

VITAL NEW CZECH HOP VARIETY



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In 2008 new variety Vital was registered in Czech Republic. Its name is derived from high contents of biologically active compounds from the group of prenylated flavonoids – xanthohumol and desmethylxanthohumol (DMX). Vital originated from hybrid progenies with majority proportion of Agnus cultivar. Geneticky belongs to the group of high-alpha hops with Euroamerican origin. The crossing of parental components was realised in 1996. Selection from the file of seedlings was done on the basis of high contents of alpha and beta acids. Characteristic trait of Vital variety is a long vegetation period at the range of 135-143 days. Harvest maturity comes in the middle of September in climate conditions of Saaz growing region. The plant has sizable regular cylindrical shape. Fruit-bearing laterals are 65-75 cm long. The bine is of green colour. Its diameter on full-grown plant is 8-9 mm. Variety Vital was bred by Hop Research Institute CO., Ltd. in Žatec. Agrotechnical parameters were verified within the scope of research project FR-TII/012 with financial support of Czech Ministry of Industry and Trade.

BASIC CHARACTERISTICS

Vital contains 12–16 % w. of alpha acids, cohumulone ratio is in the interval of 22–26 % rel. Contents of beta acids are in the range of 7–9 % hm and, colupulone ratio in the interval of 45-48 % rel. The smell of hops is pronounced spicy. Hop oils content is 1,5–2.5 % w. Majority component of hop oil is myrcene (40–60 % rel). Contents of other important sesquiterpens β-caryophyllene, α-humulene, β-farnesene and selinenes are typical for the variety. While caryophyllene content is in usual Interval of 5–8 % rel., low content of α-humulene (2–5 % rel.) is very rare. The presence of β-farnesene in the amount of 1–3 % rel. is interesting. High content of selinenes in the range of 10-17 % rel. is very large of the variety is very high content of selinenes are typical for Vital variety and can be used as an important varietal chemotaxonomy trait. Vital contains 2.5–3.5 % of total polyphenois and 0.70 – 1.00 % of xantihohumol. Unique property of the variety is very high content of desmethylixanthohumol. Its amount in green cones is up to 0.40–0.60 % w. Part of the content is lost in the course of drying, therefore only 0.25 až 0.40 % is found in dry product, It is the amount, which is two times higher at least in comparison with other Czech and foreign hop varieties. High content of person of varieties. High content of varieties and smell.

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CONE STRUCTURE - Hop cone is of a narrow egg shape. Covering bracts are tightly snuggled to the central axis of cone. Therefore low losses occur at the crop harvest due to shattering or damage of cones. Mean size of green cones is 35 mm and average weight is 0,80 g.

AROMA - The smell of hops is pronounced spicy.

RESISTANCE OF DISEASES - Vital is medium susceptible to downy mildew (Pseudoperonospora humuli) and tolerant to powdery mildew (Pseudoperonospora macularis).

RIPENING TIME - 135-143 days

YIELD - 1.8 - 2,5 t/ha

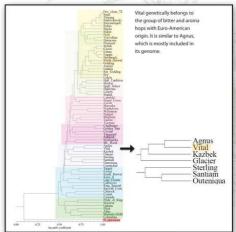
AGRONOMICS - Hop cutting is recommended to carry out at the first decade of April. Numer of shoots growing from rootstock is average (15–20). Recommended number of trained bines – 3 per vire, optimal spacing 300 x 120 cm. The period of technological ripeness is appr. 7–10 days long.

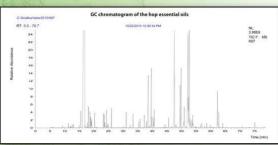




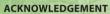


| HOP RESINS | | | | | | |
|--------------------------|--------|-------------|--|--|--|--|
| total resins | % w | 25 - 30 | | | | |
| alpha acids | % w | 12-16 | | | | |
| beta acids | 96 w | 6-10 | | | | |
| alpha/beta ratio | - | 1.6 - 2.1 | | | | |
| cohumulone | % rel. | 21 - 26 | | | | |
| colupulone | % rel. | 45 - 50 | | | | |
| HOP POLYPHENOLS | 10 | U. | | | | |
| total polyphenols | 96 W | 2.5 - 3.5 | | | | |
| xanthohumol | % rel. | 0.70 - 1.00 | | | | |
| desmethylxanthohumol | % rel. | 0.25 - 0.40 | | | | |
| ESSENTIAL OILS | | | | | | |
| total oil | % w. | 1.5 - 2.5 | | | | |
| isobutylisobutyrate | % rel. | 0.10 - 0.20 | | | | |
| myrcene | % rel. | 45 - 60 | | | | |
| 2-methylbutylisobutytate | % rel. | 0.60 - 1.20 | | | | |
| linalool | % rel. | 6-10 | | | | |
| geraniol | % rel. | 1.6 - 2.1 | | | | |
| 2-undecanone | % rel. | 1.6 - 2.1 | | | | |
| methyl-4-decenoate | % rel. | 21 - 26 | | | | |
| β-caryophyllene | % rel. | 5-8 | | | | |
| β-farnesene | % rel. | 1-3 | | | | |
| a-humulene | % rel. | 2-5 | | | | |
| α+β-selinenes | % rel. | 10 - 17 | | | | |
| γ+δ-cadinenes | % rel. | 0.60 - 0.80 | | | | |





| 11:37 | isobutylisobutyrate | 18:61 | methylheptanoate | 31:06 | 2-decanone | 39:92 | methyldeca-4,8-dienoste | 49:83 | b-famesene | 53:60 | g-cadnene |
|-------|--------------------------|-------|------------------|-------|--------------------|-------|-------------------------|-------|----------------|-------|--------------------|
| 12:60 | a-pinene | 19:10 | linonene | 33:39 | methylnonassate | 40:45 | methylgeranate | 50:25 | a-hunulene | 53:94 | d-cadnese |
| 15:53 | b-pinene | 23.59 | 2-nonanone | 19.28 | geraniol | 4438 | a-copaene | 52:28 | b-selmene | 57:91 | caryophylleneoxide |
| 16:56 | тутогое | 24:28 | Inalosi | 38:48 | 2-undecanone | 47:60 | b-caryophyllene | 5254 | 2-tridecarrone | 59:67 | humuleneposide II |
| 18:12 | 2 methylbutylisobutyrate | 26:00 | methyloctanoaty | 39.55 | methyl-4-decensutr | 48:24 | trans-a-bergamotene | 52:74 | a-sestene | 64:14 | 2-pertadecanone |



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