

Nozzle combinations and arrangements for use of a tramline deactivation on field sprayers

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The interests of society and the political commitment are directed to limiting the use of chemical pesticides to the minimum necessary extent and using them more purposefully. First approaches to reduce the pesticide application are the GPS section control as well as the adaptation in section of the output quantity. As a further possibility to reduce the amount of pesticides used, would be the recess of the culture-free tramline during the application. With common practice boom sizes and an exactly recess of the tramlines, plant protection products can be reduced by 3 to 5 %. The amount of savings is influenced by technical and crop cultivation parameters:

- Sizes of boom
- Width of tramline
- Row distance in row crops (maize, sugar beet)
- Scope of application (herbicide, fungicide, insecticide, growth regulator)
- Mode of action of pesticides (systemic or contact effect)

In addition to the savings of pesticides, a recess of the tramline also has ecological

advantages such as the reduction of run-off of pesticides, their inputs to soil, surface water and groundwater. However, the technical feasibility by switching off two or four nozzles in the tramline. Consequently an exact recess of the tramline as well as the lateral distribution, comply with the requirements, would not be achieved. The nozzle combinations and nozzle arrangements in this area must be modified in such a way that they can be variably adjusted to common practice tramline widths. Furthermore, edge nozzles are used in the tramline area. By recording distribution patterns of individual nozzles on a test stand for single nozzles (Resolution: 2.5 cm) theoretical nozzle combinations were created, which allow a relatively good recess of the tramlines. Then these variants were projected onto a larger nozzle assembly and subjected to a lateral distribution measurement (Resolution: 10 cm).

First results show that recesses of pesticides in the tramline are possible and that adequate lateral distributions can be achieved. For practicality, qualitative and quantitative spray liquid measurements in field are planned.