

Part I: CURRICULUM VITAE

1. Personal

Born: 1978, Israel.

Marital status: Married + 2

Army service: 1996-2001

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2. University Education and Additional Training

Dates	Description
2002 – 2006	B.Sc. in Animal Sciences at the Hebrew University of Jerusalem, The Robert H. Smith Faculty of Agriculture.
2006 – 2010	M.Sc. in Animal Sciences at the Hebrew University of Jerusalem, The Robert H. Smith Faculty of Agriculture. Title of thesis: The influence of period in lactation on the energy expenditure and the efficiency characters in Holstein cows. Supervision by: Dr Arie Brosh, Beef Cattle section, Newe-Ya'ar Research Center, ARO. Supervision by: Prof. Arieli Amichai, Department of Animal Sciences, Hebrew University of Jerusalem.
2011 – 2016	Ph.D. in Animal Sciences at the University of Haifa, Faculty of Natural Sciences. Title of thesis: Identification of individual efficiency characters in Holstein cows and bulls and the effect of photoperiod on production efficiency. Supervision by: Dr Arie Brosh, Beef Cattle section, Newe-Ya'ar Research Center, ARO. Supervision by: Prof. Abraham Haim, Faculty of Natural Sciences University of Haifa.

3. Positions Held and Academic Status

Dates	Description
2008-2011	Research Assistant in the dairy Cattle section, The Volcani Center, ARO.
2011-2013	Teaching Assistant at the Biology Department at the University of Haifa. Tutored the courses "Animal Physiology" and "Vertebrate Zoology".
2014-to date	Teaching the course "Vertebrate Zoology" at the Biology Department at the University of Haifa.
2015-to date	Teaching the course "Beef cattle management" at the Koret School of Veterinary Medicine, at the Hebrew University.
2016	Scientist at MIGAL (Grade C)
2016 -to date	Regional Researcher (Animal science) for north of Israel at MIGAL and Northern R&D.

4. Training / Teaching Experience

Academic Contribution:

Dates	Description
2014 to date	Lecturer at the Biology Department at the University of Haifa Title of the course: "Vertebrate Zoology"
2015 to date	Lecturer at the Koret School of Veterinary Medicine, in the Faculty of Agriculture, Food and Environment of the Hebrew University of Jerusalem. Title of the course: "Beef cattle management"

5. Active Participation in Meetings

A. International:

Date	Title of the Meeting	Place	Role
2014	The 30th International Symposium of Harnessing the Ecology and Physiology of Herbivores (ISNH/ISRP),	Canberra, Australia	Posters (3) and peer reviewed papers (3)

B. National:

Date	Title of the Meeting	Role
2008	The 20th Annual Meeting of Cattle Sciences, Jerusalem, Israel.	Abstract and oral presentation
2010	The 22th Annual Meeting of Cattle Sciences, Jerusalem, Israel.	Abstract and oral presentation
2011	The 23th Annual Meeting of Cattle Sciences, Jerusalem, Israel.	Abstract and oral presentation
2013	The 25th Annual Meeting of Cattle Sciences, Jerusalem, Israel.	Abstract and oral presentation
2014	The 26th Annual Meeting of Cattle Sciences, Ashkelon, Israel.	Abstract and oral presentation
2015	The 27th Annual Meeting of Cattle Sciences, Jerusalem, Israel.	Abstract and oral presentation

6. Awards

Dates	Description
2008	The 20th Annual Meeting of Cattle Sciences, Jerusalem, Israel. Award for Excellence.
2009	The Elie Peles scholarship, Afikim, Israel.
2009	The Yossi Leffer scholarship, Baran Industries, Israel.
2010	The 22th Annual Meeting of Cattle Sciences, Jerusalem, Israel. Award for Excellence.
2011	The 23th Annual Meeting of Cattle Sciences, Jerusalem, Israel. Award for Excellence.
2013	The Annual Meeting of the Valley Farmers Center LTD, Israel. Award for Excellence.
2013	The Jewish Agency for Israel and UGA Federation of New York scholarship, Israel.
2014	The 26th Annual Meeting of Cattle Sciences, Jerusalem, Israel. Award for Excellence.

