Sunday, July 14

6:00 PM Welcome Reception [CJ’s]

Monday, July 15

7:00 – 8:00AM Extension Agent Breakfast (invitation only) [TBA]

8:00 – 8:30AM Symposium Opening [Carolina C]
   Welcome by Convener (Frank Louws, NCSU, USA)
   ISHS Presentation (Daniel Leskovar, ISHS Representative & Francisco Pérez-Alfocea, ISHS Vegetable
   Grafting Working Group Chair)

8:30 – 9:20AM Keynote Lecture #1 [Carolina C] Moderator: Frank Louws
   Grafting to Address Grand Challenges (Francisco Pérez-Alfocea, CEBAS-CSIC, Spain)

9:20 – 9:30AM Break

9:30 – 11:30AM Session 1: Use and Development of Vegetable Grafting [Carolina C] Moderator: Xin Zhao

9:30 – 11:10AM Oral presentations.

   S1-1: Recent progress of vegetable grafting in China (Zhilong Bie, China)
   S1-2: Solanaceous vegetable rootstocks in Japan (Hiroshi Matsunaga, Japan)
   S1-3: Vegetable grafting in Thailand (Taweesak Klinkong, Thailand)
   S1-4: Vegetable grafting: Current progress and future perspectives in Pakistan (Yuan Huang, China)**
   S1-5: Development of suitable rootstock for musk melon and standardization of appropriate grafting
   technology for dry and humid areas of India (Vimal Chawda, India)

11:10 – 11:30AM Extension summation.

11:30AM – 12:30PM Lunch [Carolina A]

12:30 – 1:00PM Flash Talks for Poster Session I [Carolina D&E] Moderator: Chieri Kubota

1:00 – 1:50PM Poster Session I (see the list of poster presenters) [Carolina D&E]
1:50 – 2:40PM Keynote Lecture #2 [Carolina C] Moderator: Ricardo Hernández
Rootility's Unique Rootstock Breeding System and the Innovative Applications (Rafael Meissner, Rootility, Israel)

2:40 – 2:50PM Break

2:50 – 4:30PM Concurrent Sessions 2 and 3

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<tr>
<td>S2-1: Advances in watermelon quality through grafting (Penelope Perkins-Veazie, USA)</td>
<td>S3-1: Increasing survival and efficacy of splice-grafted watermelon using sucrose and antitranspirant (Pinki Devi, USA)**</td>
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<td>S2-2: Pumpkin-grafting delays watermelon fruit ripening by altering ABA signaling and other gene networks (Yong Xu, China)</td>
<td>S3-2: Research and application of LED lighting in the healing stage of grafted vegetable seedlings (Athanasios Koukounaras, Greece)</td>
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<td>S2-3: Watermelon fruit quality as affected by rootstock and potassium supply (Yuan Huang, China)**</td>
<td>S3-3: Temperature and light intensity during healing influence survival and plant regrowth of grafted tomato seedlings (Matthew Kleinhenz, USA)</td>
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<td>S2-4: Grafting watermelon onto interspecific hybrid squash combats hollow heart disorder (Marlee Trandel, USA)**</td>
<td>S3-4: Transplant quality and post-transplanting growth of grafted and non-grafted watermelon seedlings as affected by chilling during simulated long-distance transportation (John Ertle, USA)**</td>
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4:10 – 4:30PM Extension summation 3:50 – 4:10PM Extension summation

4:30 – 4:35PM Break

4:35 – 6:35PM Industry R&D Round-Table Discussion (open for everyone) [Carolina C] Moderator: Matthew Kleinhenz

**Tuesday, July 16**

8:00 – 8:10AM Greetings by Convener and VG Working Group Chair [Carolina C]

8:10 – 9:00AM Keynote Lecture #3 [Carolina C] Moderator: Erin Rosskopf
Integration of Grafting into Sustainable Crop Production (Roni Cohen, ARO, Israel)

9:00 – 9:10AM Break
9:10 – 10:50AM Session 4: Vegetable Grafting in Different Production/Management Systems [Carolina C]
Moderator: Margaret Lloyd

9:10 – 10:30AM Oral presentations.

