SUPPLEMENTARY MATERIALS

Plant Material-Integration

The cultivated areas are the result of a large recovery of old terraces which are still being worked on in order to increase the usable surfaces. The supports for the growth of the hop, on which it develops in height for about 3-4 meters, were made with recycled materials (reeds and wooden poles). The distance between the plants was about 1 meter while that between the rows of about 2.5 meters. The rhizomes, after being placed in pots with fertilized soil in the first spring months, were transplanted at the beginning of June into soil without fertilisers, manually cleaned of weeds and tilled, where a hole about 30-40 cm deep was created. Watering was frequent (2-3 times a week) and abundant given the high exposure temperatures.
After about 40 days, the plants were in full vegetative phase and by the first week of August most of them were in bloom.

Chemical Analysis

Table S1. tentative determined compounds

N°	COMPONENT[1]	LRI[2]	LRI[3]	Fresh I.[4] (unpowdered)	Fresh L.[5] (unpowdered)	Fresh I.[6] (powdered)	Fresh L.[7] (powdered)
1	1-butanol, 3-methyl-	715	719	-	2.0±0.06	-	0.3±0.02
2	1-butanol, 2-methyl-	765	768	-	0.8±0.02	-	-
3	2-hexene, 5-methyl	810	*	-	-	-	0.3±0.03
4	5-hexen-1-ol	812	*	-	-	-	0.3±0.02
5	decanoic acid, 2-methyl-	1094	*	0.2±0.02	-	-	-
6	4-decenoic acid, methyl ester, Z-	1112	*	1.2±0.02	-	2.6±0.03	-

[1] The components are reported according to their elution order on apolar column; [2] Linear Retention Indices measured on apolar column; [3] Linear Retention indices from literature; * LRI not available; [4]: Fresh inflorescences unpowdered components; [5]: Fresh leaves unpowdered components; [6]: powdered inflorescences hop components; [7]: powdered leaves hop components - Not detected

Chromatograms:

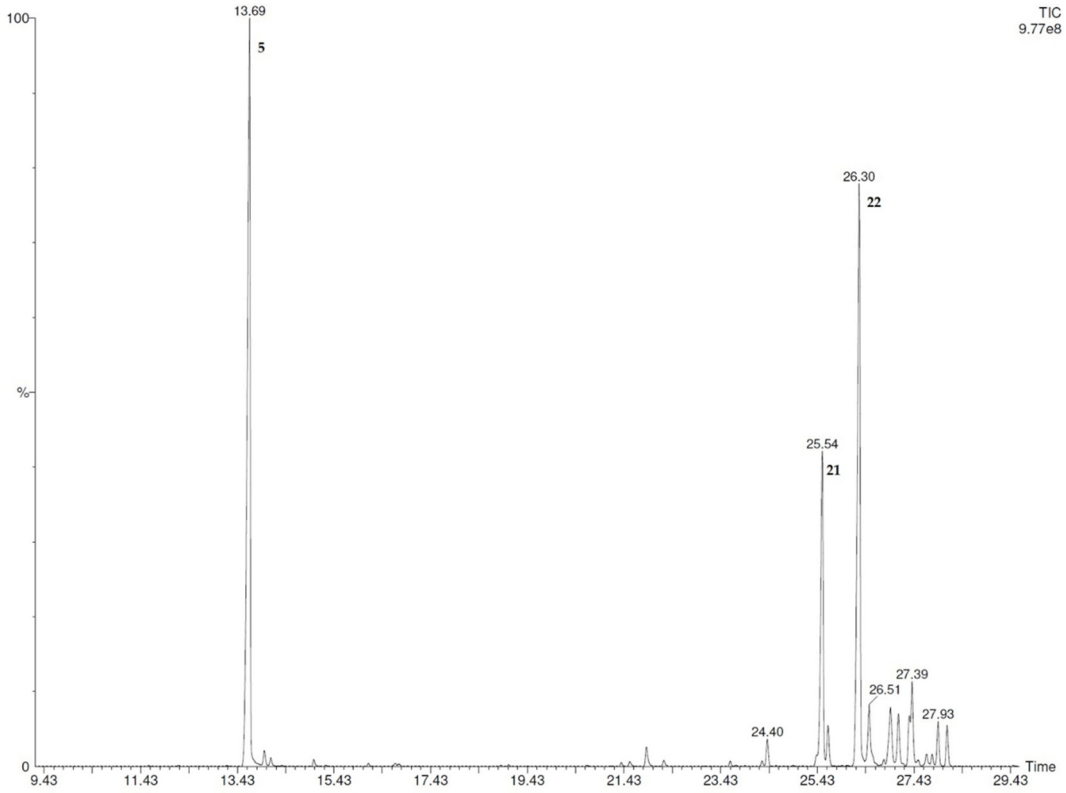

Figure S1. Chromatogram of unpowdered inflorescences determined by SPME-GC-MS.

