Development of long fibre in *Cannabis sativa* (L.)

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Introduction

Cultivation of hemp for textile destination aims at the maximisation of long fibre production in the bark. Bark production increases with increasing plant number per unit surface (plant population) (1) but little information is available on the influence of plant population on long fibre production and its distribution along the stem.
The distribution of long fibre along the stem might be an interesting information to decide upon harvesting technique. At the moment no specific machines have been developed to harvest hemp for textile destination. Flax machines could be adapted to hemp in order to cut the stems in sections and lay them on the soil in swaths. Information on the distribution of long fibre along the stem could be useful to decide whether to keep top and base stem sections separated after harvest or to collect them together if quality is not different.

Materials and Methods

Field trial was carried out in Cadriano (BO) in 2002 with a French monoecious genotype (Futura 75). At sowing time, seed density was calculated in order to achieve 4 target plant population: 30, 90, 180 e 270 plants m^{-2}.
At harvest, which took place on 4th July when all the plants reached the phase of full flowering, 1 m^{-2} of crop per plot (with four replicates) was cut at the base of the stem, all plants were counted and weighted. 5 plants of average weight per plot were then selected and cut at the level of the first opposite nodes (on average at the 7th node).
In order to determine the fibre content of each internode portion the methodology described by Höppner/Hartmann (2) was used.

Results and Discussion

The results of this preliminary investigation show that the distribution of long fibres along the stem is different at different plant densities. In particular, at high plant population basal internodes have a higher contribution to total fibre production.
Table 1 shows that plant population does not influence stem yield; that the first 7 internodes represent a larger proportion of the stem at higher densities (in particular 58% for D30, 77% for D90, 81% for D180 and 80.2% for D270); moreover bark and long fibre production in the first internodes are higher at higher plant population.
As a cosequence long fibres distributions along the stem is different at differents plants densities. In practice this is a useful information when deciding the cutting heigth at harvest: figure 2 shows that leaving 20 cm of crop in the soil causes a loss of 0.28, 0.34 and 0.40 t ha^{-1} respectively for D90, D180 and D270. The same information could be used when deciding to cut the stem in two or three portions.

References

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