S4-1: The role of grafting for local tomato production in high tunnels (Cary Rivard, USA)

S4-2: Grafting as a tool in organic watermelon production systems utilizing unique cover cropping strategies (Brian Ward, USA)

S4-3: 2018 progress report: an evaluation of grafting for processing tomato production in California's Central Valley (Gene Miyao, USA)

S4-4: Pruning reduces yields in grafted tomatoes planted in the field (Thomas Ingram, USA)**

10:30 – 10:50AM Extension summation

10:50 – 11:20AM Flash Talks for Poster Session II [Carolina D&E]  Moderator: Chieri Kubota

11:20AM – 12:10PM Poster Session II (see the list of poster presenters) [Carolina D&E]

12:10PM – 1:30PM Lunch & Photo Shooting [Carolina A]

1:30 – 2:20PM Keynote Lecture #4 [Carolina C]  Moderator: Gene Miyao
Application for Overcoming Interfamily Grafting and Grafting Microchip (Michitaka Notaguchi, Nagotya University, Japan)

2:20 – 2:30PM Break

2:30 – 4:10AM Concurrent Sessions 5 and 6

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<tr>
<td>S5-1: Frontiers in grafting-quality science (Matthew Kleinhenz, USA)</td>
<td>S6-1: Promoted graft healing and quality of watermelon seedlings by environmental manipulation (Byoung Ryong Jeong, Korea)</td>
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<td>S5-2: How grafting affects the quality of tomato fruits (Wei Liu, China)</td>
<td>S6-2: Optimizing transplant production of <em>Citrus lanatus</em> <code>Fascination</code> and <em>Cucurbita maxima x moschata</em> <code>Carnivor</code> for grafting using lower light intensity and CO₂ enrichment (Brandon Huber, USA)**</td>
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<td>S5-3: Volatile compounds and consumer perceived sensory attributes of tomato fruit as influenced by grafting and production environment (Xin Zhao, USA)</td>
<td>S6-3: GRANDES: An online decision support tool for grafting nurseries (Sara Masoud, USA)**</td>
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S5-4: High tunnel and field production system comparison of grafted tomato in Texas' Yield and quality traits (Daniel Leskovar, USA)

S6-4: Developing an economic decision support tool for grower adoption of vegetable grafting in the United States (Yefan Nian, USA)**

3:50 – 4:10PM Extension summation

4:30PM Social hour for interactions [TBA]
6:00PM Door opens for Gala Dinner (tickets optional) [TBA]

**Wednesday, July 17**

8:00 – 8:10AM Greetings by Convener and ISHS Representative [Carolina C]

TriHishtil
World Vegetable Center

8:20 – 9:10AM Keynote Lecture #5 [Carolina C] Moderator: Chandrasekar Kousik
Vegetable Grafting in Promoting Sustainable Vegetable Production in Developing Countries
(Ravishankar Manickam, World Vegetable Center, Taiwan)

9:10 – 9:20AM Break

9:20 – 11:20AM Concurrent Sessions 7 and 8

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<td>9:20 – 11:00AM: Oral presentations.</td>
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S7-1: On-farm research to evaluate efficacy of grafting to manage soilborne pathogens of tomato in North Carolina USA (Frank Louws, USA)

S8-1: Using wild relatives as a source of traits through grafting: genetic distance, heritability and vigor (Sean Fenstemaker, USA)**

S7-2: Evaluation of eggplant grafted onto commercial Solanaceae rootstocks for resistance to Verticillium dahliae (Abigail Attavar, USA)**

S8-2: Characterizing the impacts of "generative" rootstocks on growth and development of grafted tomato plants (Tian Gong, USA)**

S7-3: Carolina Strongback: a fusarium wilt and root knot nematode resistant *Citrullus amarus* rootstock for watermelon production (Patrick Wechter, USA)

S8-3: Investigating the molecular, physiological, and nutritional changes that underlie grafting-induced vigor in tomato (Margaret Frank, USA)
S7-4: Grafting on resistant rootstocks for managing Phytophthora crown rot of peppers (Chandrasekar Kousik, USA)  

S8-4: Effects of interspecific Capsicum grafting combinations on horticultural performance (Andrey Vega-Alfaro, USA)**