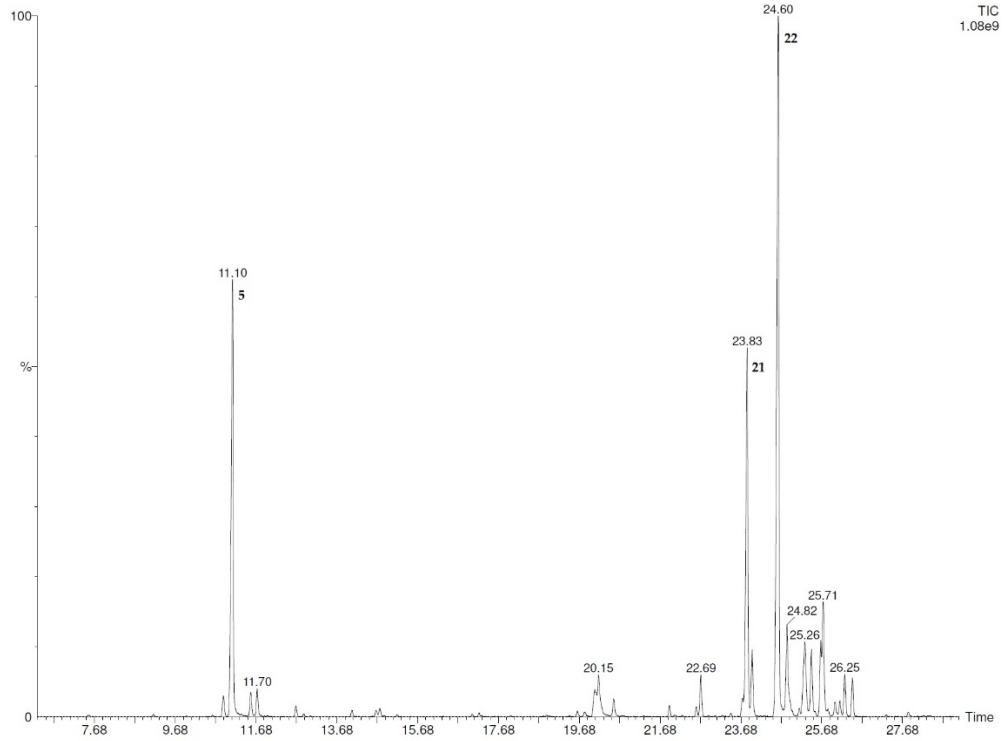

Figure S2. Chromatogram of powdered inflorescences determined by SPME-GC-MS obtained with a slight modification in the applied programmed temperature compared to the one described in the section 2.5.

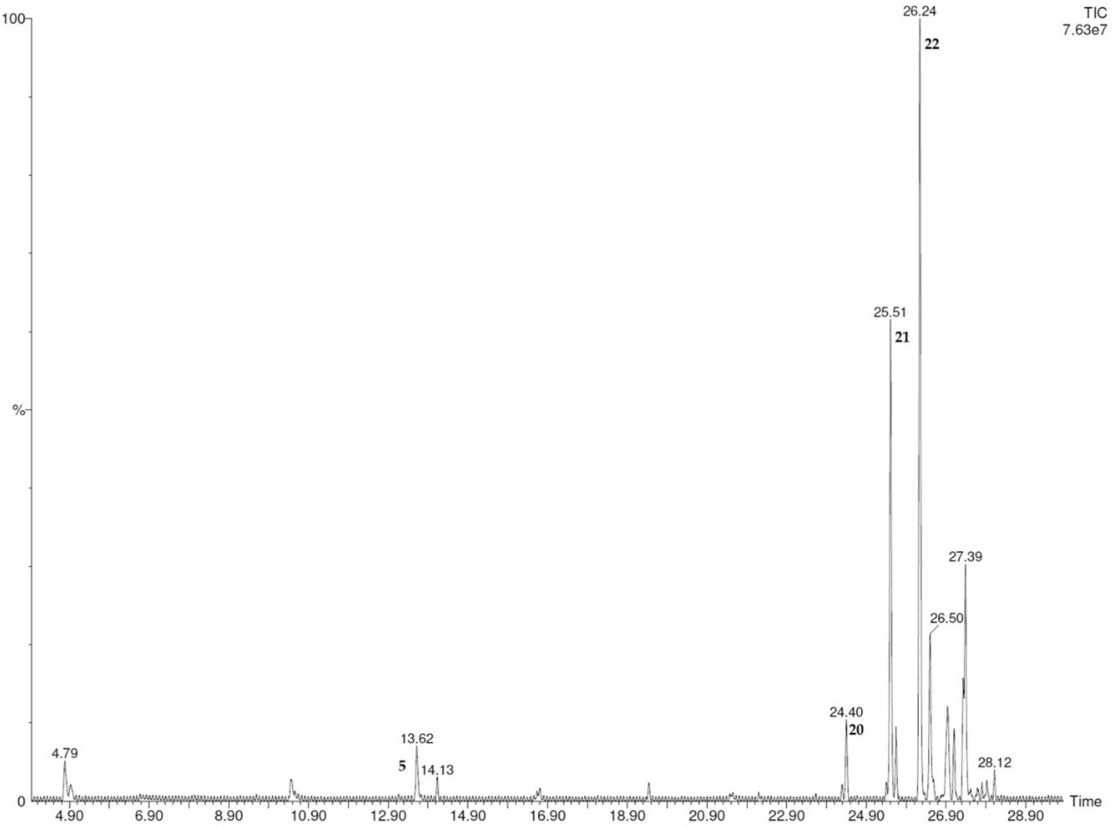

Figure S3. Chromatogram of unpowdered leaves determined by SPME-GC-MS.

