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ADDRESSING PESTICIDES WITHIN TARGET 7 (ON POLLUTION) OF THE FIRST DRAFT OF THE POST-2020 GLOBAL BIODIVERSITY FRAMEWORK

February 2022

Why do we need an ambitious target for pesticides?

Pesticides are a significant driver of biodiversity loss globally.

The global rate of species extinction is unprecedented and the absolute abundance of wild organisms has alarmingly decreased by half over the past 50 years.[1] This is a catastrophe which threatens the very basis of food production and sustainable development globally.[2] Pesticides play a major role in biodiversity loss.

In 2019, the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) Global Assessment Report[3] identified pollution, including from pesticides, as one of the five direct drivers of change in nature with the largest global impact.

Pollution has been identified as the fourth biggest driver of terrestrial and marine biodiversity loss, third biggest driver of freshwater biodiversity loss and the second biggest driver of insect decline. Pesticides are one of the main reasons for the decline of beneficial insects and pollinators.[4,5] Recent studies have also highlighted the significant harm pesticides have on soil biodiversity.[6]

Photo: Bee on flower.
Credit Oldiefan/
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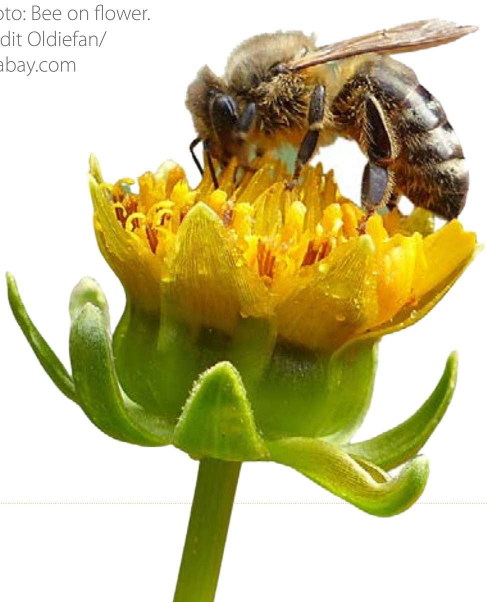

Why do we need a measurable target?

Specific and measurable targets are necessary to achieve a reduction of environmental harms from pesticide use and other forms of pollution.[7]

The Post-2020 Global Biodiversity Framework (GBF) will follow on from the Aichi Biodiversity Targets, adopted by the Convention on Biological Diversity (CBD) Parties in 2010. Aichi Biodiversity Target 8 sought to bring pollution to levels that are "*not detrimental to ecosystem function and biodiversity*" by 2020. This target lacked a quantitative component and it was not achieved.[8] Global production of pesticides steadily increased between 2010 and 2017[9] and CBD Global Biodiversity Outlook 5 points out that "*pollution from pesticide use remains at a level that has a detrimental impact on biodiversity*". Target 7 of the Post-2020 GBF must do better.

To have a realistic chance at reducing the decline in biodiversity caused by pesticides, Target 7 needs to:

- **include measurable targets to reduce synthetic pesticide use and toxicity by at least two-thirds**
- **phase out highly hazardous pesticides (HHPs), which are highly detrimental to biodiversity**
- **support farmers to transition away from a reliance on synthetic pesticide use through the use of agroecological approaches (linked to Target 10)**

(see Annex 1 for explanation of these components)

Can crop production be maintained whilst reducing pesticide use?

Pesticides are hazardous to human health and they undermine important ecosystem services on which agricultural productivity depends, such as soil health and pollination. It is well documented that significant reductions in pesticide use can be achieved without damaging yields and can often lead to higher overall farm income, especially when using agroecological approaches. See Annex 1 for examples.

Why address Highly Hazardous Pesticides (HHPs)?

In 2015, SAICM[10] adopted a resolution (IV/3) that recognizes HHPs as an issue of international concern and calls for concerted action to address HHPs.

Pesticides are inherently hazardous, and among them, HHPs cause disproportionate harm to environment and human health including severe environmental hazards and high human toxicity.

A key element that is missing from the current target related to pesticides is that of HHPs. This category of pesticides should be prioritized for phasing out.

Why is Toxicity Important?

