

## **Tribute to Avraham D. Ben Ya'acov**

Avraham D. Ben Ya'acov was an inspiration to all who work with avocados. He was in large part responsible for the current worldwide activity focusing on the identification and testing of great numbers of rootstocks with different scions and under diverse growing conditions such as calcareous soils, saline conditions and disease pressure from *Phytophthora cinnamomi* and other diseases. He was the primary force behind current work on the identification and conservation of *Persea* germplasm. His contributions to the "world of avocado" were recognized by the International Avocado Society in 1998, the American Society for Horticultural Sciences in 2000 and by the Israeli agricultural community in 2005.

### **Identification of superior rootstock and scion selections.**

In Israel, Dr. Ben Ya'acov was responsible for the selection of improved rootstock and scion material for the Israeli avocado industry. His work culminated in the selection of 40 avocado seedling rootstocks and 14 clonal rootstocks from the original estimated 200,000 trees contained in 700 experiments. This represents an unparalleled body of work by an individual. In the process of selecting improved rootstock and scion selections Dr. Ben Ya'acov developed the concept of "growers' teams" where the avocado grower was an active participant in the critical assessment of the avocado material. He developed a "systems approach" to avocado production, which looks at the interaction between the rootstock and the scion variety in terms of stress tolerance and productivity. His work and concepts have been of great significance to all involved in avocado research by broadening the horizon and scope of investigation from rootstock or variety breeding, for example, to the understanding that rootstock-scion-environment go hand in hand and need to be observed and researched simultaneously and not as independent fields of research. The production and testing of copy trees under diverse environments demonstrate his deep understanding of the importance of this tripartite interaction to the development of productive, custom-fit, commercial avocado trees.

Dr. Ben Ya'acov promoted the idea of copy trees, long before this was commercially feasible. Due to the extreme variability between avocado seedlings, he knew that for a rootstock to be ultimately successful, that it was necessary to have a means to clonally propagate avocados. Dr. Ben Ya'acov followed closely the research on rooting avocados conducted by Frolich, Halma, Zentmyer and Schroeder. These researchers recognized that rootstocks must play a leading role in mitigating the issues of salinity, alkalinity, freezes and root diseases. He associated closely with these researchers and utilized their techniques and ideas to improve his research.

Dr. Ben Ya'acov worked hard to popularize these concepts worldwide. This is evidenced by his many publications on rootstocks and scion varieties that have been published in a wide array of technical and semi-technical journals and his participation in many international meetings. His strong convictions in his work gained him many admirers and followers. He was been an inspiration to many of the authors of this tribute. By freely sharing his concepts and materials he inspired avocado industries around the world to design similar programs and to share rootstock materials for evaluation under diverse environmental conditions. Clonal rootstocks from his program are under

evaluation in California, Florida, South Africa, Chile, Peru, México and Australia where salinity, *Phytophthora* disease pressure, and foraging for certain plant nutrients limit tree longevity and productivity.

### **Germplasm exploration, identification and conservation.**

Dr. Ben Ya'acov, like his predecessors and contemporaries W. Popenoe, G. Zentmyer, C. Schroeder, E. Schieber, C. Oppenheimer, M. W. Borys, G. Bufler, A. F. Barrientos-Priego, M. Rubí, L. López-López, E. La Cruz Torres and others had a keen affinity to the preservation of avocado germplasm. He was recognized throughout the world for his work in avocado germplasm rescue and was instrumental in galvanizing the international avocado community to recognize the value of germplasm conservation. His relentless and enthusiastic search for avocado relatives and related species culminated in the *Persea* collections which are now located in Mexico and Israel. These collections include approximately 300 items belonging to *Persea americana* and other *Persea* relatives, this task was continued in Mexico and the items up to now are around 680, inspired by Dr. Ben-Ya'acov work. He made sure that materials of interest were shared with other research institutions elsewhere such as Florida, California, Chile, and Guatemala. Without his vision and foresight, many valuable representatives of *Persea* germplasm would have been lost in the last 30 years. He was the spokesman for those who saw the continuous destruction of these important germplasm resources, through wholesale deforestation and the lack of understanding of the importance of the rescue and conservation of germplasm for the future. This more than any other effort is in our view the greatest contribution to the avocado world by Avraham D. Ben Ya'acov.



Dr. Michal W. Borys, Tzotzil Indian guide and Dr. Avraham D. Ben-Ya'acov during one of our avocado germplasm exploration and collection trips in Tenejapa, Chiapas, México (Photo Dr. Alejandro F. Barrientos Priego).

Mary Lu Arpaia, University of California, Riverside

Alejandro F. Barrientos-Priego, Universidad Autonoma Chapingo, Mexico

Claudia Fassio, Universidad Católica de Valparaíso, Chile

Reuben Hofshi, [www.avocadosource.com](http://www.avocadosource.com)

Stefan Kohne, Westfalia Technological Services, South Africa

Grant Thorp, Plant and Food Research, Australia

Anthony (Tony) Whiley, Australia