Menashe Cohen **July 2012**

Part I: CURRICULUM VITAE

I. Personal

1948	Born in .Israel
1962 - 1965	High-school education in The Hebrew Realy School Haifa
1965 - 1968	Military service
Marital status:	Married, 7 children.

II. University Education and Additional Training

1968 – 1971	B.Sc. - The Hebrew University of Jerusalem, The Faculty of Agriculture, Rehovot
1986 – 1987	M.Sc. - The Hebrew University of Jerusalem, The Faculty of Agriculture, Rehovot. Not finished due to personal reasons.

III. Positions Held and Academic Status

1989 - 2010	Head, Department of bulbs and flowers at Northern R&D
1998 -	Research Scientist at Migal..

V. Membership in Scientific and Agricultural Committees

A. Local:

1990 – 2000
- Israeli committee for geophytes,
- Israeli committee for new ornamental crops,
- Committee of Golan Heights flowers growers.
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VII. Participation in International Meetings

2004 **"Crop management, postharvest treatment and marketing of flower bulbs crops"**. Argentina, Neuquen
- 2 invited lectures at the opening session of the conference:
  - Introduction of Geophyte crops to Farms in the Northern Region of Israel
  - Production of Tulips and Lilium longiflorum Bulbs in Israel
  - Member on a panel at the closing session of the conference .Full reimbursement.

2008 13th International Protea Association Conference & IXth International Protea Working Group Symposium. South Africa, Stellenbosch
Speaker:
Annual development of 'Safari Sunset': florogenesis and resource allocation.

2010 28th International Horticultural Congress Portugal, Lisbon
X International Protea research group symposium
15th International Protea Association general meeting

2010 2nd international symposium on the genus *Lilium*. Italy, Pescia.

2012 11th international symposium on flower bulbs and herbaceous perennials. Turkey, Antalya. Poster presenter

XI. Research Grants

(A) International Competitive Grants

2009 IPA (International Protea Association) grant. *Title*: Leucadendron 'Safari Sunset': Optimization of pre- and postharvest management for quality improvement of the cut branches following prolonged sea transport. Cooperative Investigator, for 3 year.
Budget: Total - € 20,000 / year; Researcher's part: € 2,000 / year.

(B) National Competitive Grants

Principal Investigator,

1998 - 2000 Chief Scientist of the Ministry of Agriculture. Title: Development of an economic protocol to minimize virus spread in lily propagation fields. .
Budget:

1999 - 2001 Chief Scientist of the Ministry of Agriculture. Title: Introduction of Leucadendron (Proteaceae).Budget:.

2002 - 2004 Chief Scientist of the Ministry of Agriculture. Title: Development of a water saving technology for geophytes and riverbank plants in the Hulla valley.
Budget:

2002 - 2004 Chief Scientist of the Ministry of Agriculture. Title: Introduction of geophytes from natural populations of South Africa **.**
Budget: 180,000 NIS

2003 - 2005 Chief Scientist of the Ministry of Agriculture . Title: Training the 'Safari Sunset' crop for a high and qualitative yield.
Budget: 405,000 NIS

2005 - 2007 Chief Scientist of the Ministry of Agriculture . Title: Introduction of new woody crops, with chilling demands, for diversifying the products' basket, of the flowering plantation, in the Galilee & Golan Heights.
Budget: 240,000 NIS.

2005 - 2007 Chief Scientist of the Ministry of Agriculture. Title: Factors that involve in the ripening of ‘Safari Sunset’ stems.
Budget 240,000 NIS

2006 - 2008 Chief Scientist of the Ministry of Agriculture. Title: Development of a protocol for new cultivars and clones of Leucadendron as cut flower and pot plant products.
Budget: 300,000 NIS

2007 - 2009 Chief Scientist of the Ministry of Agriculture. Title: Development of new cultivars of *Lilium longiflorum*.
Budget: 245,000 NIS