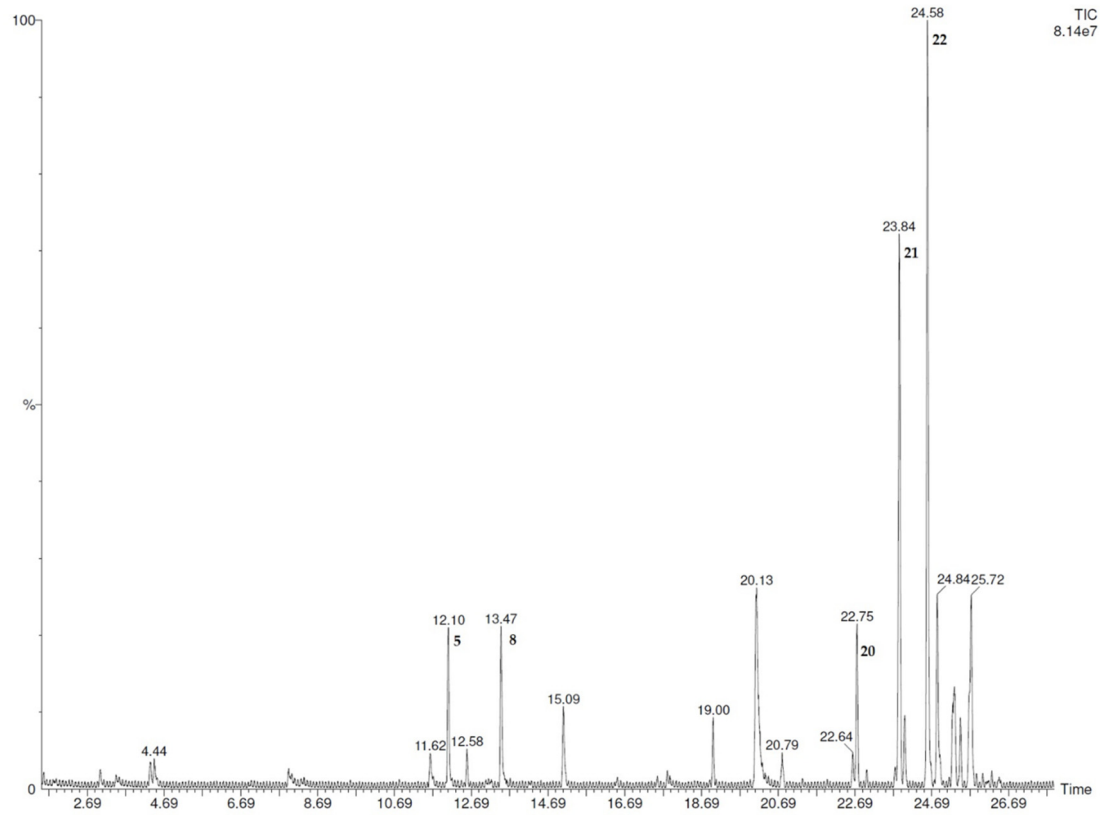

Figure S4. Chromatogram of powdered leaves determined by SPME-GC-MS obtained with a slight modification in the applied programmed temperature compared to the one described in the section *2.5.*

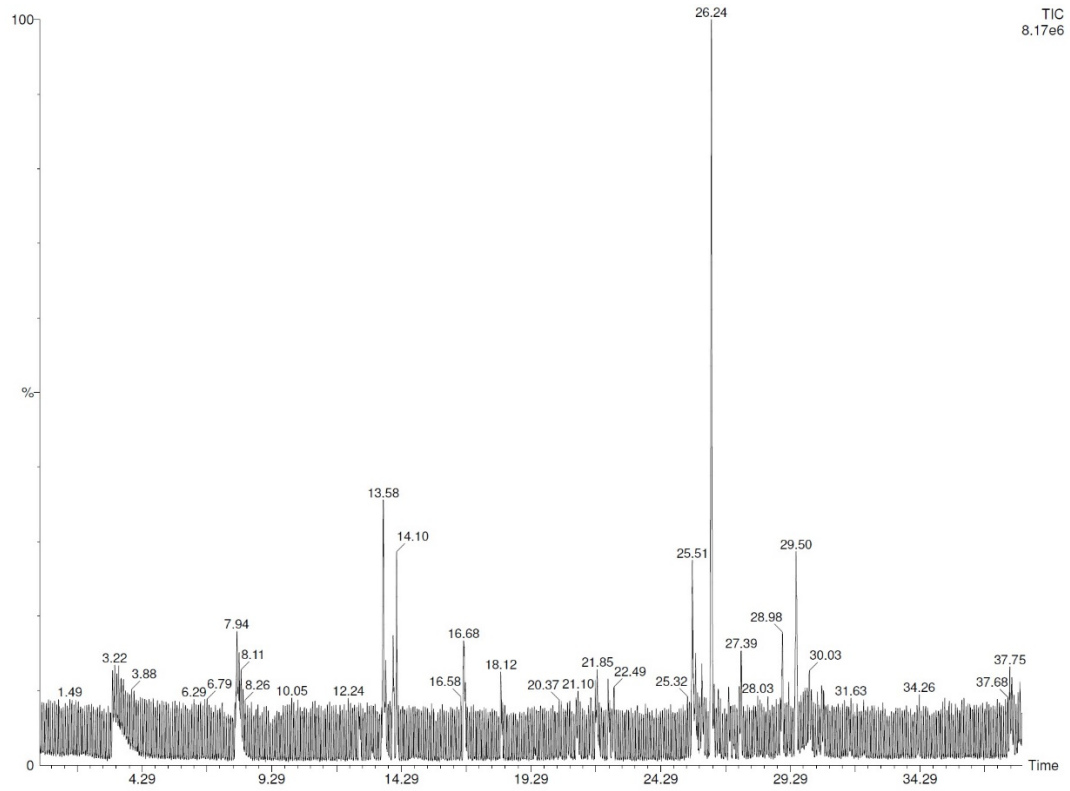

Figure S5. Chromatogram of aqueous extract from hop inflorescences determined by DI-SPME-GC-MS.