Policies and targets focusing on reducing pesticide quantity alone could have the perverse effect of incentivising the use of low-dose pesticides that have higher toxicity.[11] For example, while the amount of insecticide used has declined in the US from 1992-2016, total applied toxicity has significantly increased. Indeed, the toxicity of applied insecticides to aquatic invertebrates and pollinators more than doubled between 2005 and 2015.[12]

Proposed text

We propose that Target 7 be amended as follows (additions in bold):

Reduce pollution from all sources to levels that are not harmful to biodiversity and ecosystem functions and human health, including by reducing nutrients lost to the environment by at least half, and ***synthetic*** *pesticides by at least two thirds,* ***including phasing out Highly Hazardous Pesticides in agriculture by 2030,*** *and eliminating the discharge of plastic waste.*

Proposed indicators

The indicators relating to pesticides that have been proposed in the monitoring framework for the GBF are 'pesticide use per area of cropland' with disaggregation by 'pesticide type'.

These measures are insufficient and should be used in combination with the proposed indicators below.

Indicators for Target 7 should also include **measures of**

- **Toxicity (e.g. pesticide load or toxic load)**
- **Number and name of HHPs in use**
- **Volume/weight of HHPs in use**

Further explanation is provided in Annex 1.

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Annex 1. Supporting Information

Can crop production be maintained whilst reducing pesticide use by two thirds?

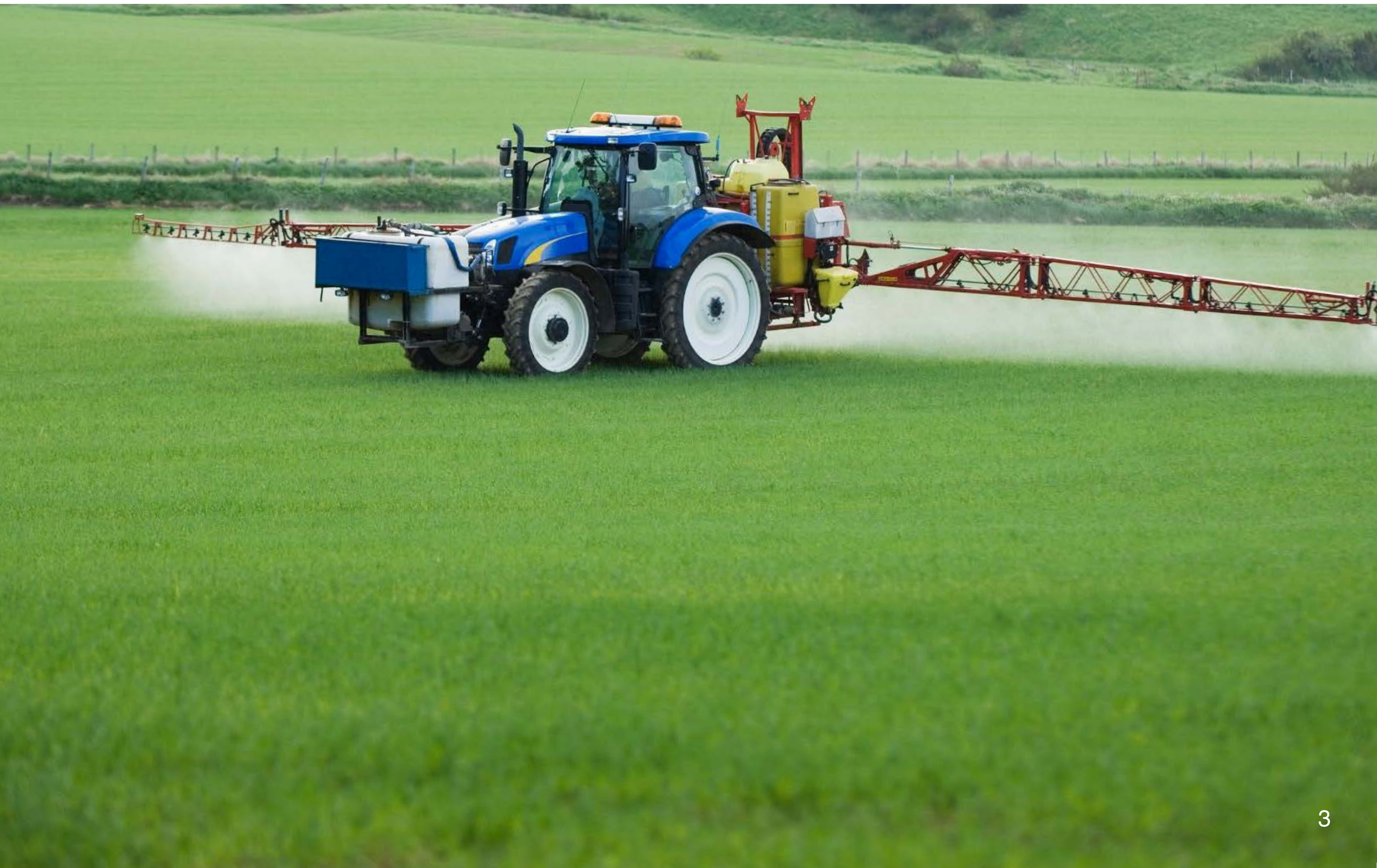
The current text of the first draft of the GBF on Target 7 calls for a reduction in pollution "*from all sources to levels that are not harmful to biodiversity and ecosystem functions and human health, including by reducing… pesticides by at least two thirds…*". This quantitative aspect should be maintained, and furthermore, is achievable, as we point out below.

