

Scaling-Up Climate Resilient Food Production

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Background

Global food production accounts for 21-37% of total greenhouse gas emissions and it is the main cause of biodiversity loss, deforestation, drought, freshwater pollution, and damage to aquatic wildlife. Growing climate-resilient wild species and relatives of domesticated crops, that require less inputs, on marginal lands could help meet Scotland's 2045 climate targets. In addition, our previous work has shown that wild relatives of modern vegetables can be very valuable from a nutritional perspective as they usually contain higher amounts of molecules considered beneficial for human health.

The integration of farming wild species and novel agri-food systems such as agroforestry and vertical urban farming could provide a more efficient, local, and environmentally friendly way to produce our food. At the same time, it will support Scottish Government objectives for reforestation and provide economic opportunities for businesses and landowners¹.

Research

Previous research (funded by SEFARI Gateway) facilitated a survey to determine the use and need of wild edible species by individuals and businesses and this has highlighted the most popular species (Fig. 1) and also informed the selection of plants for the experimental trials (Fig. 2).

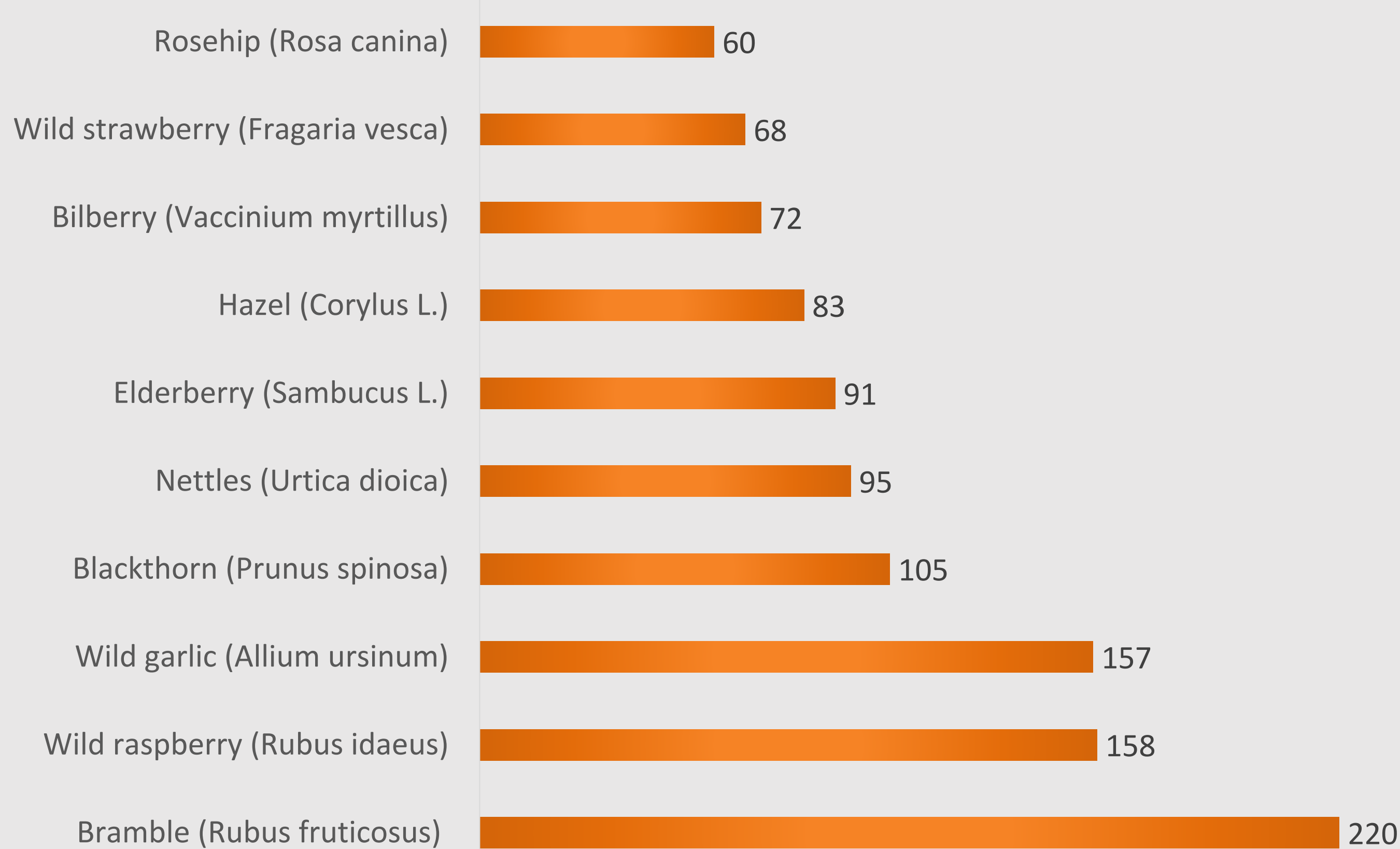


Figure 1 – Top ten species (from 329 responses) harvested in Scotland

References

1.Scotland's Forestry Strategy 2019–2029 <https://www.gov.scot/publications/scotlands-forestry-strategy-20192029/>

2. Wild plants and urban greenery...my experience at the RBGE; SEFARI Gateway Blog: <https://sefari.scot/blog/2023/03/22/wild-plants-and-urban-greenery%E2%80%A6my-experience-at-the-rbge>



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Key to planning the experimental trials was stakeholder engagement. A workshop was held in Edinburgh with academics, businesses and non-government organisations, all with an interest in agroforestry and urban food production. An exchange visit with the Royal Botanic Garden Edinburgh allowed for more detailed discussion on the plant species².

