

# Hop

Rossbauer et al., 1995

Phenological growth stages and BBCH-identification keys  
of hop  
(*Humulus lupulus* L.)

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Code	Description
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Principal growth stage 0: Sprouting

00	Dormancy: rootstock without shoots (uncut)
01	Dormancy: rootstock without shoots (cut)
07	Rootstock with shoots (uncut)
08	Beginning of shoot-growth (rootstock cut)
09	Emergence: first shoots emerge at the soil surface

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Principal growth stage 1: Leaf development

11	First pair of leaves unfolded
12	2nd pair of leaves unfolded (beginning of twining)
13	3rd pair of leaves unfolded
1 .	Stages continuous till . . .
19	9 and more pairs of leaves unfolded

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Principal growth stage 2: Formation of side shoots

21	First pair of side shoots visible
22	2nd pair of side shoots visible
23	3rd pair of side shoots visible
2 .	Stages continuous till . . .
29	Nine and more pairs of side shoots visible (secondary side shoots occur)

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Principal growth stage 3: Elongation of bines

31	Bines have reached 10% of top wire height
32	Bines have reached 20% of top wire height
33	Bines have reached 30% of top wire height
3 .	Stages continuous till . . .
38	Plants have reached the top wire
39	End of bine growth

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Principal growth stage 5: Inflorescence emergence

51	Inflorescence buds visible
55	Inflorescence buds enlarged

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Principal growth stage 6: Flowering

61	Beginning of flowering: about 10% of flowers open
62	About 20% of flowers open
63	About 30% of flowers open
64	About 40% of flowers open
65	Full flowering: about 50% of flowers open
66	About 60% of flowers open
67	About 70% of flowers open
68	About 80% of flowers open
69	End of flowering

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Principal growth stage 7: Development of cones

71	Beginning of cone development: 10% of inflorescences are cones
75	Cone development half way: all cones visible, cones soft, stigmas still present
79	Cone development complete: nearly all cones have reached full size

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Principal growth stage 8: Maturity of cones

81	Beginning of maturity: 10% of cones are compact
82	20% of cones are compact
83	30% of cones are compact
84	40% of cones are compact
85	Advanced maturity: 50% of cones are compact
86	60% of cones are compact
87	70% of cones are compact
88	80% of cones are compact
89	Cones ripe for picking: cones closed; lupulin golden; aroma potential fully developed