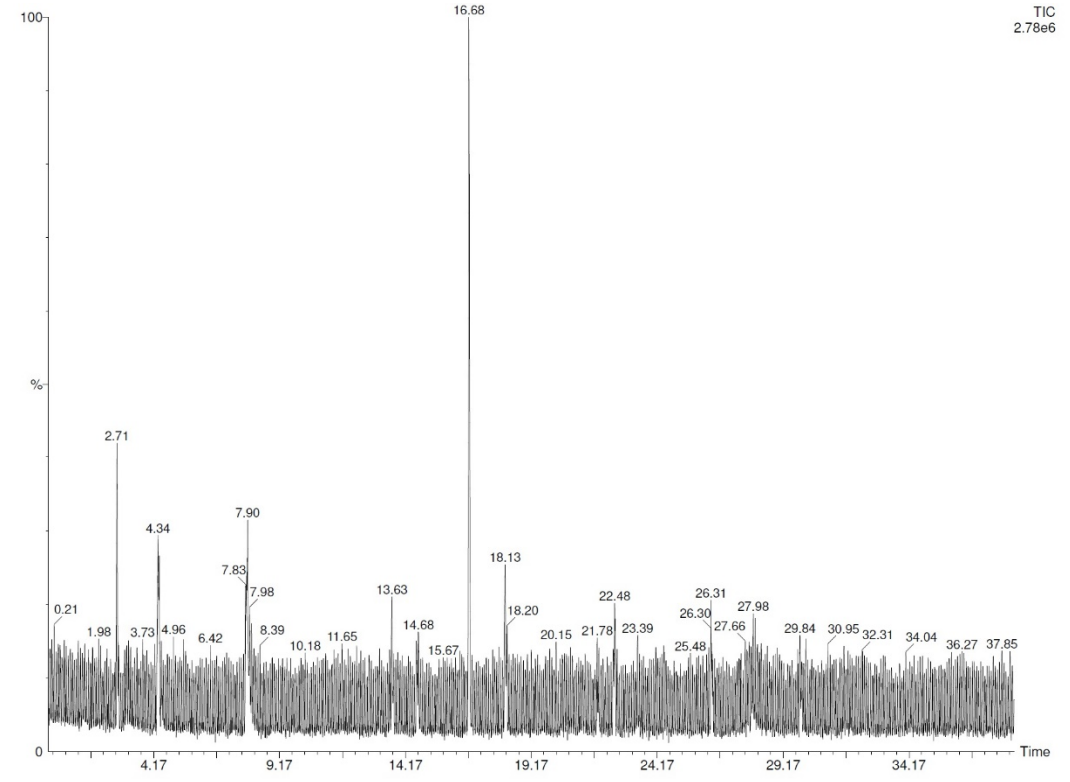

Figure S6. Chromatogram of aqueous extract from hop leaves determined by DI-SPME-GC-MS.