Part II: LIST OF PUBLICATIONS

<u>Marks:</u>	
S	Student, technician or post-doc under my supervision
*	Equal contribution

1. Articles in Reviewed Journals

1. **Asher**, A., A. Shabtay, A. Haim, Y. Aharoni, J. Miron, G. Adin, A. Tamir, A. Arieli, I. Halachmi, U. Moallem, A. Orlov, and A. Brosh (2014). Time required determining performance variables and production efficiency of lactating dairy cows. *Journal of Dairy Science*. 97:4340–4353.
2. **Asher** A, Shabtay A, Brosh A, Eitam H, Agmon R, Zubidat AE, Cohen-Zinder M and Haim A. (2015). "Chrono-functional milk": The difference between melatonin concentrations in night-milk versus day-milk under different night illumination conditions. *Chronobiol. Int.* 32(10), pp.1409-1416.
3. Miron, J., G. Adin, R. Solomon, M. Nikbachat, A. Zenou, E. Yosef, A. Brosh, A. Shabtay, **A. Asher**, H. Gacitua, M. Kaima, S. Yaacobi, Y. Portnik, S.J. Mabjeesh. Effects of feeding cows in early lactation with soy hulls as partial forage replacement on heat production, retained energy and performance. *Animal Feed Science and Technology* 155 (2010) 9-17.
4. Eitam, H., R. Agmon, **A. Asher**, A. Brosh, A. Orlov, I. Izhaki and A. Shabtay (2012). Protein deprivation attenuates Hsp and proteasome expression in fat tissue. *Cell Stress & Chaperones* 17: 339-347.
5. Halachmi I., A. Shabtay, A. **Asher**, R. Agmon, A. Orlov, M. Mazaribe, A. Zuabi, and A. Brosh (2011). Intake Based Milk Allocation Improves Health and Growth of Calves. *The Open Agriculture Journal*, 2011. 5: p. 37-45.

2. Articles in Symposia Proceedings in Hebrew

1. **Asher**, A., J. Miron, G. Adin, U. Moallem, E. Zenou, A. Shabtay, A. Arieli, I. Halachmi, Y. Aharoni, A. Brosh. 2008. Production efficiency of lactated dairy cows: comparison of tables calculated vs. measured in-vivo ME concentration values. The 20th Annual Meeting of Cattle Sciences, Renaissance Hotel, Jerusalem, Israel, pp. 131-132. Abstract and oral presentation.

2. **Asher A.**, J. Miron, G. Adin , A. Arieli , A. Shabtay, I. Halachmi , U. Moallem, Y. Aharoni , A. Brosh . 2010. The influence of week of lactation on production level and the energy balance of the Israeli dairy cow. The 22th Annual Meeting of Cattle Sciences, Renaissance Hotel, Jerusalem, Israel, pp. 73-74. Abstract and oral presentation.
3. **Asher A.**, J. Miron, G. Adin , A. Arieli , A. Shabtay, I. Halachmi , U. Moallem, Y. Aharoni , A. Brosh. 2011. Identification of individual efficiency characters in Holstein cows and the effect of photoperiod on production efficiency. The 23th Annual Meeting of Cattle Sciences, Renaissance Hotel, Jerusalem, Israel, pp. 68-69. Abstract and oral presentation.
4. **Asher A.**, A. Brosh , A. Haim, Y. Aharoni, J. Miron, R. Agmon, I. Halachmi , A. Orlov, A. Shabtay . 2013. Identification of individual efficiency characters in Holstein growing calves. The 25th Annual Meeting of Cattle Sciences, Renaissance Hotel, Jerusalem, Israel, pp. 126-127. Abstract and oral presentation.
5. **Asher A.**, A. Shabtay, A. Haim, Y. Aharoni, J. Miron, R. Agmon, I. Halachmi , A. Orlov, and A. Brosh .2014. The Influence of Diet and Age on Ranking of Growing Calves According to their Feed Efficiency. The 26th Annual Meeting of Cattle Sciences, Leonardo Hotel, Ashkelon, Israel, pp. 126. Abstract and oral presentation.
6. **Asher A.**, A. Haim, R. Agmon, I. Halachmi, A. Orlov, M. Cohen-Zinder, Brosh and A. Shabtay. 2014. The Influence of Artificial light at night on performance, feed efficiency and behavior of suckling Holstein calves. The 27th Annual Meeting of Cattle Sciences, Leonardo Hotel, Ashkelon, Israel, pp. 126. Abstract and oral presentation.