Pesticides by their very nature are designed to kill, but less than 0.1% of pesticides applied for pest control reach their target pests[1]. More than 99.9% of pesticides used move directly into the environment where they have negative impacts on many types of terrestrial and aquatic organisms. There is broad scientific consensus that pesticide use is one of the main reasons for the decline of beneficial insects and pollinators[2-5]. A recent review study also highlighted the significant harm pesticides have on soil biodiversity, a serious warning for us all as healthy soil biodiversity is vital to maintain food production into the future [6, 7].

Rather than simply adding another tool to the farmers' toolbox, pesticides often displace safer, cheaper and more sustainable options. Pesticides kill beneficial natural enemies of pests, for example, that would otherwise help to keep pest populations in check. A recently published review paper revealed that natural enemies are as effective as pesticides at reducing pest populations[8]. Removing such systems creates a problem of 'resurgence' of pest populations, often leading to an escalating cycle of pesticide use and further loss of beneficial organisms[9, 10].

The widespread use of pesticides also affects other vital ecosystem services, such as pollination, decomposition of organic material and bioavailability of plant nutrients in the soil. According to the UNEP Report 'Environmental and Health Impacts of Pesticides and Fertilizers and Ways of Minimizing Them' there is a need to "*fundamentally change crop management and adopt ecosystem-based approaches*"[11].

Photo: Tractor spraying field with pesticide. Credit northlightimages from Getting Images via Canva.



It is well documented that improved yields and/or incomes can accompany reductions in pesticide use, especially when using agroecological approaches. There are now many published studies that support this. For example:

- An analysis of 85 IPM projects from 24 countries of Asia and Africa implemented over the past twenty years demonstrated a mean crop yield increase of 40.9% combined with a decline in pesticide use by 30.7% compared with baseline[12]. A total of 35 of 115 (30%) crop combinations resulted in a transition to zero pesticide use.
- Pretty et al.[13], De Schutter[14, 15], Ponisio et al. [16] and Reganold and Wachter[17] summarized many examples, mainly from tropical and subtropical countries, showing significant yield increases associated with agroecological farming.
- An analysis of 946 non-organic arable commercial farms in France demonstrated that lower pesticide use rarely decreases productivity and profitability in French arable farms and average reduction of herbicide, fungicide and insecticide use by 37, 47 and 60%, respectively, could be achieved without loss in productivity or profitability[18].
- Analysis of long-term comparative farming systems research in Kenya, India, and Bolivia revealed that profitability and productivity of organic agriculture can equal conventional practices for several farming systems. Furthermore, the results of this long-term research show that well-managed organic farming systems can increase soil fertility, reduce pesticide residues and enhance biodiversity[19].
- Successes of effective implementation of IPM systems have also been reported by India's Directorate of Plant Protection Quarantine & Storage, whereby they managed to successfully control the outbreaks of insect pests by non-chemical agents, thus preventing significant losses of economically important crops[20].
- Europe is often criticized by pesticide makers and agricultural interests as being overly protective with burdensome regulations. While the EU has less land dedicated to agriculture than China, its export value of agricultural products is higher than the USA, China and Brazil combined (FAOSTAT, 2016). Therefore, the EU remains highly competitive as a major agricultural power despite having banned many widely-used, potentially hazardous agricultural pesticides and introducing a target to reduce pesticide use by 50% by 2030[21].
- Following bans of the pesticides monocrotophos, methamidophos, and endosulfan in Sri Lanka, no drop in rice and vegetable productivity was observed in the years after the main bans were instituted[22] and there was no change in yield trends for 8 crops in Kerala state of India following bans of 14 HHPs[23].