2007 - 2009 Chief Scientist of the Ministry of Agriculture. Title: Production of Iris rhizomes as a new agricultural activity in the Hula valley.
Budget: 270,000 NIS

2008 - 2010 Chief Scientist of the Ministry of Agriculture. Title: Understanding the factors responsible for leaf blackaning and dessication in 'Safari Sunset' branches during transport and developing means to prevent them.
Budget: 189,000 NIS

2009 – 2011 Chief Scientist of the Ministry of Agriculture. Title: Leucadendrons in pots: development of technology for series of new products for export.
Budget: 227,000 NIS

2010 - 2012 Chief Scientist of the Ministry of Agriculture. Title: Strategy for development and production of new ornamental crops in Northern Israel for the international markets.
Budget: 588,000 NIS

2010 - 2012 Chief Scientist of the Ministry of Agriculture. Title: Development of technologies for production, propagation and flowering of *Lilium formolongi* as new crop for export and domestic market.
Budget: 405,000 NIS

2012 - 2014 Chief Scientist of the Ministry of Agriculture. Title: Development of a dynamic model for chilling requirements for in soil- planted Peony.
Budget: 360,000 NIS

2012 - 2014 Chief Scientist of the Ministry of Agriculture. Title: Development of geophytes with cold requirements as new potted plants: technologies of propagation and cultivation.
Budge: 405,000 NIS

Cooperating Investigator,

1999 - 2001 Chief Scientist of the Ministry of Agriculture . Title: Dormancy and growth in Peony.,

1999 - 2001 Chief Scientist of the Ministry of Agriculture . Title: Production of Flowering Branches of Deciduous Trees, as Cut Flowers.

2000 - 2002 Chief Scientist of the Ministry of Agriculture . Title: Respond of Leucadendron plants to irrigation rate and frequency in Northern Israel. .

2001 - 2003 Chief Scientist of the Ministry of Agriculture . Title: Evaluation of geophites from Kazakhstan and Central Asia in Israel.

2001 - 2003 Chief Scientist of the Ministry of Agriculture . Title: Development of system for tulip bulb production for export.

2002 - 2004 Chief Scientist of the Ministry of Agriculture . Title: Peony: physiology and cutting propagation.

2003 - 2005 Chief Scientist of the Ministry of Agriculture . Title: Water and fertilization management of ‘Safari Sunset’ under deficit irrigation.

2003 - 2005 Chief Scientist of the Ministry of Agriculture . Title: Peony: Improving cut flowers quality by examining the effects of growth conditions and developing postharvest treatments. .

2003 - 2006 Chief Scientist of the Ministry of Agriculture . Title: Harvesting systems for Safari Sunset flowers.

2007 - 2009 Chief Scientist of the Ministry of Agriculture . Title: Growing Peony as perennial crop: environmental effect of the assimilate translocation and quality of underground crowns and flowers. Budget – 300,000 NIS.

2008 - 2010 Chief Scientist of the Ministry of Agriculture . Title: Root and crown pathogens of Paeonia lactiflora and their management.

Part II: LIST OF PUBLICATIONS

1. *Articles in reviewed journals.*

1. Degani C, **Cohen M**, Gazit S., and Ruth El-Batsri R (1992)
PGI Isozyme Diversity and Its Genetic Control in Mango
Hortscience 27(3):252-254.

2. Halevy A. H., Levi M., **Cohen M**. and V. Naor (2002).
Evaluation of methods for flowering advancement of herbaceous peonies.
HortScience, 37(6): 885-889.

