

Overview of the *Lavandula angustifolia* and various *Lavandula X intermedia* breeding strategies developed in France during the last 30 years

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Lavender (*Lavandula angustifolia*) and lavandin (*Lavandula x intermedia* Emeric ex Loisel) are two emblematic plants of the south east of France. Mainly used for their essential oil, those crops have been domesticated during the 20th century and are since the 50's mainly cultivated. Thanks to this cultivation, yield has increased and quality has been standardized and genetic improvement became a need for growers and industrials of the sector. Initially, massal empiric selection has been performed in the fields, it has permitted the development of clonal propagation of lavender such as 'Maillette' and lavandin such as 'Grosso'. It leads to a strong development of lavandin and a segmentation of the market with different quality of essential oil from luxury perfumery with "true lavender" (seeds propagation) to mass perfumery with lavandin. Productivity has been an important criterion since the beginning of variety breeding but, because of new issues on production such as decline due to Stolbur phytoplasma and more recently water stress due to climate change, new objectives have been added to screen the genetic resources. In the 90's, breeding programs has been engaged to combine lavender essential oil quality with lavandin productivity. The polyploidy way has been chosen to restore fertility in lavandin thanks to chromosome doubling. Newly created tetraploids were crossed with lavender to make triploids that were evaluate in the fields. 9 triploids variety have granted with Plant Variety Right (PVR) in the last decade. In parallel, tetraploids are still under evaluation. In the same time, prospection of interesting material from the wilderness or from production plots was and is still evaluated. In order to propose solutions against Stolbur on seed propagated lavender, a breeding program on maternal lines progenies has permitted to release three populations varieties that largely replaced the former populations. Nowadays, new breeding tools are under development. Controlled crossings is now operational, molecular markers will be available next year thanks to a GWAS in progress and tools to phenotype the water stress are under development. New breeding programs include those tools and permit to forecast a deep improvement in the future genetic material.

Key words: *Lavandula angustifolia*, *Lavandula x intermedia* Emeric ex Loisel, variety breeding, molecular markers, phenotyping