S7-5: Identification of potential rootstock for tomato grafting from bacterial wilt screening trial in NC (Dilip Panthee, USA)  

S8-5: Influence of grafting and pruning on *Solanum lycopersicum* L. cvs. Anahu and Rutgers on plant biomass partitioning in the presence and absence of *Meloidogyne incognita* (Nematoda) (George Bird, USA)

11:00 – 11:20AM Extension summation  

11:20 – 11:30AM Break

**11:30AM – 12:20PM ISHS Business Meeting (open for everyone) [Carolina C]**

**11:30AM – 12:20PM Extension Agent Wrap-up (invitation only) [Mecklenburg 2]** Moderators: Matthew Kleinhenz, Katie Jennings, and Russell Tronstad

12:20 – 1:20PM Lunch [Carolina A]

**1:20 – 3:30PM Session 9: Addressing Abiotic and Biotic Factors in Grafted Vegetable Production [Carolina C]**  
Moderator: Christopher Gunter

1:20 – 3:00PM: Oral presentations.

S9-1: Prospecting Solanum rootstock biodiversity for improving nutrient use efficiency in tomato (Francisco Pérez-Alfocea, Spain)  
S9-2: Mechanism of increasing salt resistance of cucumber by grafting onto salt tolerant rootstock pumpkin (Zhilong Bie, China)  
S9-3: Mechanisms of tolerance to salt stress in three pepper accessions used previously as rootstocks: a physiological and genetic approach (Lidia López-Serrano, Spain)**  
S9-4: Tomato rootstocks contribute to abiotic stress tolerance: emphasis on root chill tolerance (Felipe Barrios Masias, USA)  
S9-5: Development of eggplant rootstocks resistant to bacterial wilt (Mohamed Rakha, Taiwan)

3:00 – 3:20PM Extension summation

3:20 – 3:30PM Break

**3:30 – 4:30PM Symposium Summary and Closing [Carolina C]**

**Thursday, July 18**

Post Symposium Tour *(pre-registration required)*
List of Poster Presentations:

Poster Session I (Flash Talks I: 12:30 – 1:00PM & Poster Session I: 1:00 – 1:50PM, Monday, July 15)

P1-1: Field evaluation of new watermelon grafting methods to reduce verticillium wilt (Scott Lukas, USA)
P1-2: Rootstock and plastic mulch effect on grafted watermelon flowering and fruit maturity (Pinki Devi, USA)**
P1-3: Growing new roots for tomato to boost off season production through grafting technology (Sumeet Singh, India)
P1-4: Study on the relationship between seedling age and plug seedling standardization in vegetable crops (Yang Gyu Ku, Korea)
P1-5: Influence of cylindrical paper pot system on the reduction of decreased growth caused by excessive irrigation compared with the plug system in fruit and vegetable seedlings (Il-Seop Kim, Korea)
P1-6: (cancelled)
P1-7: Using Solanum galapagense as a source of drought resistance through introgression breeding and grafting for tomato improvement (Sean Fenstemaker, USA)**
P1-8: Evaluation of tomato (Solanum lycopersicum `Pectomech`) grafts against root knot nematode Meloidogyne incognita (Naalamle Amissah, Ghana)
P1-9: Changes of seedling quality of grafted cucumber transplants grown in cylindrical paper pot by different fertilizer concentrations and seedling growing days (Sewoong An, Korea)
P1-10: Evaluating fungicides and grafting to reduce Pythium disease in watermelon (Sean Toporek, USA)**
P1-11: Developing tomato rootstock recommendations for high tunnel production and enhancing our understanding of the `rhizobiome` (Cary Rivard, USA)
P1-12: Application of grafting technology for the control of tomato verticillium wilt caused by Verticillium dahliae (Yeonyee Oh, USA)
P1-13: Cost estimates for grafted, non-grafted, and direct seeded cantaloupes (Russell Tronstad, USA)
P1-14: Rootstocks affect response of grafted cucumbers to silicon supplementation (Min Wei, China)
P1-15: Grafted pepper fruits retain similar market quality to those harvested from their own-rooted counterparts across a range of rootstock and scion genotypes (Joe Scheerens, USA)
P1-16: Exploring the use of Cucurbita rootstocks for early spring planting of seedless watermelon in North Florida (Sylvia Willis, USA)**
P1-17: Screening rootstocks to mitigate the supra-thermal stress of bell pepper crops (Salvador Lopez-Galarza, Spain)**
P1-18: Screening World Vegetable Center eggplant and pepper rootstocks for resistance to verticillium wilt (Abigail Attavar, USA)**
P1-19: Grafting for open-field production of heirloom tomatoes in California (Margaret Lloyd, USA)
P1-20: Performance of grafted hybrid tomatoes within a Midwestern United States high tunnel in the absence of soilborne disease pressure (Ajay Nair, USA)
P1-21: Vegetable grafting workshops participation in the Delaware region (Rose Ogutu, USA)
P1-22: Weed competitiveness and herbicide tolerance in grafted tomato (Sushila Chaudha, USA)
P1-23: Grafting tomato as a tool to manage Fusarium solani in greenhouses (Yoel Messika, Israel)

