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Establishment of a collection of *Salvia* with multipurpose potentialities

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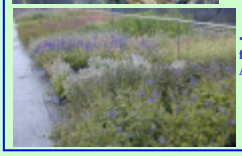
Aims of the research and plant material

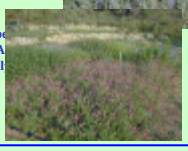
The genus *Salvia* includes more than 900 species spread out all over the world. Some of them are well known for their aromatic features, others for the medicinal and cosmetic properties; many species are used only for gardening. In the frame of an international project on the evaluation of the potentialities of this genus, about 100 underutilized or rare species were collected, propagated and evaluated to obtain new ornamental products (above all pot plants) and new natural substances.

Collection and cultivation

•Plants grown under shading nets (Experimental Institute for Floriculture, Sanremo, Italy)



•Plants in ope field (CeRSA Albenga, Ital



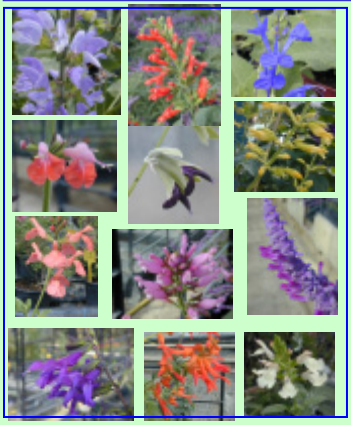
•Biomass production in open field with organic culture (farm Chupin, 500m o.s.l.; Imperia, Italy)

Tab. 1: Selected species of Salvia for ornamental or medicinal purposes

Interest: *=moderate, **=high, ***= very high

Species		Field of interest	
		Ornamental	Medicinal
Salvia	*aethiopis*	**	
Salvia	*argentea*	**	
Salvia	*blefarophylla*	**	
Salvia	*cacalifolia*	-	**
Salvia	Caramba	***	
Salvia	*carduacea*	**	
Salvia	*chamaedryoides*	**	
Salvia	*chiapensis*	**	
Salvia	*cinnabarina*	**	**
Salvia	*coahuilensis*	*	
Salvia	*coccinea* Brenthurst	***	
Salvia	*coccinea* Lady in Red	***	
Salvia	*columbariae*	*	
Salvia	*corrugata*	**	**
Salvia	*discolor*	*	
Salvia	*dorisiana*	**	
Salvia	*elegans*	**	
Salvia	*gesneriiflora*	**	
Salvia	*greggii* Alba	**	
Salvia	*greggii* Ketr's red	**	
Salvia	*greggii* Peach	**	
Salvia	*greggii* Yellow	**	
Salvia	*huenkei*	*	
Salvia	*ianthina*	**	
Salvia	*indica*	**	
Salvia	*jamensis* La siesta	**	**
Salvia	*jurisicii*	*	
Salvia	*leucantha* Purple velvet	***	
Salvia	*maroccana*	**	
Salvia	*miniata*	**	
Salvia	*namaensis*	*	
Salvia	*patens*	***	
Salvia	*regla*	*	
Salvia	*roemeriana*	**	
Salvia	*sclarea* Alba	**	
Salvia	*sinaloensis*	**	
Salvia	*somaliensis*		**
Salvia	*verticillata* Alba	**	
Salvia	*wagneriana*	*	**

Variability in flower features



New species for pot plant production

In Vivo propagation

Table 2: seed germination percentanges

Salvia	*aethiopis*	82,2
Salvia	*apiana*	26,7
Salvia	*barrelieri*	85,0
Salvia	*broussonetii*	24,2
Salvia	*canescens daghestanica*	2,5
Salvia	*carduacea*	9,2
Salvia	*clevelandii*	0,0
Salvia	*coahuilensis*	31,7
Salvia	*coccinea* Brenthurst	78,3
Salvia	*coccinea* Lady in Red	94,4
Salvia	*columbariae*	75,0
Salvia	*cyanescens*	0,0
Salvia	*desoleana*	30,0
Salvia	*disermas*	19,4
Salvia	*dolicantha*	28,1
Salvia	*farinacea* Reference	80,8
Salvia	*farinacea* Silver	88,3
Salvia	*farinacea* Victoria blue	80,0
Salvia	*haenatodes*	28,1
Salvia	*henryi*	4,2
Salvia	*indica*	54,2
Salvia	*jurisicii*	21,7
Salvia	*lanigera*	53,3
Salvia	*lavandulifolia*	0,0
Salvia	*lyrata*	5,2
Salvia	*melissodora*	40,8
Salvia	*maroccana*	68,3
Salvia	*melifera*	24,2
Salvia	*merjamie*	0,8
Salvia	*mexicana*	55,8
Salvia	*namaensis*	13,3
Salvia	*nemorosa*	31,1
Salvia	*nilotica*	82,5
Salvia	*nubicola*	71,7
Salvia	*patens*	93,3
Salvia	*reflexa*	10,8
Salvia	*regla*	68,3
Salvia	*repens*	53,3
Salvia	*reptans*	54,2
Salvia	*roemeriana*	5,0
Salvia	*runcinata*	28,3
Salvia	*sagittata*	30,8
Salvia	*sclarea* var. *turkestanica*	78,3
Salvia	*staminea*	61,7
Salvia	*stenophylla*	43,3
Salvia	*tingitana*	31,7
Salvia	*verbenaca*	1,7
Salvia	*verticillata* ssp. *amasiaca*	11,7
Salvia	*viridifolia*	36,1
Salvia	*verticillata* var. *alba*	64,4

• Seed germination

was performed in the greenhouse. Mean emergence time at 20-25°C was about 20 days.

•Multiplication by cutting

was performed in mist greenhouse during 15 days in average; it permitted to achieve in most species 90-100% of rooting. Only few species need a longer rooting period.

In vitro performance

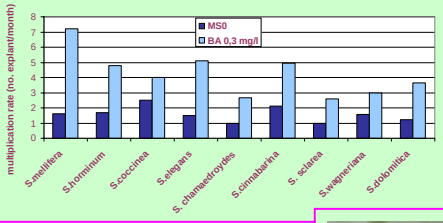


Figure 1: multiplication rates of some species interesting for medicinal purposes; comparison between two multiplication substrates.

•Biomass

was produced from callus and cell cultures, and from Hairy Root tissue in order to set up protocols for secondary metabolites extraction

• Micropropagation

The results of the multiplication rate screening (Fig.1) on the species tested permitted to observe a large variation: the shoots were able to grow in hormone-free medium but reached multiplication rates 2 or 3 times higher when cultivated with BA (0.3 mgl-1). Rooted plants were transferred to acclimatization without further *in vitro* treatments. After 50 days the acclimatization percentage for all species reached a mean value of 80%, so the plants were transferred to pot successfully.

Acclimatization phase in greenhouse with mist

Aknowledgements
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