

## Delivering metribuzin from biodegradable nanocarriers: Assessing herbicidal effects for soybean plant protection and weed control

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### Supplementary information

**Table S1.** Soil physicochemical properties.

Parameters <sup>a</sup>	Sandy loam soil
Sand (%)	50.4
Silt (%)	31.6
Clay (%)	18.0
pH (CaCl <sub>2</sub> )	6.1
Organic matter (%)	3.8

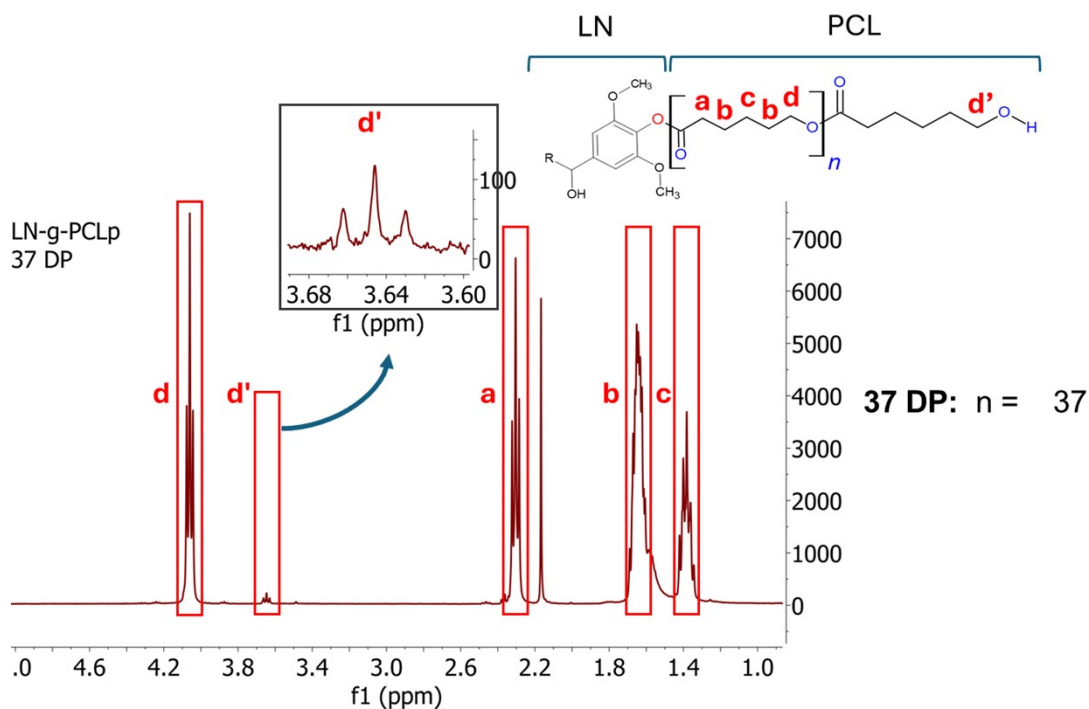
<sup>a</sup>Soil analyzed in Cornell Soil Health Lab, Ithaca, New York, United States of America.

**Table S2.** Nanoparticle characterization by dynamic light scattering (DLS). Hydrodynamic size, polydispersity index (PDI), and surface charge (zeta potential) of PCL-MTZ and PCL-lig-MTZ nanoparticles. The samples were diluted in ultrapure water (1:1000, v/v) and analyzed in ZetaSizer Nano ZS90 equipment (Malvern Instruments, United Kingdom).

