

# Binary Mixtures of (*N*-phosphonomethyl)-glycine with New Aminophosphonates

Krzysztof Bielecki<sup>a</sup>, Janusz Sarapuk<sup>b</sup>, and Halina Kleszczyńska<sup>b,\*</sup>

<sup>a</sup> Department of Botany and Plant Physiology, Agricultural University, Cybulskiego 32, 50-205 Wrocław, Poland. E-mail: Bielecki@ozi.ar.wroc.pl

<sup>b</sup> Department of Physics and Biophysics, Agricultural University, Norwida 25, 50-375 Wrocław. Fax: (+48)-71-3205172. E-mail: HALINA@OZI.AR.WROC.PL

\* Author for correspondence and reprint requests

Z. Naturforsch. **59c**, 515–518 (2004); received March 25/May 4, 2004

The potential biological activity of binary mixtures of some new organophosphorous compounds, aminoalkane- and aminofluorenephosphonates, with (*N*-phosphonomethyl)-glycine (glyphosate, PMG) was studied. The inhibition of growth of wheat (*Triticum aestivum*) induced by individual compounds and their equimolar mixtures with PMG was a measure of that activity. The experiments were expected to show if the new compounds exhibited good biological activity to be used for agrochemical applications and if this activity can be improved when they are used in mixtures with glyphosate which is the active component of the well-known herbicide Roundup.

The results obtained show that aminofluorenephosphonates inhibited wheat growth when used in micromolar concentrations. Thus, their efficiency can be compared to that of PMG. The efficiency of aminoalkanephosphonates was one order of magnitude weaker. The measure of the efficiency was the effective concentration inhibiting wheat growth by 50% (EC<sub>50</sub>). The most demanded interaction, *i.e.*, a synergistic was observed for only one of binary mixtures of the compounds studied with PMG. Mostly they showed antagonistic or strong antagonistic interactions. Some of them were of the additive type. Such results exclude the possibility of potential use of all the compounds studied in binary mixtures with phosphonomethylglycine, especially as the mentioned synergistic interaction found was rather weak. The influence of structural features of aminophosphonates on the results obtained is discussed.

*Key words:* Aminophosphonates, Biological Activity, Binary Mixtures