Poster Session II (Flash Talks II: 10:50 – 11:20AM & Poster Session II: 11:20AM – 12:10PM, Tuesday, July 16)
P2-1: The study on the effect of five cucurbit rootstocks on growth, development and active substances content of medicinal pumpkin (*Cucurbita pepo subsp. pepo var. Styriaca*) (Majid Azizi, Iran)

P2-2: Histological and transcriptomic reveal the healing mechanism at graft junction of cucumber grafted onto squash heterografts (Xianchang Yu, China)**

P2-3: Grafted combinations affect tomato root growth and water permeability (Takashi Ikeda, Japan)

P2-4: Grafting watermelon onto pumpkin improves the nitrogen uptake and nitrogen use efficiency (Zhilong Bie, China)

P2-5: Effects of shade treatment on bioactive compounds in the fruit of pepper plants grown under high light intensity stress during summer (Yang Gyu Ku, Korea)

P2-6: Growth of grafted tomato seedlings as affected by N and P contents in a nutrient solution during cultivation after graft union formation (Yurina Kwack, Korea)

P2-7: Non-destructive characterization of grafted tomato root systems using the mini-horhizotron (Christopher Gunter, USA)

P2-8: The use of supplementary lighting enhances the quality of grafted watermelon seedlings (Athanasios Koukounaras, Greece)

P2-9: Growth change after grafting of root pruning splice grafted cucumber seedling grown in different media (Seung Jae Hwang, Korea)

P2-10: A conceptual model of smart grafted transplant production system (Sewoong An, Korea)

P2-11: Short-term mechanisms of grafted pepper using NIBER rootstock, tolerant to salinity (Lidia López-Serrano, Spain)**

P2-12: The role of ethylene in long-distance transportation of grafted vegetable seedlings (Tricia Jenkins, USA)**

P2-13: Molecular marker-assistant selection of pumpkin rootstocks for powdery mildew resistance and blooming capacity (Jiaxing Tian, China)

P2-14: Grafting bell peppers onto pepper and tomato rootstocks, and the effects on yield and plant morphology (Cary Rivard, USA)

P2-15: Environmental conditions affect silicon absorption and bloom formation on fruit surface of grafted and non-grafted cucumbers (Min Wei, China)

P2-16: Exploring chamberless healing for small-scale production of grafted tomato transplants (Tian Gong, USA)**

P2-17: Pathogenic races and putative fungal effectors in *Fusarium oxysporum f. sp. lycopersici* from greenhouse tomato in North Carolina (Frank Louws, USA)

P2-18: Effect of supplemental lighting source combined with intensity on quality of grafted tomato plug seedlings (Hao Wei, China)

P2-19: A meta-analysis of the effects of watermelon grafting on yield and fruit quality (Zhifeng Gao, USA)

P2-20: Functional characterization and expression analysis of influx silicon transporter LSi1 in pumpkin rootstocks and cucumber scion during bloom accumulation on cucumber fruits (Jintao Cheng, China)

P2-21: Herbicide tolerance of grafted eggplant on tomato rootstock (Sushila Chaudha, USA)

P2-22: Critical period of control of a mixed weed population in grafted triploid watermelon (Katherine Jennings, USA)

**Presenters for Young Minds Award Competition