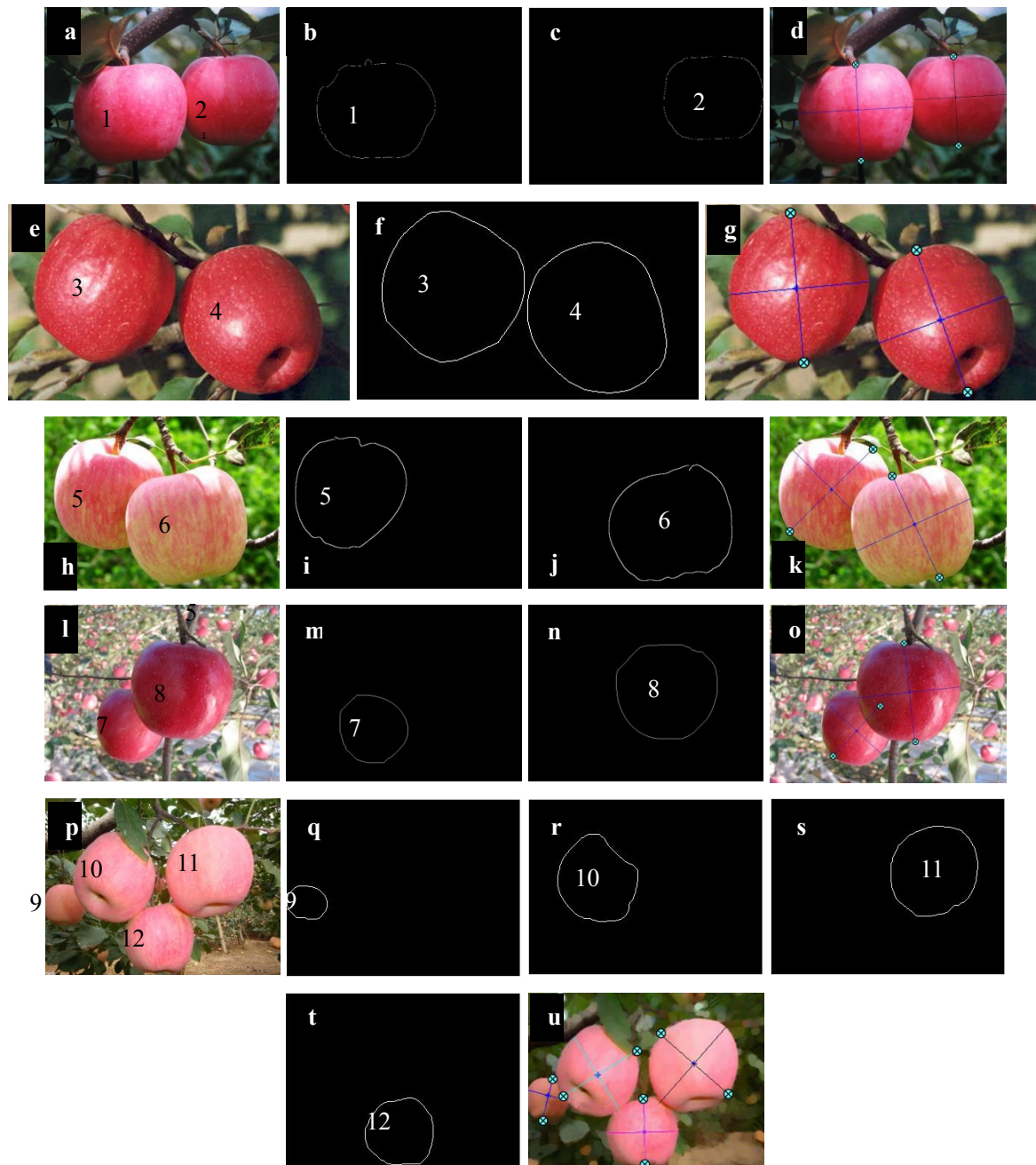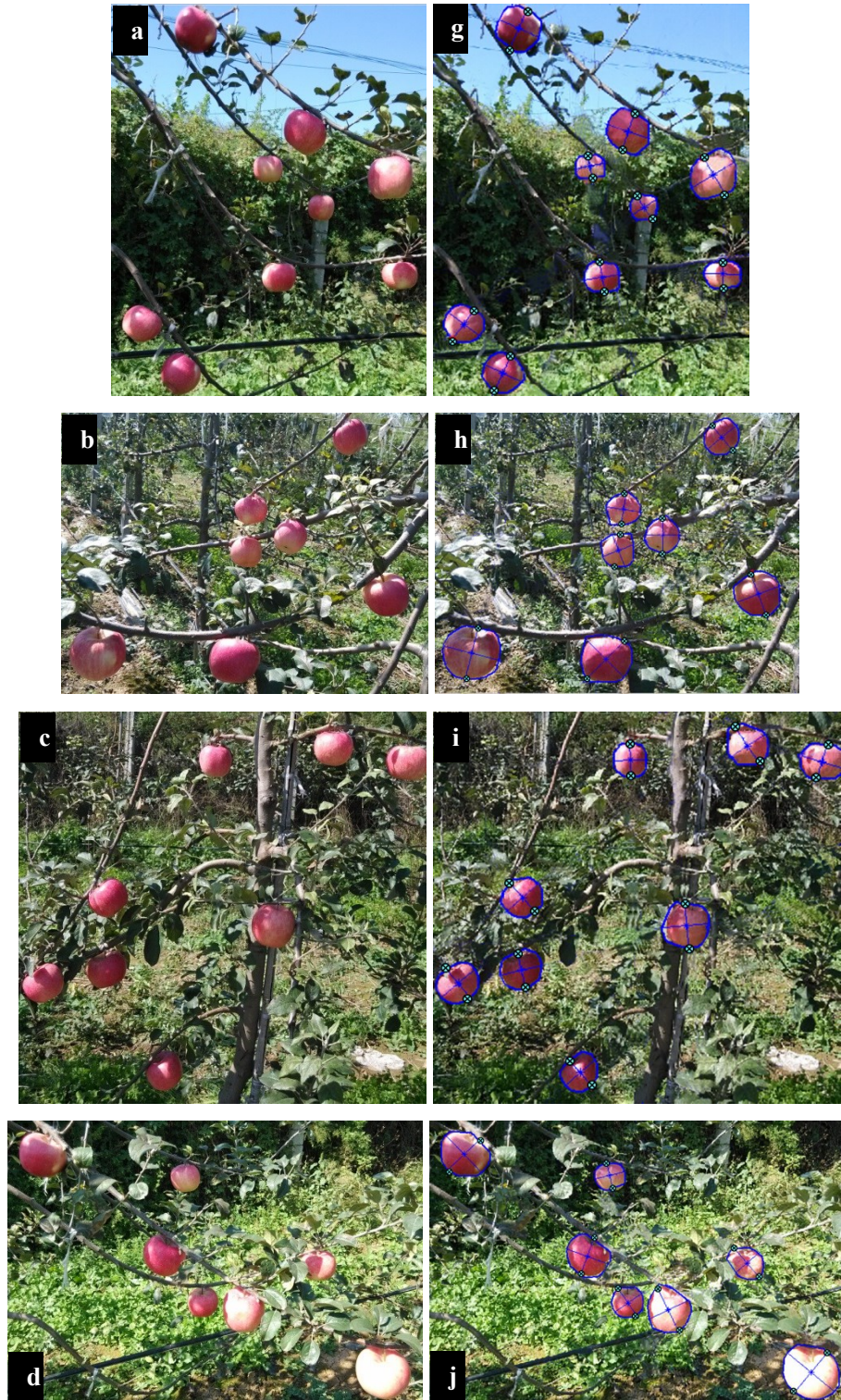**Supplementary Figure S1.** Location results of single and blocked apple targets: **(a, b, c, d)** original digital images obtained in natural daylight conditions; **(e, f, g, h)** results of location of apples using the proposed method (picking points marked with cyan "⊕"); **(i, j, k, l)** location results of apples processed with the unimproved method; **(m, n, o, p)** location results of apples using the PIA method.

Supplementary Figure S2. Location of single and blocked apple targets with larger error: **(a, b, c, d)** original digital images got in natural daylight condition; **(e, f, g, h)** results of location of apple using proposed method (picking points marked with cyan "⊕"); **(i, j, k, l)** location results of apple processed with unimproved method; **(m, n, o, p)** location results of apple using PIA method.

Supplementary Figure S3. Location results of image containing adjacent apples: **(a, e, h, l, p)** original images taken in natural daylight conditions; **(b, c, f, i, j, m, n, q, r, s, t)** apple contour after reconstruction; **(d, g, k, o, u)** results of location of apple using proposed method (picking points marked with cyan "⊕").

Supplementary Figure S4. Location results of panoramas: **(a, b, c, d, e, f)** original images captured in natural daylight conditions; **(g, h, i, j, k, l)** results of location of apple processed with proposed method (picking points marked with cyan "⊕").

Supplementary Figure S4 (cont.). Location results of panoramas: **(a, b, c, d, e, f)** original images captured in natural daylight conditions; **(g, h, i, j, k, l)** results of location of apple processed with proposed method (picking points marked with cyan "⊕").