevent the passage of pollinating insects, without hampering sensibly the wind action, while the other one was left free. For each branch, flowers, set fruits, and ripe fruits were counted; the latter were also weighed.

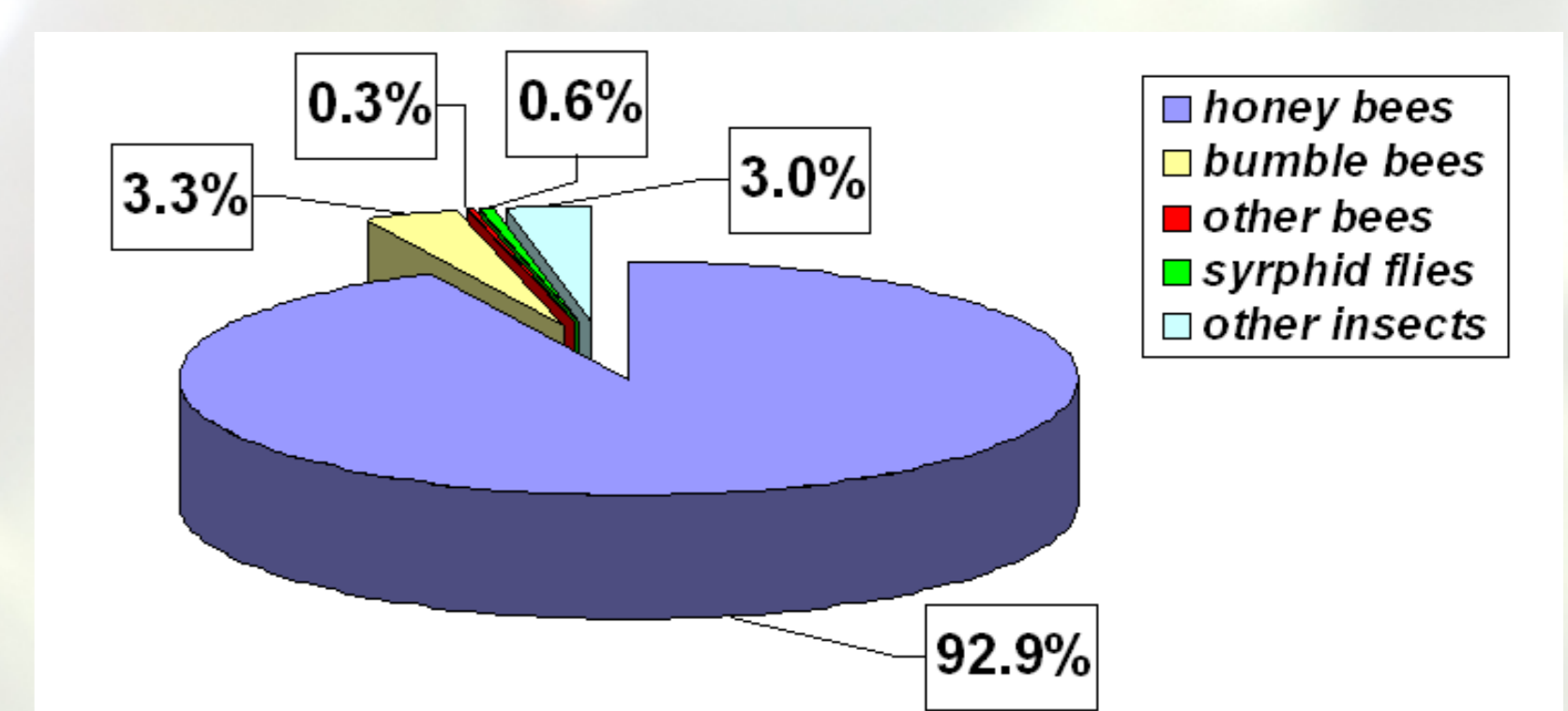
During the blooming period, observations were made on the presence of pollinating insects. They were counted on the flowers along a 200 m long transect. Honeybees were the most abundant, while wild pollinators were rather scanty. Relatively few wild bees were recorded and most of them were *Osmia cornuta* (Latreille, 1805) females and bumblebee queens belonging to the species *Bombus hortorum hortorum* (Linnaeus, 1761), *B. hypnorum ericetorum* (Panzer, 1801), *B. pratorum pratorum* (Linnaeus, 1761), and *B. terrestris terrestris* (Linnaeus, 1758).

Most cultivars produced none or very few fruits on the caged branches, although these fruits were often bigger than those produced on the free branches; such cultivars were completely or nearly completely auto-incompatible and require therefore the presence of pollinating cultivars, combined with the beneficial action of the honey bee. On the contrary the remaining cultivars were clearly auto-compatible or, at least, their partial auto-incompatibility did not hamper the production of enough fruits to be commercially acceptable; as a matter of fact, auto-compatible cultivars often needed extensive thinning of small fruits to produce ripe fruits of commercial size.

When auto-incompatible cultivars are grown, an adequate presence of pollinating insects is needed; this can be readily achieved by placing honeybee hives in the orchards, but also mason bees or bumblebees could be used. Whatever pollinating insect is used, the risk of poisoning them by using pesticides during or close to blossom must be taken into due account and pest management schemes should be adapted accordingly.



A caged branch.



Pollinating insects recorded during blossom.



A caged branch (on the right) compared with a free one (on the left) after the fruit had set and before thinning.

Results of pollination trials carried out on 25 newly established apricot cultivars. Percentages are relative to flower number.

