

Contents

Contributors	vii
1. Tree Fruit Production Automation <i>Qin Zhang</i>	1
2. The Economics of Perennial Crops' Production Automation <i>R. Karina Gallardo and David Zilberman</i>	13
3. Sensing for Stress Detection and High-throughput Phenotyping in Precision Horticulture <i>Sindhuja Sankaran, Chongyuan Zhang and Afef Marzougui</i>	28
4. Light Interception and Canopy Sensing for Tree Fruit Canopy Management <i>Francisco Rojo, Jingjin Zhang, Shrinivasa Upadhyaya and Qin Zhang</i>	43
5. Precision Orchard Systems <i>Matthew Whiting</i>	75
6. Variable Rate Irrigation on Center Pivots <i>R. Troy Peters</i>	93
7. Precision Technologies for Pest and Disease Management <i>Lav Khot, Gwen-Alyn Hoheisel, Yasin Osroosh and Reza Ehsani</i>	112
8. Precision Nutrient Management <i>Gerry Neilsen and Denise Neilsen</i>	134
9. Precise Crop Load Management <i>Caixi Zhang and Du Chen</i>	161

10. Mechanical Harvest and In-field Handling of Tree Fruit Crops	179
<i>Manoj Karkee, Abhisesh Silwal and Joseph R. Davidson</i>	
11. Opportunity of Robotics in Precision Horticulture	234
<i>Thomas Burks, Duke Bulanon and Siddhartha Mehta</i>	
Index	293