# Four years of early warning and rapid eradication of common ragweed using citizen science: where are we now?

Common ragweed (*Ambrosia artemisiifolia* L.) stands as one of the most economically burdensome invasive alien plants in Europe, owing to its allergenic pollen and agricultural impact as a weed. In Southern Belgium, where the species is in its nascent stages of invasion, the Walloon Ragweed Observatory was established in 2020 to tackle its proliferation.

Utilizing citizen science as the cornerstone, surveillance efforts span Southern Belgium, facilitated through smartphone applications such as Observations.be or iNaturalist.org, as well as direct engagement with the Walloon Ragweed Observatory. A multifaceted approach, comprising training sessions, active social media engagement, specialized journal publications, video dissemination, and public media coverage, gradually mobilized stakeholders to report common ragweed sightings. From 25 known populations in 2020, reports have surged to 110, with an annual increase of approximately 30 new populations.

Over time, the proportion of populations directly reported to the Observatory has steadily risen, underscoring its pivotal role in citizen engagement for surveillance. Control measures, entailing the removal and enumeration of all plants, are enacted across recorded populations. Subsequent yearly monitoring detects and removes new plants, if present. Four years into the initiative, 12 populations have been eradicated (with no observed plants for three consecutive years), while 44 are under effective control (with no observed plants at the latest monitoring). The number of removed plants appears to have plateaued at 4000-4500 annually. Nonetheless, certain populations persist despite recurrent interventions, likely due to a robust seedbank, necessitating sustained eradication efforts.

Despite inherent biases in citizen science, the project demonstrates efficacy in curbing exponential population growth. Visits to recorded populations have heightened landowner awareness and revealed predominant introduction pathways, with birdseeds emerging as a significant conduit, with nearly half of the populations situated near bird feeding sites.