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Influence of the growth stage of industrial hemp on the yield formation in relation to certain fibre quality traits

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Abstract

To study the influence of the stage of growth of industrial hemp (*Cannabis sativa* L.) on yield formation and fibre morphology, a field trial was carried out in Switzerland in 1997. Different harvests took place at 7–14 day intervals, from the vegetative stage of growth to the senescence of the crop. Total yield and its components, fibre content and the frequency of primary and secondary fibres as well as the exact stage of growth were determined in male and female plants.

Stem, bark and fibre yield reached their maximum at the time of flowering of the male plants ('technical maturity'). Maximum stem yield amounted to 14.8 tons of dry matter (DM) per hectare. Bark yield showed a development similar to that of stem yield and reached 5.8 tons DM/ha. Fibre yield was highly correlated with stem and bark development and also reached its maximum at the time of flowering of the male plants (yield: 4.1 tons DM/ha). During the vegetative phase, primary fibres were first created and then filled. The peak of the stem and fibre yield at male plant flowering stage was probably caused by an increase in the production and lead to a filling of secondary fibres. After that, and because of their characteristics, secondary fibres may cause of decrease in bark quality. With regard to fibre production, the upper third of the stem did not account for much fibre yield.

Key words : *Cannabis sativa* L., Fibre hemp, Bark, Growth, Harvest time, Fibre quality, Primary and secondary bark fibres