Influence of heavy metal contaminated soil on plant biomass turnover

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We investigated the effects of sublethal heavy metal levels on plant growth and leaf lifespan. For this purpose, two heavy metal contaminated soils were collected near Sudbury, ON and diluted with silica sand in a logarithmic series to volumetric soil concentrations of 1/2 to 1/64. Rosettes of the hawkweed *Hieracium piloselloides,* collected from a non-contaminated site, were planted in pots filled with the soil-sand mixtures in June 2002. We hypothesized that both growth and leaf lifespan would decrease with increasing concentrations of heavy metals. Initial results supported this hypothesis, but by September, leaf lifespan of plants growing in metal contaminated soil was higher. This was caused by a positive correlation between reproduction of the plant and leaf turnover: the plants flowered intensively, and seed ripening was associated with the senescence of leaves attached to that stem. Metal contaminated soil delayed the flowering and reduced the flowering intensity, thus slowing down biomass turnover. Effects were found even at low contamination levels.

The results suggest that low levels of heavy metals may dramatically influence plant life history and biomass turnover. This is likely to have consequences for the species' population dynamics, species composition of a community, and ecosystem processes.