3. B. Zion, A. Weisblum, L. Reshef, R. Regev, M. Levi, **M. Cohen**, Y. Steinmetz, M. Lev (2007).
Mechanical harvesting of leucadendron flowers.
Applied Engineering in Agriculture Vol. 23(4): 425-431

2. Publications in Acta Horticulture

1 Kamenetsky, R., Barzilay, A. and **Cohen, M**. (2007).
Herbaceous peony for cut flower production: flowering physiology and cultivation techniques
Acta Hort. 755:121-126

2. **Cohen, M**., Zemach, H., Ben-Jaacov, J. and Kamenetsky, R. 2010.
Annual development and florogenesis of Leucadendron 'Safari Sunset' in Israel. *Acta Hort. (ISHS)* 869:87-96

3. Booklets in Hebrew (Published by Northern R&D),

1. **M. Cohen** (editor) (2001).
Northern R&D flowers department activities. 75 pages.

2. **M. Cohen** (editor) (2002).
Northern R&D flowers department activities. 84 pages.

3. M. Cohen (2002).
Peony: Economic development in the Golan Heights and the Galilee. 13 pages.

4. Articles in Non-Reviewed Journals in Hebrew

1. Meir, S., Philosoph-Hadas, S., Salim, S., Parzelan, Y., **Cohen, M.** and Ran, Y. (2005).
Peony part 1: Effect of grower's storage conditions (from harvest to transport) and packing conditions for air transport on quality of cut flowers cvs. 'Douchesse de Nemours' and 'Sarah Bernhardt' during vase life.

http:/www.mop-zafon.org.il/lab/flower/0058.pdf; 12 pages.

2. Meir, S., Philosoph-Hadas, S., Salim, S., Parzelan, Y., **Cohen, M.** and Ran, Y. (2005).
Peony part 2: Effect of growth conditions, growth methods, growth region and temperature regimes on quality of cut flowers cvs. 'Douchesse de Nemours' and 'Sarah Bernhardt' during vase life.
http:/www.mop-zafon.org.il/lab/flower/0059.pdf; 9 pages.

3. Meir, S., Philosoph-Hadas, S., Salim, S., Parzelan, Y., Kamenetsky, R., Barzilay, A. and **Cohen, M.** (2005).
Peony part 3: Effect of temperature regimes during growth in the phytotron on quality of cut flowers during vase life.
http:/www.mop-zafon.org.il/lab/flower/0060.pdf; 4 pages.

4. Meir, S., Philosoph-Hadas, S., Salim, S., Perzelan, J., **Cohen, M.,** Ran, Y., Finkelstein, S. and Zilber, A. (2006).
Peony: Improving cut flowers quality by examining the effects of growth conditions and developing postharvest treatments - a report summary.
Olam Haperach, May Issue: 54.

5. **Cohen, M.** and Kamenetsky, R. (2007) Development of Peony as commercial crop in Israel. Haklai Israel, 33, p. 18-22

6. **Cohen, M.,** Shemi, N., Eitan, R., Kamenetsky, R., Philosoph-Hadas, S., and Meir, S. (2008).
Seasonal shipment damage in 'Safari Sunset' branches: Causes and possible solutions.
Olam Haperach, August-September Issue: 56-60.

7. **Cohen, M.,** Meir, S., Philosoph-Hadas, S., Salim, S., Levi, M., Zilber, A., Shemi, N., Eitan, R. and Kamenetsky, R. (2009).
Early flowering in Peony.
Olam Haperach, April-May Issue: 42-46.

8. Philosoph-Hadas, S., Perzelan, J., Rosenberger, I., Droby, S., **Cohen, M.** and Meir, S. (2009).
Leucadendron 'Safari Sunset': Developing treatment for improving branch quality following prolonged sea transport.
Olam Haperach, October-November Issue: 40-44.