Highly Hazardous Pesticides

Pesticides are inherently hazardous, and among them, Highly Hazardous Pesticides (HHPs) cause disproportionate harm to environment and human health including: severe environmental hazards, high acute and chronic toxicity. According to FAO and WHO, the continued use of HHPs "undermines" the attainment of several Sustainable Development Goals (SDGs) because of their adverse effects on health, food security, biodiversity and other environmental negative impacts such as pollution[24].

The International Code of Conduct on Pesticide Management[25] and the Guidelines on Highly Hazardous pesticides[26] adopted the following definition of HHPs:

"Highly Hazardous Pesticides means pesticides that are acknowledged to present particularly high levels of acute or chronic hazards to health or environment according to internationally accepted classification systems such as WHO or Global Harmonized System (GHS) or their listing in relevant binding international agreements or conventions. In addition, pesticides that appear to cause severe or irreversible harm to health or the environment under conditions of use in a country may be considered to be and treated as highly hazardous".

Consistent with global agreements and UN statements

Phasing out the use of HHPs is necessary and consistent with developments in other international fora addressing chemicals and pesticides.

In 2015, SAICM (Strategic Approach to International Chemicals Management, with the Secretariat hosted by UNEP) Fourth International Conference of Chemicals Management adopted a resolution (IV/3) that recognizes HHPs as an issue of international concern and calls for concerted action to address HHPs, including giving priority to agroecological practices when replacing them.

A target to phase out HHPs is also consistent with:

- The FAO/WHO Guidelines on Highly Hazardous Pesticides[26]
- The FAO Council statement on HHPs in 2006[27]

In addition, in 2021, the UN Special Rapporteur on the right to food stated in his report (A/HRC/49/43) on 'Seeds, right to life and farmers' rights' that "*A gradual phasing out of pesticides, starting with highly hazardous pesticides, in accordance with WHO and FAO norms is considered a realistic objective by a large number of experts worldwide*".

Identifying HHPs

The 2021 updated list of HHPs is available at http://pan-international.org/wp-content/uploads/PAN_HHP_List.pdf. The list, compiled by Pesticide Action Network, is based on classifications by recognised authorities and synthesizes information from WHO, US EPA, the EU Commission and the Pesticide Property Database.

Toxicity

Because certain pesticides cause disproportionate harm to both the environment and human health, a purely quantitative target to reduce pesticide use is insufficient on its own to reduce biodiversity loss from pesticide pollution.

Further information on proposed measures for toxicity:

- **Pesticide load** - an approach used by Denmark as a straightforward means of combining key toxicity and environmental fate data in one indicator. It includes three sub-indicators for human health, ecotoxicology and environmental fate, but it can be tailored to focus more on biodiversity[28].
- **Toxic load indicator** – similar to the Pesticide load indicator, this simple-to-use scoring tool for assessing pesticide toxicity takes into account mammalian toxicity, environmental toxicity and environmental fate[29] .