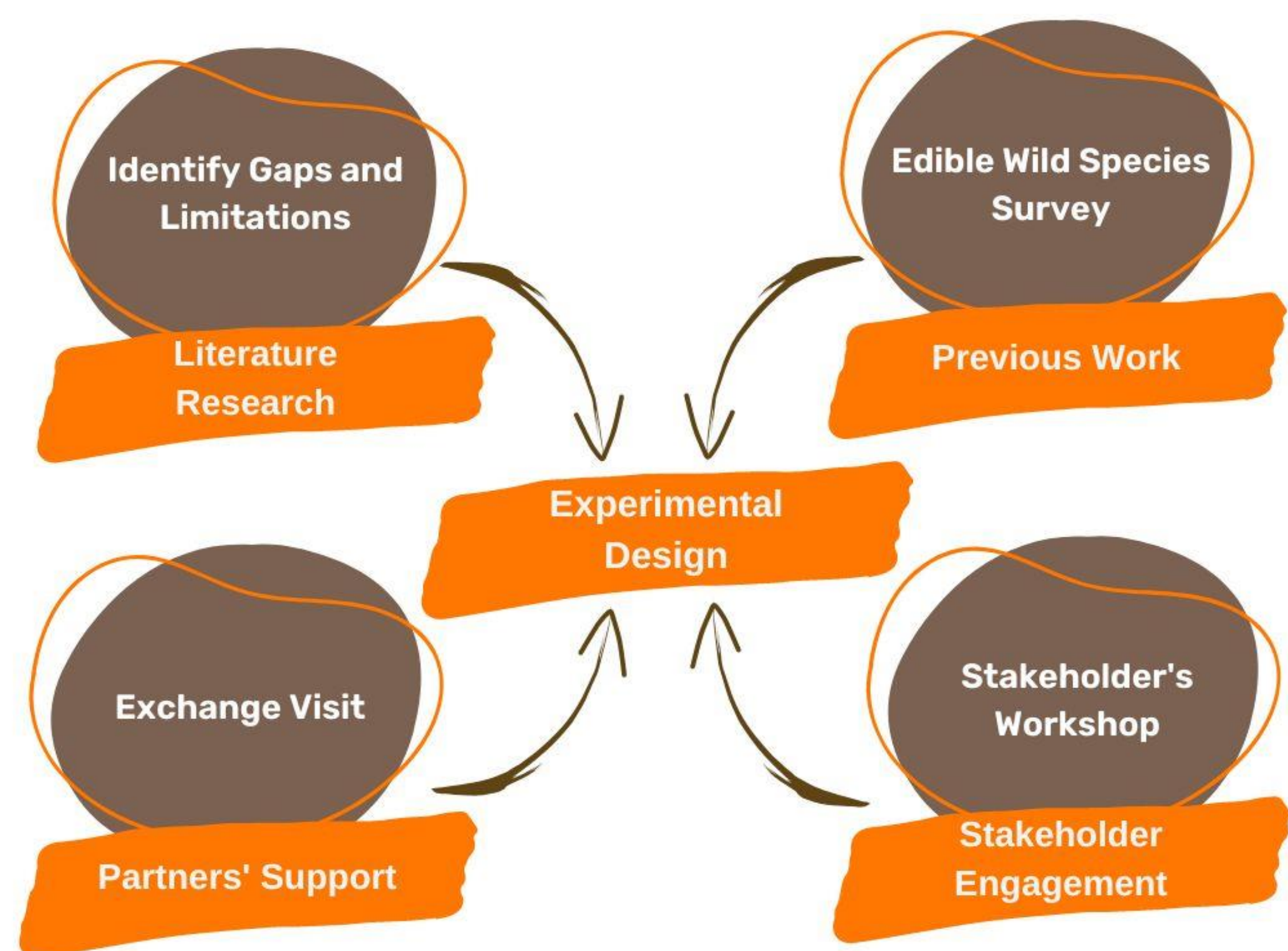


Figure 2 – Informed product selection for the novel agri-food experimental trials

From a comprehensive review of the literature regarding the environmental impact of urban plant production, several gaps were identified including lack of comparable standardised assessment methods. From this information, a new algorithm was developed for the Life Cycle Analysis (LCA) that will be applied to the experimental plots.

Outcomes

- Five plant species have been selected
- Experimental design (agroforestry & urban plots) being finalised
- Key partners identified to support growing trials
- LCA developed for data evaluation

