



## **Establishment of three permanent cover crop seed mixtures in Hungarian vineyards**

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In organic vineyard farming sowing high diversity cover crop seed mixtures offers a great opportunity to overcome high-priority problems mitigating vineyard cultivation, such as gain erosion control, save soil fertility, improve soil microbial activity and control weeds. Furthermore, we can also improve the biodiversity and ecosystem services of vineyards. Mainly non-native or low diversity seed mixtures are used for cover cropping containing some grass, grain or Fabaceae species. We studied vegetation development after sowing native high-diversity seed mixtures in four vineyards in an on farm field trial. We compared the effects of 4 treatments: (i) Biocont-Ecowin mixture (12 species), (ii) Fabaceae mixture (9 species), (iii) Grass-forb mixture (16 species) and control (no seed sowing). Study sites were located in Tokaj wine region, East Hungary. Seed mixtures were sown in March, 2012. After sowing, we recorded the percentage cover of vascular plant species in the end of June 2012, 2013 and 2014 in altogether 80 permanent plots. In the first year the establishment and weed control of Biocont-Ecowin and Legume seed mixture was the best. For the second year in inter-rows sown with Grass-herb and Legume seed mixtures we detected decreasing weed cover scores, while in inter-rows sown with Biocont-Ecowin seed mixture and in control inter-rows we detected higher weed cover scores. In the third year we still detected lower weed cover scores in inter-rows sown with Grass-forb and Legume seed mixtures, however on several sites we also detected decreasing cover of sown species. All sown species were detected in our plots during the time of the study, however some species were present only with low cover scores or only in a few plots. Out of the sown species *Lotus corniculatus*, *Medicago lupulina*, *Plantago lanceolata*, *Trifolium repens*, *T. pratense* and *Coronilla varia* established the most successfully, and had high cover scores on most sites even in the second and third year. Our trial to develop species rich cover crops was successful. According to our findings sowing high-diversity seed mixtures in cover cropping offers a good opportunity to gain weed control.