

al., 2021). Before planting, localized land preparation or hole preparation should be carried out, and well-decomposed organic fertilizer should be applied as basal fertilizer. After planting, root-setting water should be applied promptly, and mulching or other moisture-retention measures should be adopted according to understory light and humidity conditions.

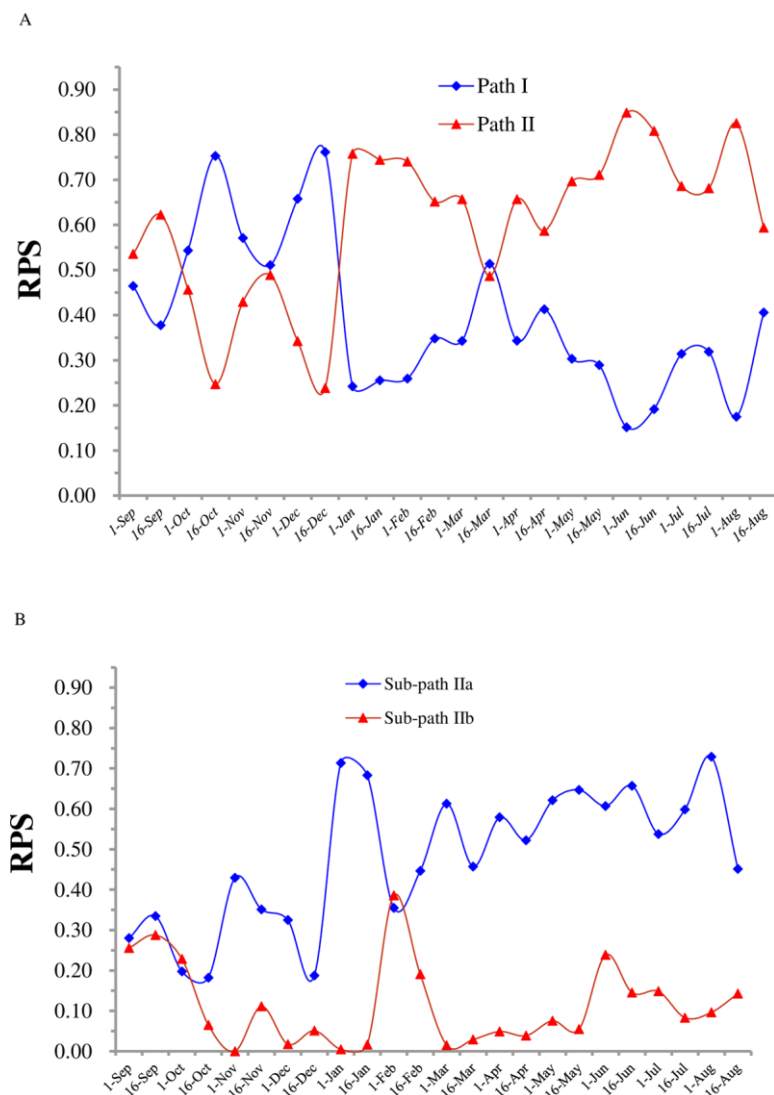


Figure 2 Reaction path selectivity (RPS) of flavonoid biosynthesis in *T. hemsleyanum* and their seasonal variations (Adopted from Shi et al., 2022)

Image caption: (A): Path I: producing Ap, IsoO and Or; Path II: producing Km, Qu, IsoQ, Rut, Ast and Km3rut; (B) Sub-path IIa: producing Qu, IsoQ and Rut; Sub-path IIb: producing Ast and Km3rut (Adopted from Shi et al., 2022)

## 5.2 Vine guidance, trellising, and plant management of *Tetrastigma hemsleyanum*

*T. hemsleyanum* is a climbing vine with obvious twining and climbing growth characteristics in its aboveground parts. It requires support structures to make full use of vertical space, improve ventilation and light penetration, and reduce lodging. If allowed to creep naturally, plants are likely to become entangled with one another, causing excessive canopy closure within the crop layer, increasing disease risk, and hindering the transport of photosynthetic products to tuberous roots. Comparative studies of different planting models have shown that, compared with creeping cultivation, stereoscopic cultivation can significantly improve the quality of tuberous roots and increase the contents of compounds such as polydatin, piceatannol, resveratrol, and kaempferol. Greenhouse cultivation combined with stereoscopic planting can also produce higher aboveground and underground biomass, indicating that vertical support and spatial stratification are conducive to biomass accumulation and medicinal quality improvement (Hu et al., 2023).