Key findings

The study titled "Stability Analysis through Multiplicative Interaction Models among promising Accessions of Brassica rapa" aimed to characterize 41 accessions, assess their genetic divergence and stability across three environments, and compare multiple stability analysis models.

Key findings include:

1. Significant genetic variability was found in all yield and yield-related traits across environments.
2. Seed yield, number of primary branches per plant, and number of seeds per siliqua exhibited the highest phenotypic and genotypic variability and heritability; oil content showed the lowest variability.
3. Seed yield was positively correlated with traits such as days to maturity, plant height, raceme length, siliquae number/density, primary branches, seed count, oil content, and thousand seed weight.
4. Path coefficient analysis revealed positive direct effects of primary branches, raceme length, oil content, seeds per siliqua, and thousand seed weight on seed yield; negative direct effects from some traits were compensated via indirect positive effects.
5. Genetic divergence analysis grouped accessions into clusters varying by environment, aiding parent selection for breeding.
6. Stability analyses using Eberhart and Russell, AMMI, GGE biplot, and Multi-Trait Stability Index (MTSI) showed complementarity: MTSI was best for multiple-trait stability, others suited trait-specific stability.
7. Specific accessions were identified as stable and high yielding, suitable for broad or environment-specific adaptation.
8. The study emphasized the importance of combining multiple statistical approaches for robust genotype evaluation and breeding strategy optimization.

Overall, this research provides comprehensive insights into genetic variability, trait associations, and genotype stability in yellow sarson, facilitating efficient selection for enhanced yield and adaptability in varying environments.