5. Abstracts

1. **Cohen, M.**, Zemach, H., Ben-Jaacov, J. and Kamenetsky, R. (2008).
Annual development of 'Safari Sunset': florogenesis and resource allocation.
13th International Protea Association Conference & IXth International Protea Working Group Symposium. Stellenbosch, South Africa

2. Philosoph-Hadas, S., Rosenberger I., Perzelan, Y., **Cohen, M.** and Meir S. (2009). *Leucadendron* 'Safari Sunset': Carbohydrates supply prevents leaf

blackening in cut branches during prolonged sea shipment.
6th International postharvest symposium. Antalya, Turkey**,** P.39, S7-0.3/PPH/PD 567-OR

3. Philosoph-Hadas, S., Rosenberger I., Perzelan, Y., Zemach, H., Kamenetzky, R., **Cohen, M.** and Meir S. (2010).
Leucadendron 'Safari Sunset': Prevention of leaf blackening in cut branches during prolonged sea shipment using improved fertigation regime and carbohydrate supply after harvest.
The 28th International Horticultural Congress (IHC 2010), Lisboa, Portugal; Abstract no. S17.012, p. 743.

4. **Cohen, M**., Lahav, T., Luria, G., Shemi, N., Levi, M. and Eitan, R. (2012).
Development of new Lilium crops for commercial production in Israel.
11th international symposium on flower bulbs and herbaceous perennials Antalya, Turkey

6. Final research reports (only of major, several year-long projects)

1. Cohen, M., Gera, A. Rakah, B., Cohen, J., Levi, M., Barchai, O. and Ruso, R., (2000).
Development of an economic protocol to minimize virus spread in lily propagation fields.
Final Report to The Chief Scientist of The Ministry of Agriculture Fund. (Grant No. 640-0018-98). 17 pages.

2. Cohen, M., Ben-Yaakov, J. Shemi, N., Levi, M. and Steinmetz, Y., (2001).
Introduction of Leucadendron (Proteaceae).
Final Report to The Chief Scientist of The Ministry of Agriculture Fund. (Grant No. 596-0167-00). 9 pages.

3. Kamenetsky, R., Barzilay, A., Halevy, A., Erez, A., Ran, Y., Levi, M., **Cohen, M.,** Ben-Nun, Z. and Yablovitz, Z., (2001).
Dormancy and growth in Peony.
Final Report to The Chief Scientist of The Ministry of Agriculture Fund. (Grant No. 256-0547-99). 17 pages.

4. Ran, Y., Halevy, A., Shlomo, E., Meir, S., Philosoph-Hadas, S., Snir, A. and **Cohen, M.,** (2001).
Production of Flowering Branches of Deciduous Trees, as Cut Flowers
Final Report to The Chief Scientist of The Ministry of Agriculture Fund. (Grant No. 596-0166-00). 8 pages.

5. Kamenetsky, R., **Cohen, M.,** Luria, G., Ben Uliel, S., Levi, M., Barzilay, A., and Beizerman, M. (2003).
Evaluation of geophttes from Kazakhstan and central Asia in Israel.
Final Report to The Chief Scientist of The Ministry of Agriculture Fund. (Grant No. 256-0604-01). 13 pages.

6. Kamenetsky, R., **Cohen, M.,** Zemach, H., Ben Uliel, S. and Levi, M., (2003).

Development of system for tulip bulb production for export.
Final Report to The Chief Scientist of The Ministry of Agriculture Fund.
(Grant No. 256-0605-01). 10 pages.

7. **Cohen, M.,** Luria, G., Yasur, E., Shemi, N. and Tel Or, E., (2004).
Development of a water saving technology for geophytes and riverbank plants in the Hulla valley.
Final Report to The Chief Scientist of The Ministry of Agriculture Fund.
(Grant No. 596-0218-02). 14 pages.

8. **Cohen, M.,** Kamenetsky, R., Luria, G., Ben Uliel, S. and Levi, M.,(2004).
Introduction of geophytes from natural populations of South Africa.
Final Report to The Chief Scientist of The Ministry of Agriculture Fund.
(Grant No. 596-217-02). 16 pages.

9. Levi, M., **Cohen, M.,** David, N., Steinmetz, Y., Shlomo, E., Silber, A., Asulin, S., Levkovitz, I. and Suriano, S., (2004).
Respond of Leucadendron plants to irrigation rate and frequency in Northern Israel.
Final Report to The Chief Scientist of The Ministry of Agriculture Fund.
(Grant No. 640-0025-02). 11 pages.