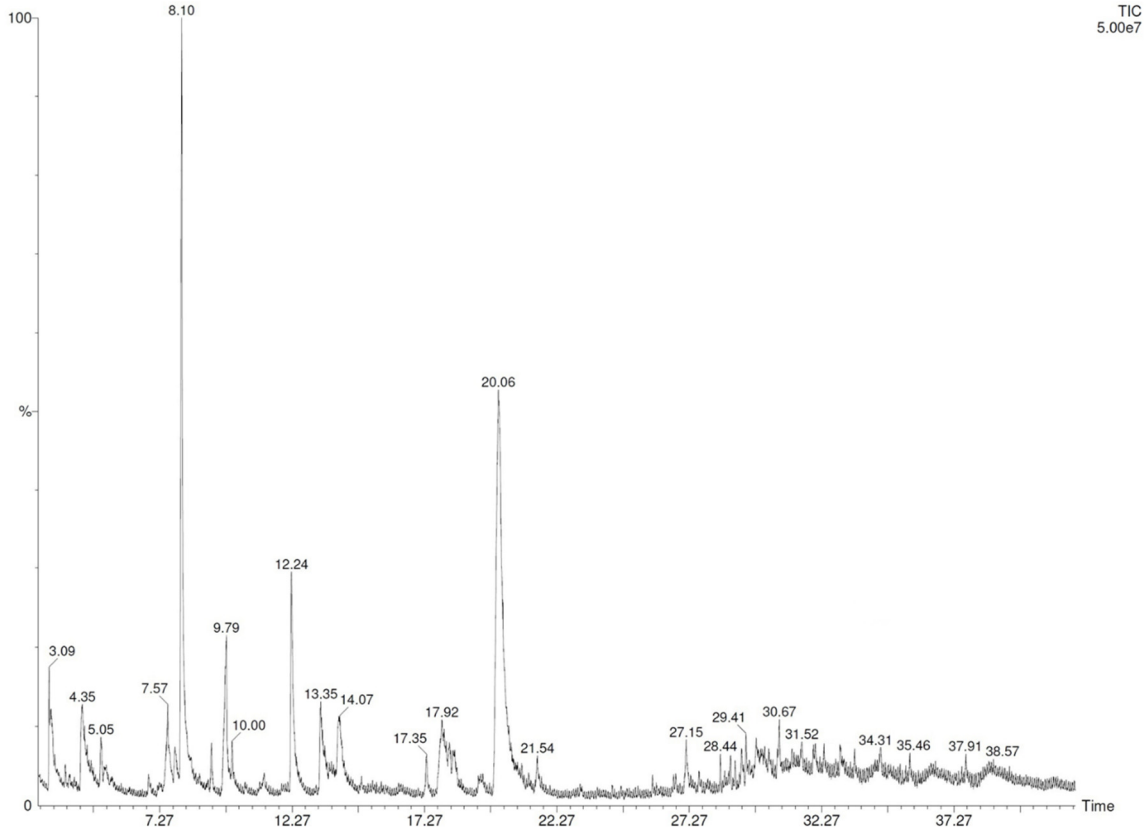

Figure S7. Chromatogram of methanolic extract from hop inflorescences determined by GC-MS.

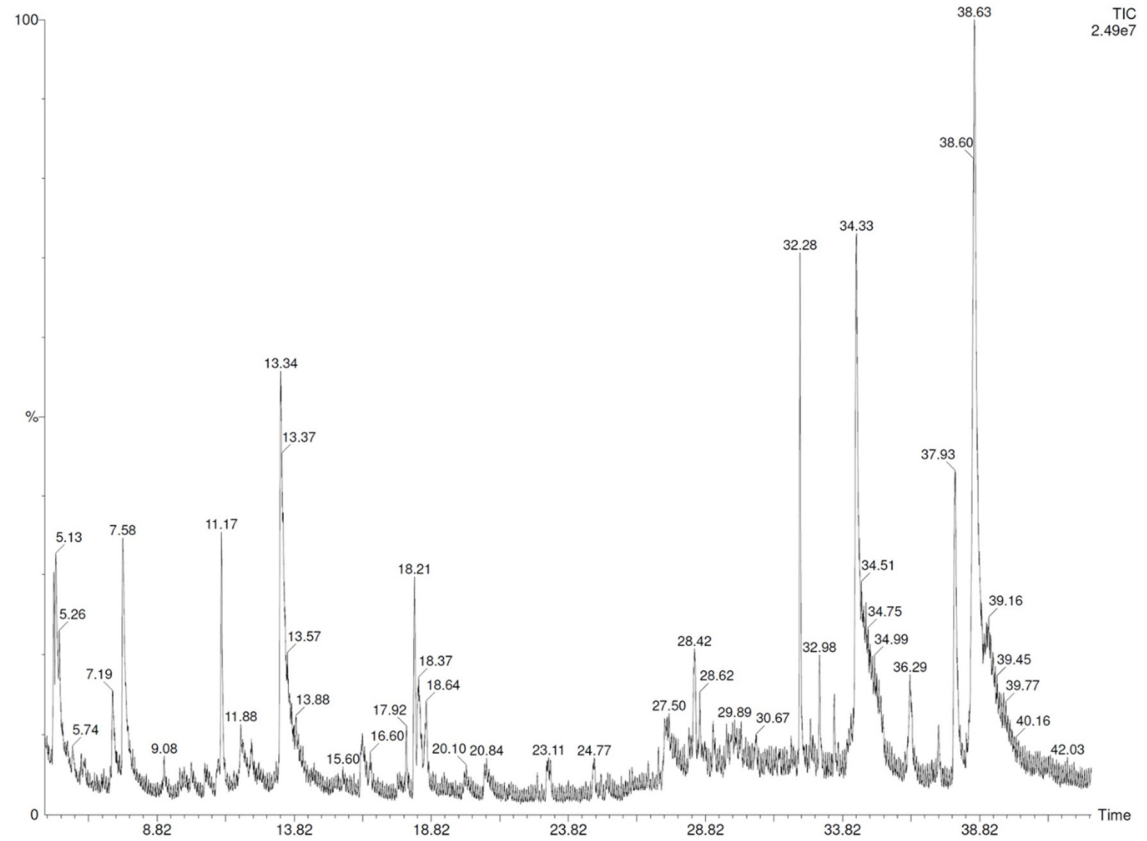

Figure S8. Chromatogram of methanolic extract from hop leaves determined by GC-MS.