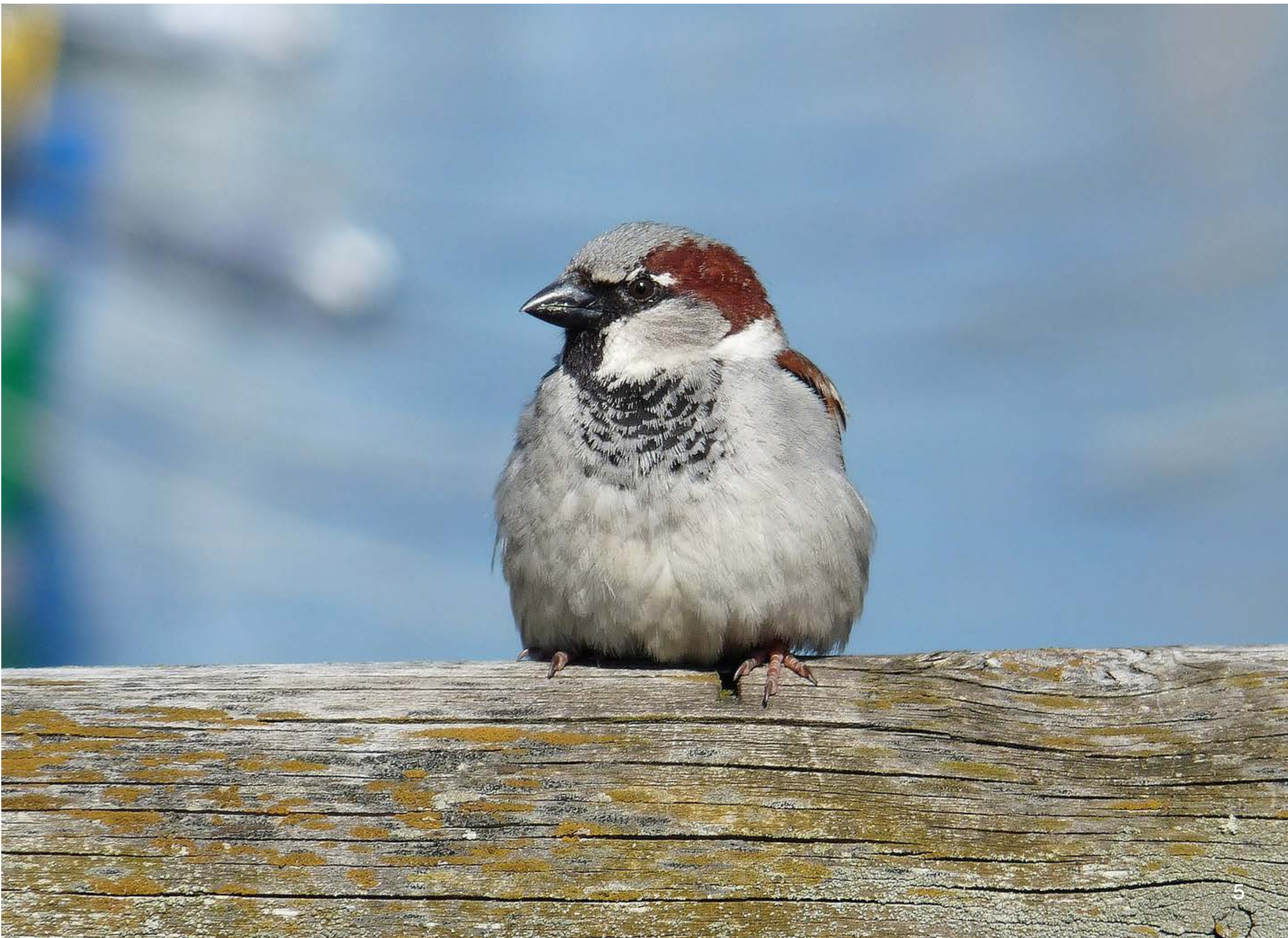
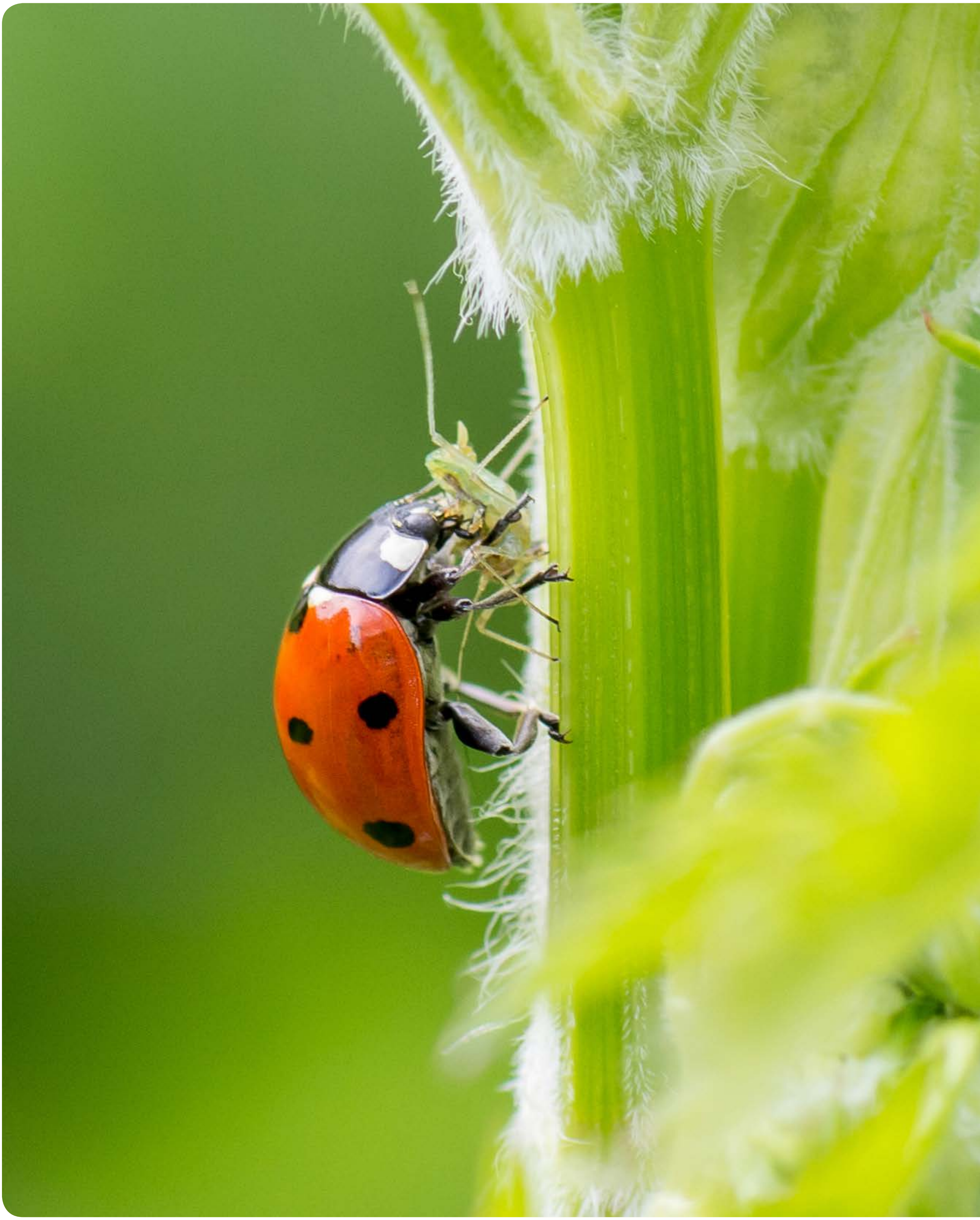