Cultivar	testing year(s)	set flowers (%)		fruits before singling (%)		ripe fruits (%)		ripe fruit weight (g)		selfing	pollination needed
		caged branches	free branches	caged branches	free branches	caged branches	free branches	caged branches	free branches		
Goldrich	2000-2001	24.7±24.0	38.0±15.2	*	*	1.1±1.0	26.2±17.7	51.8±6.3	60.6±19.7	no	yes
Hargrand	2000-2001	36.3±36.9	53.3±9.8	*	*	0.9±1.1	19.2±17.7	57.0±16.0	59.3±27.8	no	yes
Laycot [◊]	2000-2001	9.7±8.5	38.3±7.2	*	*	0	23.3±17.0	0	43.6±12.0	no	yes
Orange Red [®] Bhart [◊]	2000-2001	5.2±9.5	37.3±12.7	*	*	0.1±0.1	32.7±14.1	54.3	29.2±7.2	no	yes
Pinkcot [®] Cotpy [◊]	2000-2001	3.9±4.0	24.2±5.8	*	*	0.1±0.3	15.6±5.1	86.0	58.5±17.7	no	yes
Robada [◊]	2001-2002	16.6±12.7	37.5±7.0	0 [†]	21.0±2.3 [†]	0	16.6±11.7	0	44.1±18.1	no	yes
Bobcot [®] Norcot [◊]	2002-2003	27.1±14.7	21.9±21.0	15.2±10.4	8.2±7.3	8.2±7.2	5.4±5.2	44.2±13.2	42.1±18.0	yes	no
Golstrike [®] Toyesi [◊]	2002-2003	22.8±13.0	33.3±20.9	0.7±0.8	20.8±12.9	0.3±0.6	12.4±5.3	35.5±10.9	32.8±20.8	no	yes
Sweetcot [®] Toyuda [◊]	2002-2003	11.0±10.1	28.0±13.8	1.1±1.0	21.3±11.9	0.7±0.6	12.1±3.9	49.4±18.0	47.3±15.7	no	yes
Tomcot [®] Toyaco [◊]	2002-2003	24.1±18.2	31.7±23.0	14.7±9.1	19.9±11.8	11.0±7.9	12.4±5.3	26.1±12.6	29.8±15.4	yes	no
Flavorcot [®] Bayoto [◊]	2002-2003-2004	20.7±7.9	41.9±10.8	14.8±5.3	29.8±17.3	8.1±2.2	13.8±6.1	32.9±7.5	28.5±7.4	yes	no
Goldbar [®] Toyiba [◊]	2002-2003-2004	20.3±15.2	41.7±13.9	2.0±2.0	27.9±11.8	1.8±1.9	15.7±9.0	62.6±18.8	44.8±23.5	partial	yes
Incomparable de Malissard [®] Valsard [◊]	2002-2003-2004	33.5±17.3	60.8±17.8	14.4±4.4	52.3±14.1	12.4±4.8	25.1±7.0	39.8±7.1	28.4±5.5	no	yes
Kyoto [◊]	2004	22.8±14.1	71.7±12.4	15.1±9.3	31.1±11.7	9.2±3.7	16.0±8.0	41.7±7.0	42.1±7.7	yes	no
Jenny Cot [®] Larclyd [◊]	2005	69.4±9.6	69.0±17.1	64.5±10.4	61.1±15.6	0	16.0±3.8	0	38.80±2.19	no	yes
Larqueen [◊]	2005	37.9±13.5	42.1±10.9	30.4±8.3	36.4±13.7	9.3±1.3	18.4±3.2	50.26±7.42	55.18±6.47	yes	no
Mango Cot [®] Rustey [◊]	2005	20.3±15.6	48.0±24.7	14.0±11.3	29.7±18.1	0	12.2±6.3	0	67.72±4.95	no	yes
Yamato [◊]	2005	19.7±6.8	39.6±21.6	9.3±2.0	29.7±16.8	0	12.2±6.3	0	89.57±2.25	no	yes
Zebra [®] Priboto [◊]	2005	22.2±19.6	30.0±16.8	17.9±10.6	24.0±13.1	0.2±0.3	6.2±3.2	87.00±0.00	88.50±5.25	no	yes
Wondercot [◊]	2008	1.5±1.8	5.9±0.1	0.4±0.5	4.4±0.4	0	3.0±1.5	0	85.0±1.4	no	yes
Lilly Cot [◊]	2008	4.0±0.2	6.0±5.4	1.2±0.9	5.1±4.0	0.9±0.6	3.6±1.5	73.3±10.9	68.4±15.1	partial	yes
Lady Cot [◊]	2008	8.9±0.5	33.8±10.7	6.3±0.2	18.0±10.3	0	11.5±6.1	0	93.0±2.4	no	yes
Sunny Cot [◊]	2009	40.2±13.8	57.4±0.9	6.7±1.4	11.6±0.3	5.5±3.1	7.4±2.2	72.4±10.0	69.4±12.7	yes	no
Tropic Blush A 1537 [◊]	2009-2010	52.2±26.0	61.4±21.8	6.6±1.3	29.1±13.4	4.8±0.7	14.0±6.7	37.6±6.7	33.0±4.7	partial	no
Tropic Blush A 2858 [◊]	2009-2010	46.1±29.9	51.9±24.4	2.4±2.6	17.5±7.9	0.6±0.8	7.6±4.2	34.8±6.3	29.8±5.7	no	yes

® trade mark; ◊ cultivar under patent protection; * the fruits were not singled; † 2002 only; evidenced areas point out statistically significant differences.