SUMMARY OF THE DISCLOSURE

[0007] The present disclosure is directed to mechanisms that facilitate location and alignment of grow towers for one or more processing operations. As discussed herein, grow towers may be relatively narrow and long structures that are comprised of an extruded plastic material. One or both of the lateral faces of the grow tower may include grow sites. The modeled or designed configuration of a grow tower assumes that the location of the grow sites varies along a single axis along the lateral face, but that the opposing lateral face does not vary along the y- or z-axis. Grow towers in reality, however, vary across all three axes due, for example, to manufacturing tolerances and/or various loads placed on the towers. For example, a grow tower 50 may curve slightly along its length, causing the relative locations of the grow sites to vary with such curvature. This may present certain challenges when performing various operations on the grow tower, such as transplanting, harvesting, cleaning or other operations. Various implementations of the present invention reduce variation of the grow tower (and corresponding grow site locations) in one or two axes to facilitate processing during crop production. In one implementation, the alignment mechanism comprises a track including an alignment feature and one or more engagement actuators. The alignment feature is configured to engage features of a track-contacting face of a grow tower. The engagement actuators press the grow tower against the track, causing the alignment feature to engage the grow tower and align it along the track to facilitate processing operations.

[0007a] According to a first aspect of the present invention, there is provided an apparatus, comprising a grow tower having a plurality of grow sites along at least one lateral face thereof, the grow tower having a track-contacting face, wherein the track-contacting face has a first cross-section profile; a track having an alignment feature extending along the track and having a second cross-section profile that is configured to engage the first cross-section profile of the track-contacting face; and one or more engagement actuators disposed to releasably press the grow tower against the track to register the grow tower against the alignment feature.

[0007b] According to a second aspect of the present invention, there is provided an apparatus for processing a grow tower, the grow tower having a plurality of grow sites along at least one lateral face thereof, the grow tower having a track-contacting face, wherein the track-

contacting face has a first cross-section profile, wherein apparatus comprises a track having an alignment feature extending along the track and having a second cross-section profile that is configured to engage the first cross-section profile of the track-contacting face; first and second engagement actuators disposed at first and second positions along the track, the first and second engagement actuators operative to releasably press the grow tower against the track to register and align the grow tower against the alignment feature; and a grow tower processing system disposed between the first and second positions, the grow tower processing system operative to apply one or more operations on the grow tower.

BRIEF DESCRIPTION OF THE DRAWINGS

[0008] Figure 1 is a functional block diagram illustrating an example controlled environment agriculture system.

[0009] Figure 2 is a perspective view of an example controlled environment agriculture system.

[0010] Figures 3A and 3B are perspective views of an example grow tower.