10. Kamenetsky, R., Barzilay, A., Halevy, A., Riov, Y., Ran, A., Levi, M., **Cohen, M.,** Ben-Nun, Z., Bruner, M., Yablovitz, Z., Robinson, M., Zurel, A, and Forer, Y., (2004).
Peony: physiology and cutting propagation.
Final Report to The Chief Scientist of The Ministry of Agriculture Fund.
(Grant No. 256-0625-03). 20 pages.

11. **Cohen, M.,** Riov, Y., Silber, A., Shlomo, E., Weiss, N., Levi, M. and Steinmetz, Y., (2005).
Developemnt of the 'Safari Sunset' crop for a high and qualitative yield.
Final Report to The Chief Scientist of The Ministry of Agriculture Fund.
(Grant No. 596-0244-03). 12 pages.

12. Silber, A., Asulin, S., Cohen, Y., Levkovitz, I.,Suriano, S., Levi, M., **Cohen, M.,** David, N., Shlomo, E. and Steinmetz, Y. (2005).
Water and fertilization management of ‘Safari Sunset’ under deficit irrigation.
Final Report to The Chief Scientist of The Ministry of Agriculture Fund.
(Grant No. 301-0382-03). 19 pages.

13. Zion, B., Weisbloom, A., Regev, R., Reshef, L., Lev, M., Levi, M., **Cohen, M.,** Steinmetz, Y. and Ben-Yaakov, J. (2005).
Harvesting systems for Safari Sunset flowers.
Final Report to The Chief Scientist of The Ministry of Agriculture Fund.
(Grant No. 459-0373-03). 19 pages.

14. **Cohen, M.,** Shlomo, E., Meir, S. and Philosoph-Hadas, S. (2007).
Introduction of new woody crops, with chilling demands, for diversifying the products' basket, of the flowering plantation, in the Galilee & Golan Heights.

Final Report to The Chief Scientist of The Ministry of Agriculture Fund. (Grant No. 596-0308-05). 22 pages.

15. Cohen, M., Riov, Y., Silber, A., Kamenetsky, R., Levi, M., Eran, D. and Steinmetz, Y., (2007).
Factors that involve in the ripening of 'Safari Sunset' stems.
Final Report to The Chief Scientist of The Ministry of Agriculture Fund. (Grant No. 596-0287-05). 11 pages.

16. Meir, S., Philosoph-Hadas, S., Salim, S., Perzelan, Y., Kamenetsky, R., Barzilay, A., **Cohen, M.**, Ran, Y., Finkelshtein, S. and Silber, A., (2007).
Peony: Improving cut flowers quality by examining the effects of growth conditions and developing postharvest treatments.
Final Report to The Chief Scientist of The Ministry of Agriculture Fund. (Grant No. 430-0007-06). 19 pages.

17. Cohen, M., Riov, Y., Silber, A., Shlomo, E., Spiegei, E., Steinmetz, Y. and Eran, D., (2008).
Development of a protocol for new cultivars and clones of Leucadendron as cut flower and pot plant products.
Final Report to The Chief Scientist of The Ministry of Agriculture Fund. (Grant No. 596-0321-06). 16 pages.

18. Cohen, M., Luria, G., Lahav, T., and Levi, M.(2009).
Development of new cultivars of Lilium longiflorum.
Final Report to The Chief Scientist of The Ministry of Agriculture Fund. (Grant No. 596-0341-07). 31 pages.

19. Cohen, M., Luria, G., Shemi, N., and Levi, M., (2009).
Production of Iris rhizomes as a new agricultural activity in the Hula valley.*Final Report to The Chief Scientist of The Ministry of Agriculture Fund.* (Grant No. 596-0318-07). 24 pages.