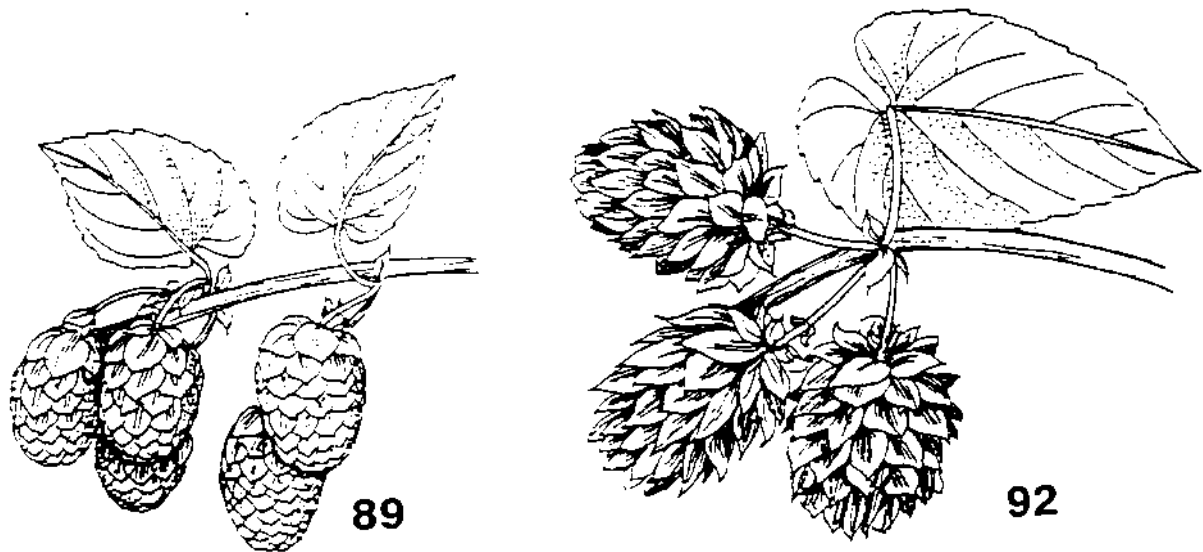
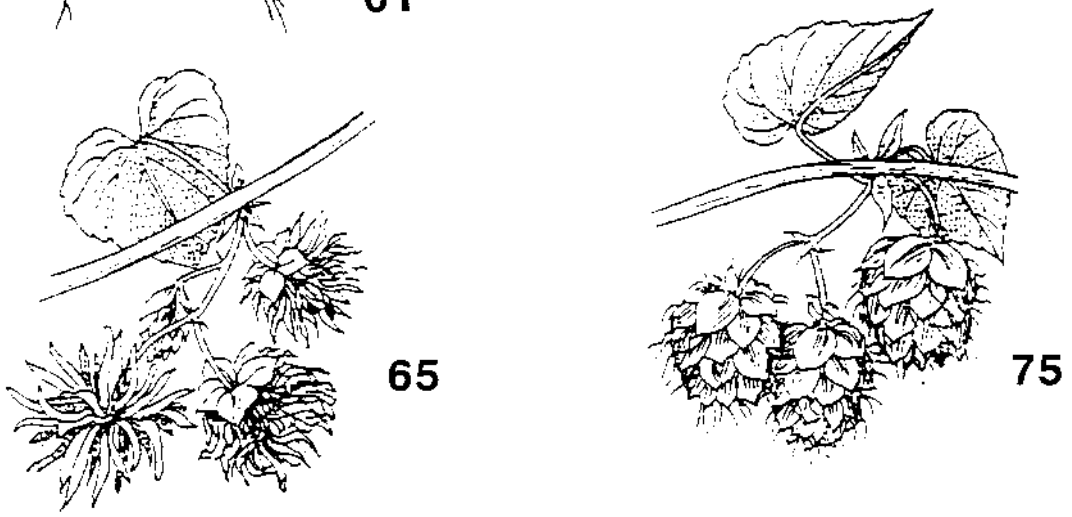
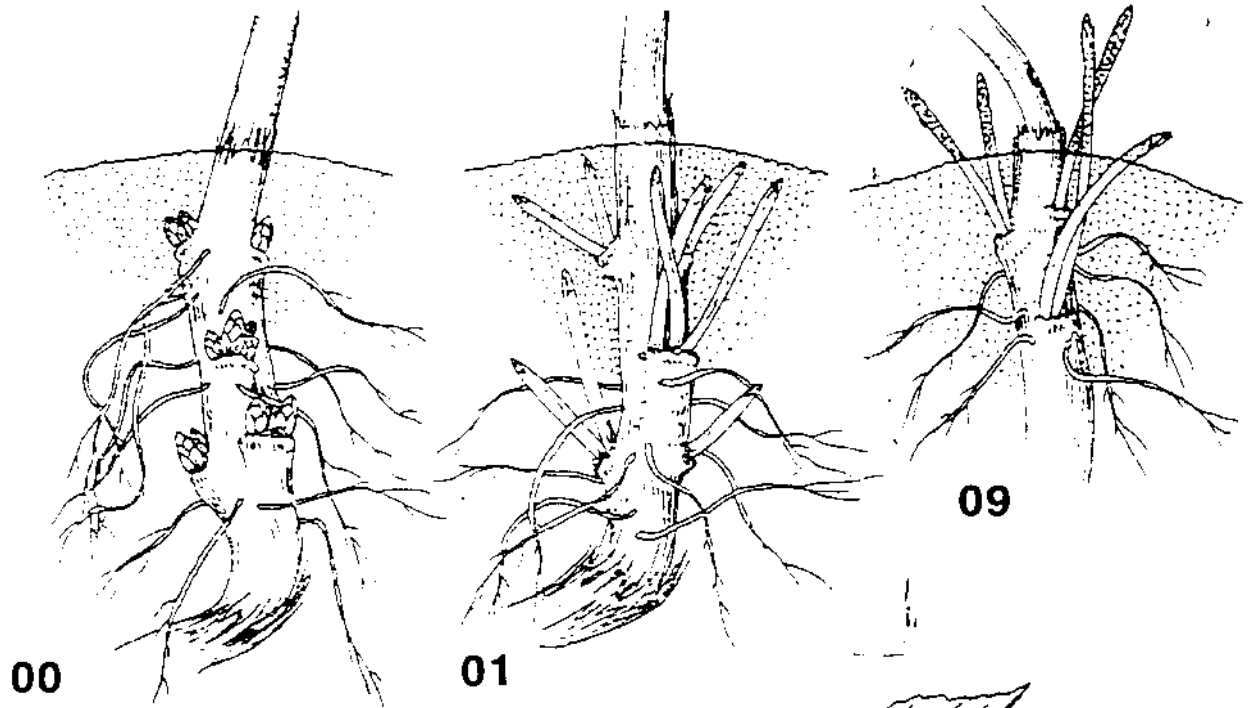
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Principal growth stage 9: Senescence, entry into dormancy

92	Overripeness: cones yellow-brown discoloured, aroma deterioration
97	Dormancy: leaves and stems dead

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