Photo: House sparrow - there have been large drops in populations of Europe's birds. Credit 2111695/Pixabay.com



AGROECOLOGY – A VIABLE METHOD TO SUPPORT PESTICIDE REDUCTION IN AGRICULTURE

There is a growing body of evidence showing that by working with nature rather than against it, agroecology can provide farmers with safer and more sustainable alternatives to pesticide use. Aligning closely with Target 10 of the Post-2020 Global Biodiversity Framework, the promotion and adoption of agroecological practices in agricultural systems worldwide can also contribute to increased food production without compromising future food security[30]. For example, meta-analysis of 17 studies showed that following the adoption of agroecological practices, yields increased in 61 percent of the cases analysed, while farm profitability increased in 66 percent of cases[31].

Over the past decade, numerous high-level panels of experts, intergovernmental and UN bodies, and scientific publications affirm that an agroecological transformation of agricultural systems is the most robust and appropriate response to ensuring the conservation of biodiversity, while promoting climate stabilization, healthy food, nutrition and diets, and system resilience. See, for example:

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Photo: Ladybird eating aphid. Credit Jolanda Aalbers/Shutterstock.com

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Pesticide Action Network International (PAN International) is a network of over 600 participating nongovernmental organizations, institutions and individuals in over 90 countries working to replace the use of hazardous pesticides with ecologically sound and socially just alternatives.

www.pan-international.org

Contact at PAN-UK:
Email: **alex@pan-uk.org**
Telephone: **+44(0)1273 964230**

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www.twn.my

Contact at TWN:
Email: **twn@twnetwork.org**
Telephone: **60-4-2266728**
60-4-2266159