

Fig.1 Carbon farming practice in CRCF

Introduction

Carbon farming is increasingly recognised as an important pathway for supporting climate neutrality in agriculture. Under the EU **Carbon Removal and Carbon Farming Certification Framework (CRCF)**, practices should be assessed not only for their climate mitigation potential, but also for cost-effectiveness, permanence, feasibility and wider environmental benefits.

Carbon farming practices differ substantially across these dimensions, therefore a **multi-criteria decision-making method TOPSIS** was applied to compare them in a structured and transparent way.

11 CRCF-relevant practices were included in the assessment. The analysis was carried out for a **10-year period** and evaluation was based on **five criteria**:

- climate benefits
- cost-effectiveness
- reversal risk
- feasibility of implementation on the farm
- ecosystem co-benefits

The TOPSIS method was used to compare and rank the practices.

The weights were assigned by prioritizing climate performance first, followed by economic viability and carbon permanence, while practical feasibility of implementation and broader ecosystem co-benefits were given secondary, yet still important, significance.

Methodology

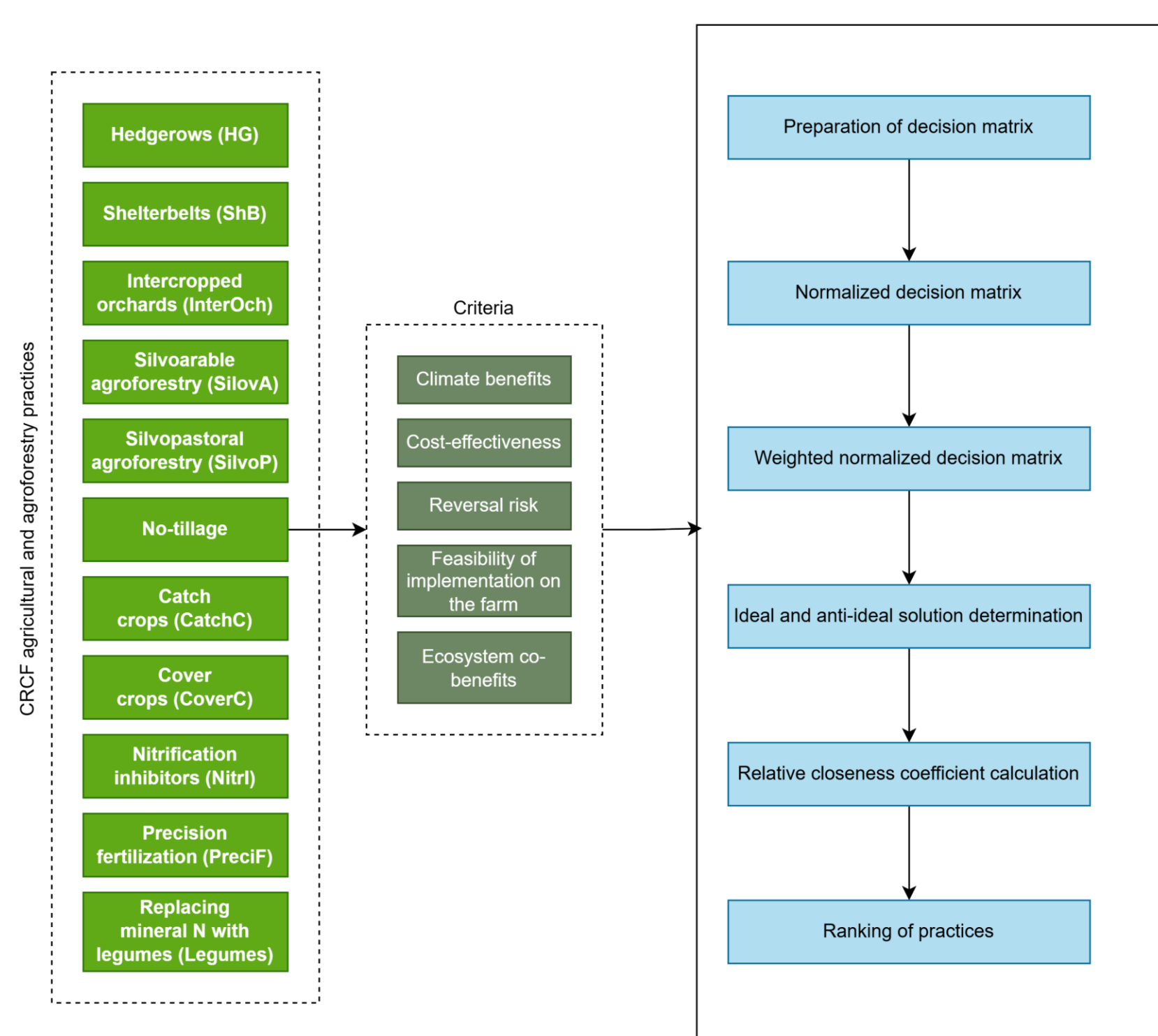


Fig.2 TOPSIS methodology

Results

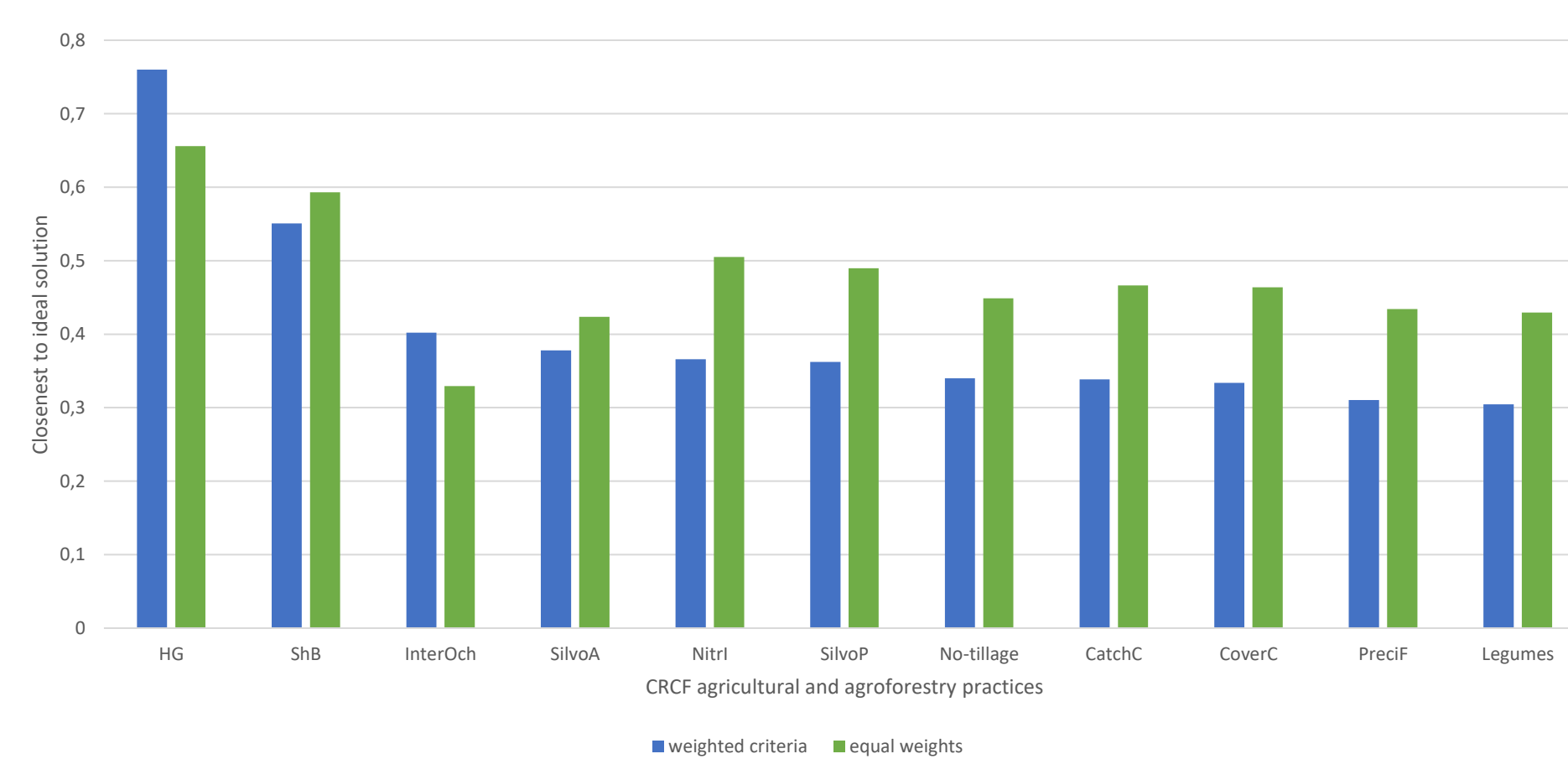


Fig.3 TOPSIS results

These results indicate that woody landscape elements consistently achieve the strongest overall performance when climate benefits, cost-effectiveness, reversal risk, feasibility of implementation, and ecosystem co-benefits are assessed simultaneously. The stability of hedgerows and shelterbelts across both weighting scenarios suggests that these practices are robustly preferred within the applied TOPSIS framework. By contrast, changes in the third-ranked alternative indicate that the relative performance of other practices is more sensitive to the weighting scheme.