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RoboWeedSupport-Sub Millimeter Weed Image Acquisition in Cereal Crops with Speeds up till 50 Km/H

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Abstract : For the past three years, the Danish project, RoboWeedSupport, has sought to bridge the gap between the potential herbicide savings using a decision support system and the required weed inspections. In order to automate the weed inspections it is desired to generate a map of the weed species present within the field, to generate the map images must be captured with samples covering the field. This paper investigates the economical cost of performing this data collection based on a camera system mounted on a all-terain vehicle (ATV) able to drive and collect data at up to 50 km/h while still maintaining a image quality sufficient for identifying newly emerged grass weeds. The economical estimates are based on approximately 100 hectares recorded at three different locations in Denmark. With an average image density of 99 images per hectare the ATV had an capacity of 28 ha per hour, which is estimated to cost 6.6 EUR/ha. Alternatively relying on a boom solution for an existing tracktor it was estimated that a cost of 2.4 EUR/ha is obtainable under equal conditions.

Keywords : weed mapping, integrated weed management, weed recognition, image acquisition
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