20. Kamenetsky, R., **Cohen, M.,** Silber, A., Levi, M., Meir, S., Philosoph-Hadas, S., Luria, G. and Steinmetz, Y., (2009).
Growing Peony as perennial crop: environmental effect of the assimilate translocation and quality of underground crowns and flowers.
Final Report to The Chief Scientist of The Ministry of Agriculture Fund. (Grant No. 256-0713-07). 24 pages.

21. Gamliel, A., Benihes, M., Kaminetzky, R., Silber, A., Steinmetz, Y., Levi, M. and **Cohen, M.,** (2010).
Root and crown pathogens of Paeonia lactiflora and their management.
Final Report to The Chief Scientist of The Ministry of Agriculture Fund. (Grant No. 459-4302-08). 19 pages.

22. Cohen, M., Kamenetsky, R., Philosoph-Hadas, S., Meir, S., Rosenberger, I., Perzelan, Y. and Levy, M. (2011),

Understanding the factors responsible for leaf blackaning and dessication in 'Safari Sunset' branches during transport and developing means to prevent them.
Final Report to The Chief Scientist of The Ministry of Agriculture Fund. (Grant No. 596-0359-10). 30 pages.

23. Philosoph-Hadas, S., Meir, S., **Cohen, M.**, Kamenetsky, R., Zemach, H. (2012). Leucadendron 'Safari Sunset': Optimization of pre- and postharvest management for quality improvement of the cut branches following prolonged sea transport
Final Report to The IPA (International Protea Association) Fund. (Grant No. 430-0333-10). 3 pages.

Part III: LIST OF MAJOR ACHIEVEMENTS

Peony – from research to high economic crop production

Development of peony as new cut flowers was initiated in Northern R&D in the early 1990-s, and from the beginning of this research I actively participated in scientific projects, market research and surveys, numerous meetings and professional tours in Israel and abroad, scientific conferences and discussions on development of this important ornamental crop. I was involved with the development of peonies as off season cut flowers from the very initial stages until now, in close collaboration with Prof. A. Halevy and Prof. R. Kamenetsky.

Understanding the annual physiological cycle and especially dormancy and cultivar dependent chilling requirements led to development of 3 growth strategies, which resulted in earlier marketing of cut flowers from Israel.

After the starting of commercial plantations we went on with research regarding irrigation and fertilization, plant protection, improvement of satisfying chilling demands by means of passive energy and production of Peonies as pot plants.

Today, the Peony, planted on 500 dunams, became the most profitable flower crop in Israel.

Production of *Leucadendron.* 'Safari Sunset'

L. 'Safari Sunset' became a major crop of the flowers production activity in the northern region of Israel from mid 1990-s. I was involved with research issues as principal investigator and as cooperating researcher. Since 'Safari Sunset' branches are marketed for the ornamental value of their floral bracts and leaves (and not for the flowers which do not posses ornamental value), my research led to better understanding of the physiological relationship between inflorescence, bracts and leaves. This understanding enabled to develop a protocol for pruning, understanding the factors responsible for leaf blackening and improving fertilization regime. 'Safari Sunset' production area developed from 10 to 2500 dunams since 1995 through 2007. Due to commercial difficulties and world-wide economical crisis, production

area decreased to 300 dunams in 2010. Nowadays there are signs of recovery in the markets.

Geophytes

I was involved in development of several geophytes crops aiming to bulbs production or to cut flowers and pot plant production. Main topics were:

Lilium: - vegetative propagation, development of a protocol to minimize virus spread in propagation plots, development of new cultivars (*L. longiflorum and L. formolongi*)

Zantedeschia (Calla lily) – propagation via tissue culture, flowers production, annual life cycle, plant protection (mainly the bacterial disease *Erwinia crotovora*).

Tulips – production of bulbs capable to flower in November and December before Dutch bulbs arrive at the markets.

Iris – production of rhizomes in the wet land of the Hula valley.

Introduction of geophytes from central Asia and South Africa. – I was involved in import, testing and evaluation of about 30 species.

Dicentra and Helleborus – currently I am involved in development of these plants as potted plants.