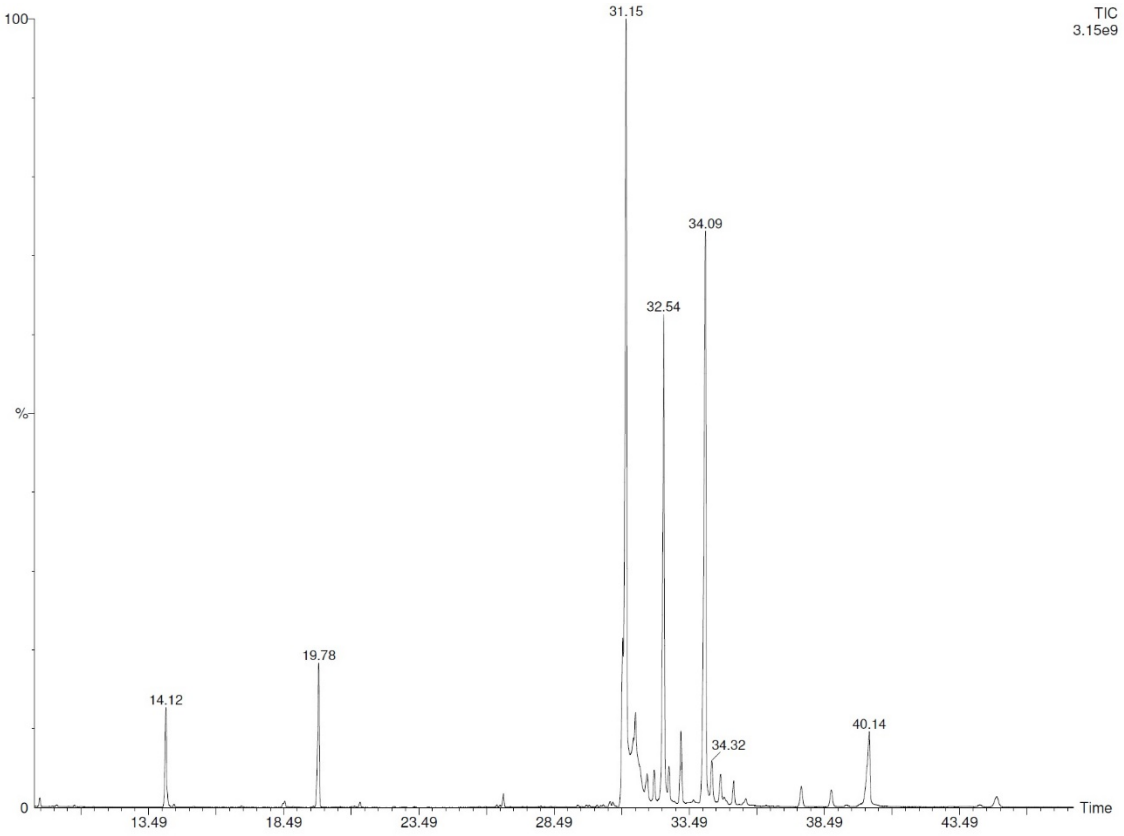

Figure S9. Chromatogram of methanolic extract after derivatization from hop inflorescences determined by GC-MS

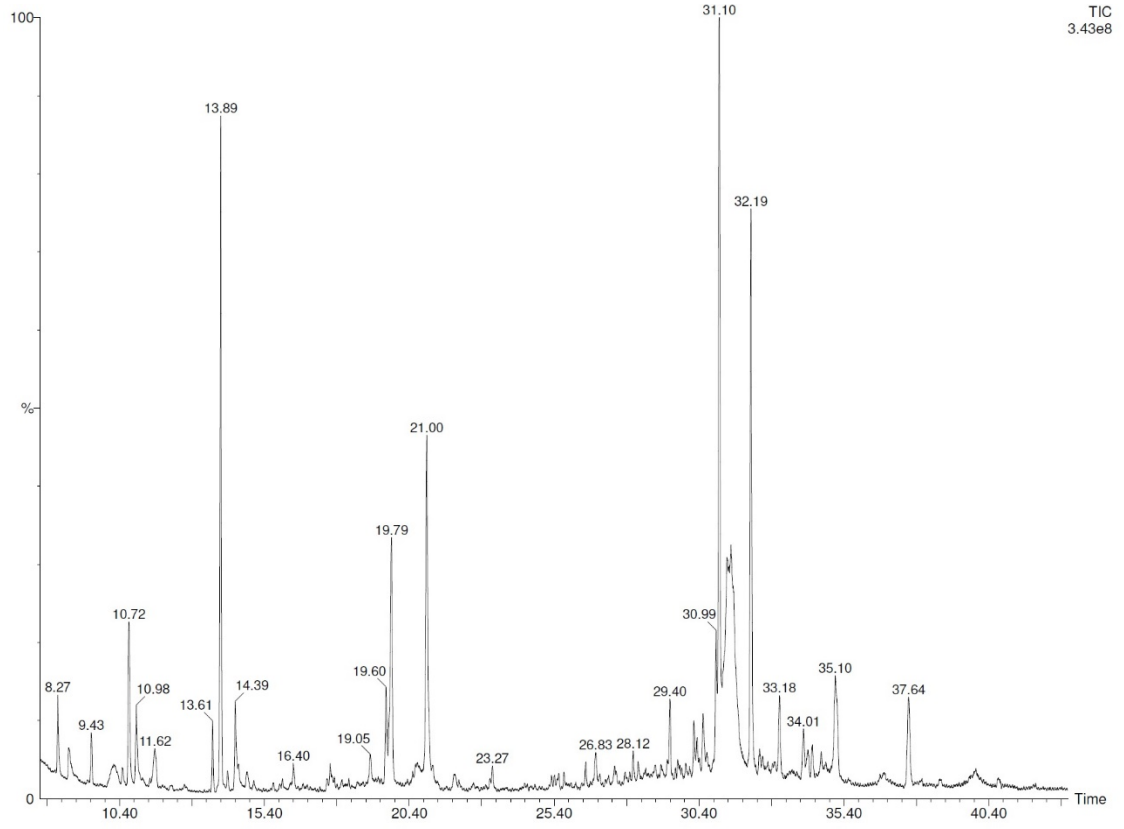

Figure S10. Chromatogram of methanolic extract after derivatization from hop leaves determined by GC-MS

Mass Spectra:

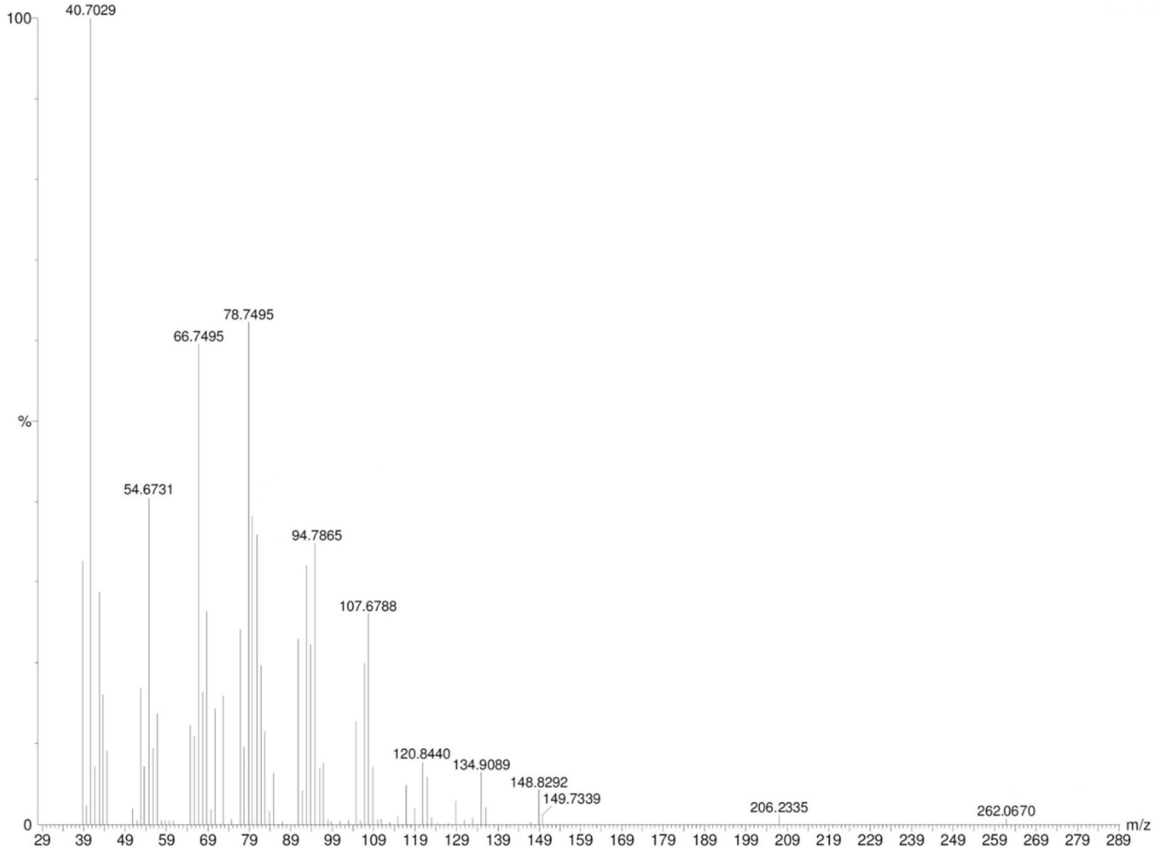

Figure S11. Mass spectrum of 9,12,15-octadecatrienal

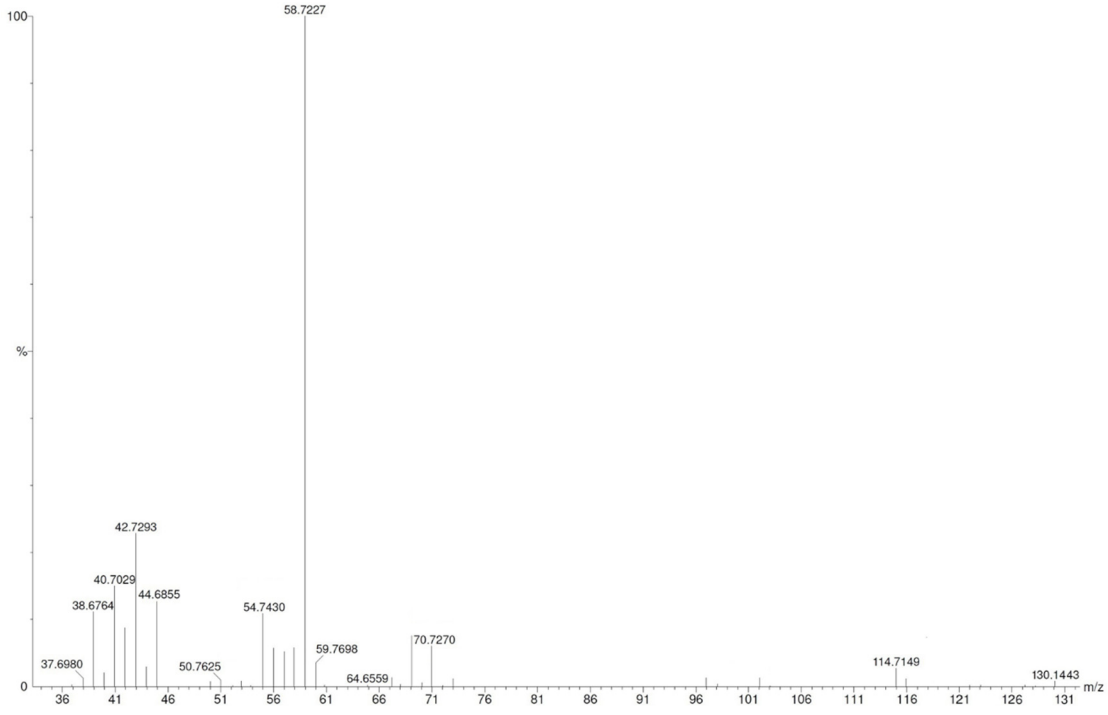

Figure S12. Mass spectrum of 2-heptanol-2-methyl

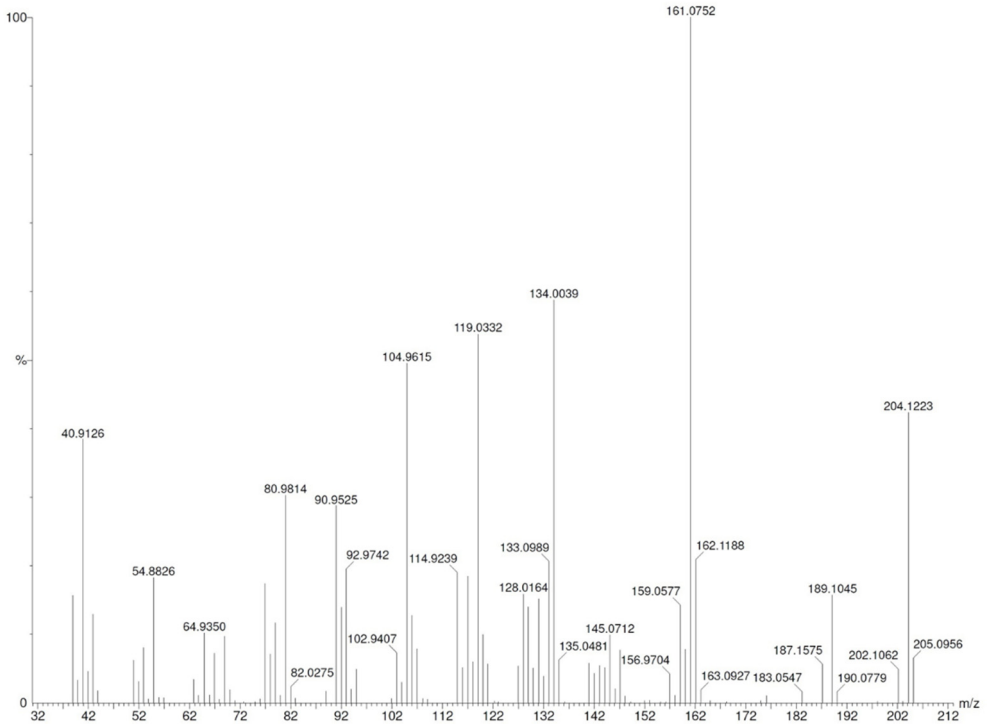

Figure S13. Mass spectrum of δ-cadinol

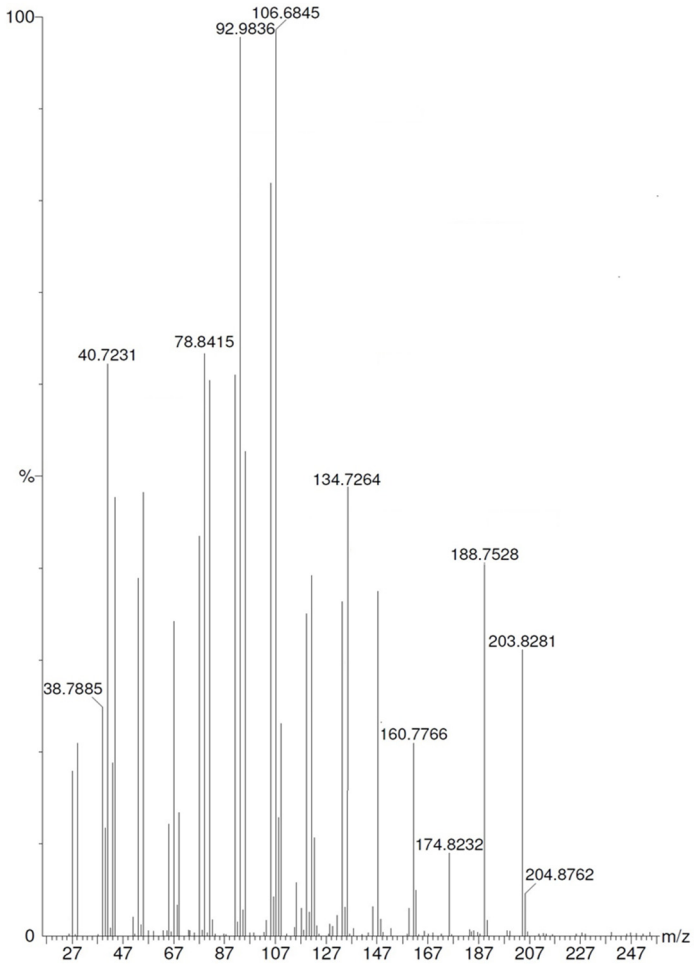

Figure S14. Mass spectrum of guaia-1(10), 11-diene

Photos:

Figure S15: Puntato Farm

Figure S16: Hop rhizome transplant

Figure S17: Planting layout and irrigation method

Figure S18: Late hop flowering phase

Figure S19: View of plants in full bloom

Figure S20: Hop inflorescence collection

Figure S21: Harvested hop with the presence of lupulin

Figure S22: Fresh material packaging