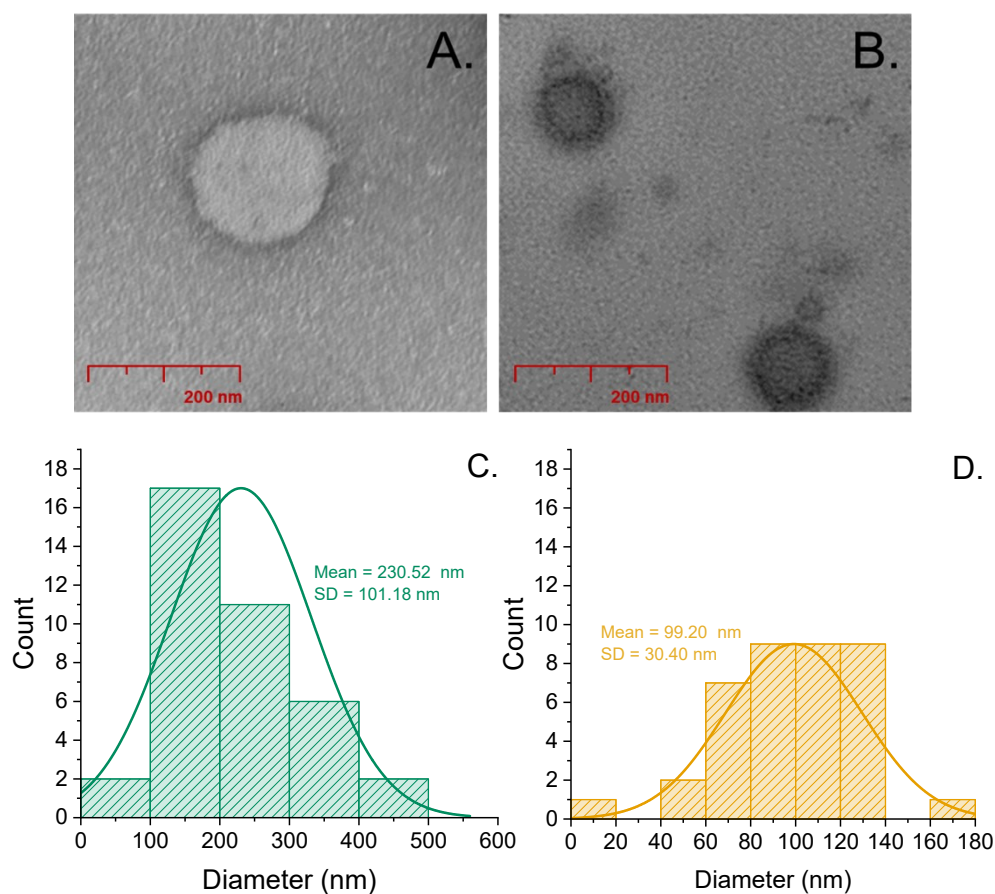
Nanoformulation	Nanoformulation characteristics*		
	Hydrodynamic size (nm)	PDI**	Zeta potential (mV)
PCL-MTZ	265.83 ± 1.79	0.17 ± 0.05	-27.33 ± 0.03
PCL-lig-MTZ	178.23 ± 0.26	0.34 ± 0.03	-42.27 ± 0.07

\*Measurements before preparation of work application solutions.

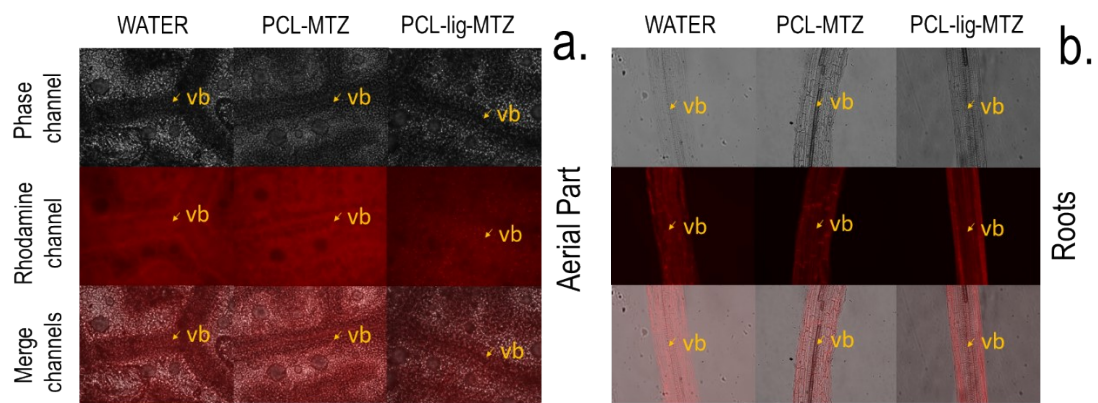
\*\*Dimensionless values.



**Figure S1.**  $^1\text{H-NMR}$  for LN-g-PCL<sub>p</sub> 37 DP. Recorded on a Bruker 400 (Billerica, MA) at 400 Hz in deuterated chloroform ( $\text{CDCl}_3$ ).



**Figure S2.** Morphology characterization of PCL-MTZ (a) and PCL-lig-MTZ (b) nanoparticles by Transmission Electron Microscopy (TEM). Diameter distribution of PCL-MTZ (c) and PCL-lig-MTZ (d) nanoparticles by TEM.



**Figure S3.** Fluorescence intensity of *Amaranthus retroflexus* plants at 5 days after application of metribuzin nanoformulations. Yellow arrows indicate the vascular bundles (vb) in the images of the aerial part and root (A).