7. Articles in international Symposia Proceedings

1. **Asher**, A. Shabtay, A. Haim, Y. Aharoni , J. Miron, G. Adin, A. Tamir , A. Arieli , I. Halachmi , U. Moallem, A. Orlov and A. Brosh . 2014. Time required determining performance variables and production efficiency of lactating dairy cows. The 30th International Symposium of Harnessing the Ecology and Physiology of Herbivores (ISNH/ISRP), Canberra, Australia, September 8 to 12, Abstract 137.
2. **Asher, A.**, A. Shabtay, A. Haim, Y. Aharoni , J. Miron, G. Adin, A. Tamir , A. Arieli , I. Halachmi , U. Moallem, A. Orlov and A. Brosh . Heat Production and Energy Balance of Holstein Cows throughout Lactation. 2014. The 30th International Symposium of Harnessing the Ecology and Physiology of Herbivores (ISNH/ISRP), Canberra, Australia, September 8 to 12, Abstract 138.
3. **Asher, A.** , A. Shabtay, A. Haim, Y. Aharoni, J. Miron, R. Agmon, I. Halachmi , A. Orlov, and A. Brosh . 2014. The Influence of Diet and Age on Ranking of Growing Calves According to their Feed Efficiency. The 30th International Symposium of

Harnessing the Ecology and Physiology of Herbivores (ISNH/ISRP), Canberra, Australia, September 8 to 12, Abstract 195.

4. Brosh, A., **Asher, A.**, Miron, J., Shabtay, A., Adin, G., Moallem, U., Aharoni, Y., Arieli, A. 2009. Residual Feed Intake and Heat Production of Holstein Cows throughout Lactation. Abstract and oral presentation, 2009 Joint ADSA-CSAS-ASAS Annual Meeting, Montreal Quebec, Canada July 12-16, Abstract 698, Format Oral presentation
5. Brosh, A., **A. Asher**, J. Miron, A. Shabtay, G. Adin, U. Moallem, E. Tahar, S. Abboud and Y. Aharoni. 2009. Heat production of dairy cows under acute and chronic heat load. The 11th International Symposium on Ruminant Physiology (ISRP), Clermont-Ferrand, France, September 6 to 9, 2009.

Part III: DESCRIPTION OF MAJOR ACHIEVEMENTS

1. Contribution to Agricultural Sciences

The research studies based on my projects on cattle efficiency are exclusive in their way of measuring all the individual energy components of the efficiency values under a large variety of conditions that represent the yearly cycle of metrological changes, age changes, diet changes and the effect of photoperiod, including an innovative study of the effect of artificial light on performance and on efficiency.

2. Achievements in Applied Research

1. Applications in the dairy cattle industry:

The experiment of individual identification of lactating cows' efficiency, Reveals that by measuring the Recovered Energy and Heat Production we can calculate a cow's production efficiency without the need for a direct and individual measurement of food intake. This cost-effective method opens a new practical way to select domestic ruminants for greater efficiency.

Another important application of this experiment is that quantifying the energetic efficiency of dairy cows using HP has revealed that substantial changes occur as the weeks of lactation advance. Thus it is critical to measure feed efficiency at a standardized stage of lactation.

The experiment of individual identification of cattle efficiency also revealed behavior parameters that can explain efficiency values and may be used as markers for identifying the most efficient and most inefficient cattle for future selection for improved production efficiencies. The importance of selection for greater efficiency in cattle is strongly supported by another finding of this project, which reports that there were 30% individual differences among Holstein dairy cows' efficiencies without any effect on the cows' production rate.

2. Application for the beef cattle industry:

The definition of efficiency is a ratio of outputs to inputs. Businesses use measures of efficiency to establish benchmarks and goals for production and finance, which may result in decisions that increase productivity without increasing costs of production. There are measures of efficiency that can be used to optimize biological productivity and/or economical profitability in beef production enterprises. One of these is feed efficiency.

Applications of feed efficiency warrant consideration in the beef industry because 55 to 75% of the total costs associated with beef cattle production are feed costs. For instance, a 5% improvement in feed efficiency could have an economic impact four times greater than a 5% increase in average daily weight gain. In addition, feedlot studies have demonstrated that a 10%

improvement in average daily gain (ADG) improved profitability by 18%; whereas, a 10% improvement in feed efficiency returned a 43% increase in profits. Thus, efforts aimed at improving the efficiency of feed/forage use will have a large impact on reducing input costs associated with beef production. Our study results of investigating the influence of diet and Age on ranking of growing calves according to their feed efficiency indicates that feed efficiency depends neither on the diet consumed by the animal nor on its age. This constitutes significant input for the beef industries, because it makes the selection of domestic ruminants for greater efficiency more practical and enables selection at an early stage of life.