Uranine as a tracer for rapid detection of spray deposition

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**Abstract.** While being virtually mandatory to any sustainable agricultural activity, plant protection products pose sensible risks from the side effects of improper application techniques.

Monitoring of the application parameters is paramount to the characterization of sprayer performance, one of which is the deposition pattern, whose sampling is reportedly time-consuming and unreliable due to uncontrollable test conditions.[1]

We investigated a simplified deposition assessment strategy involving uranine, a non-toxic and low cost fluorescent tracer widely used in other fields[2], to minimize the measurement uncertainties exploiting the well-known phenomenon of optical absorbance.

A nozzle evaluation bench has been used to deposit the fluorescent solution on a matrix of petri dishes, which were then oven-dried and the residuals redissolved in a fixed amount of water. Spectrophotometry was used to retrieve the mass of deposited solution.

After careful calibration against known uranine concentrations, the method yielded results very well correlated to the weight measurements performed prior to drying and allowed to trace back an approximate deposition curve.

The complete evaporation of the deposited solvent gets rid of the unpredictable atmospheric conditions during the test, while the flexibility of the solution allows to easily tailor the technique to different application volumes, deposition rates or collector configuration without losing accuracy.

**References.**

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