

S07-O2. Weed perception and management decision criteria of farmers reducing reliance on herbicides

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Economic weed thresholds refer to the density of a specific weed species in a particular crop, beyond which the cost of yield loss caused by the weed exceeds the cost of herbicide application. It is the main indicator to trigger a herbicide treatment. Economic thresholds are commonly used to assess the harmfulness of weed species since the 1970s. However, with the national and international objectives of reducing reliance on herbicides and the promote of integrated weed management, new research approaches focusing on weeds' functionality have emerged. Weeds are no longer viewed solely as pests but are also evaluated for their potential to provide ecosystem services. They are no longer measured on a species-by-species approach, but described as plot-specific communities filtered through the cropping system and landscape. Farmers who reduce the reliance on herbicides face new challenges in assessing the potential harmfulness of weeds and deciding to act with a wide range of tactics. We therefore aimed to study farmers' perception of the negative and positive effects of weeds and their management decision criteria when implementing integrated weed management (IWM). We conducted a survey of Swiss arable farmers in winter 2023. In total, 562 farmers responded, with a representative distribution across Switzerland's agricultural regions. 13% of the respondents were organic farmers, 70% subscribed to a federal contribution for pesticide reduction and 35% subscribed to a federal contribution for herbicide reduction. The median number of crops per farm was six, with a predominance of wheat, maize, temporary meadow, rapeseed and barley. The most problematic weeds cited were perennial species (e.g. *Cirsium arvense*) and grass species (e.g. *Echinochloa crus-galli*). The indirect effects of weeds (e.g. increased soil seed bank) are perceived as more important than the direct effects (e.g. yield loss). Weed observation remains a predominant criterion for decision-making (93% of farmers) but the decision criteria are not based on weed density but the presence of specific weed species and their growth stage in relation to crop development. Indicators, such as the number of weed species or evenness between species, are rarely taken into account by farmers. This suggests new avenues of research to provide farmers with relevant indicators to help them implement IWM.