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# the Dairy Industry in Israel 2012

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Israeli Company for Artificial  
Insemination & Breeding Ltd.



Israel Cattle Breeders  
Association



Mutual Society for Clinical  
Veterinary Services

# The Dairy Industry in Israel 2012

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On the cover:  
Thanks to Yoav Tzur for the photo  
of "Zehava" – the beautiful cow in  
Moshav Beer Tuvia .

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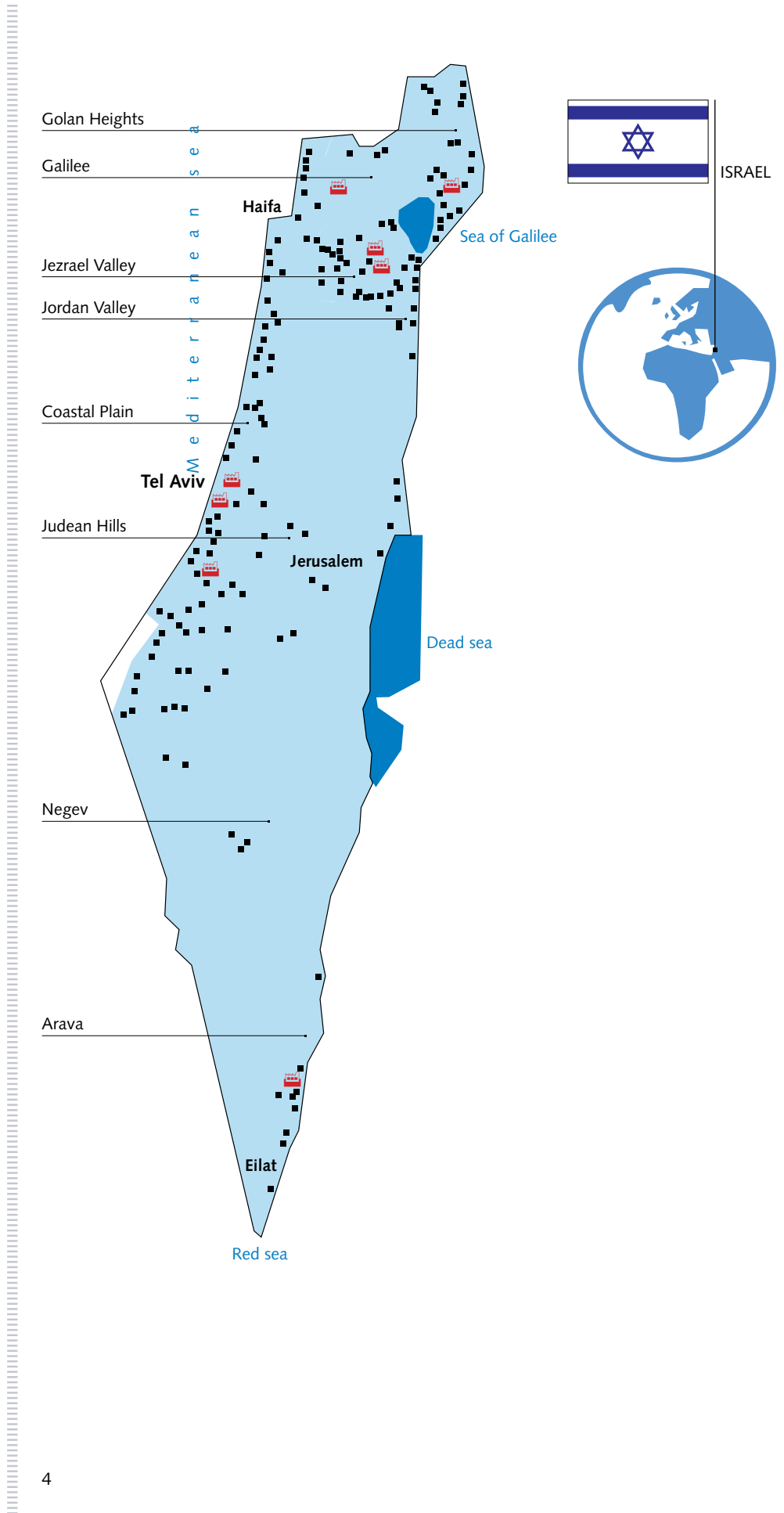
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**Map of the Dairy Industry  
in Israel –  
Main Dairy Plants and  
Dairy Farms**

Dairy Plants   
Dairy Farms 



## The Dairy Industry in Israel

The Dairy Industry is one of the leading sectors in Israel's agriculture, is spread across the country, and counts as one of the major agriculture activity in the rural parts of the country.

It supplies about 80% of the Israeli domestic demand for milk and dairy products, while the rest is supplied by imports.

The annual production is of about 1.3 billion liters of cow milk, and the value of all processed dairy products reaches 2.6 billion US\$.

The Israeli supermarket shelves are bursting with a variety of over 1,000 healthy, innovative and tasty dairy products which can be compared with the state-of-the-art dairy industries worldwide.

Milk is produced by 940 farms, countrywide. The national dairy herd comprises of about 120,000 milking cows of the Israeli-Holstein breed. The breed has been developed by the Israeli Genetic Improvement system. The fact that the common Israeli milking cow has been selected from local breeding stock throughout generations brings it to be well adapted to the harsh Israeli unique environment: long and hot summers and endemic diseases.

The Israeli Herd-book (DHI) receives and processes information from the official milk production control system, which includes 90% of the dairy herd in the country.

In addition to production data, the Israeli Herd-book incorporates information from the Breeding system and from the Society for Veterinary services – "HaChaklait". Such comprehensive structure of the Israeli Herd-book, provides farmers with useful multi-disciplinary information, which is used for data-based management analyses and

decision-making processes. Accurate information combined with the professional skills of the Israeli dairy farmers has led to outstanding world-scale achievements. Indeed, the Israeli cow has the highest national milk production (cow/year) and milk solids yields in the world. In 2012, the average annual milk yield per cow was 11,706kg, with 3.24% of protein (379 kg) and 3.70% of fat (433 kg).

National per-capita consumption stands on 176 kg in fluid milk equivalent basis, and is on rising for the last few years. As in other parts of the world, the Israeli consumer is becoming more price conscious, and the industry is challenged with the need to provide the same high quality products with lower price levels.

In March 2011 Israeli Parliament (Knesset) has voted on behalf of a "Milk Law".

The core issue the law deals with, is anchoring the rights of all entities involved in the dairy industry, and particularly the dairy farmers. It determines the quota production system and defines the target price to be paid to raw milk producers.

This is an historic step for the local dairy farming, and it well might be a unique legislative framework worldwide – establishing by state law the fair game rules between all parts involved in the dairy industry, plus ensuring and formulating a minimum target price for raw milk.

We are pleased to present you with this summary of the Israeli Dairy Industry for 2012 and hope this will shed light on how the Israeli Dairy Farm has become known as a source of knowledge and pride.

Sincerely,



**Yaacov Bachar**  
Israel Cattle Breeders Association  
General Manager

# The Agricultural Sector in Israel

Rachel Borushek

Israel Farmers' Federation [rachel\_b@mail.netvision.net.il]

## Economic and financial data of Israel and its agricultural sector

(1 US\$ = 3.86 NIS)

Table 1.1

Population	7.91 million inhab.
GDP per cápita	117,430 NIS =31,330 US\$
GDP of Agricultural Sector	11.89 NIS Billions = 3.1 US\$ Billions
Share of Agriculture in National GDP	1.3%
Share of Agriculture in the Business Sector GDP	1.8%
Direct Employment in Agriculture as share of National Labor Force	2.0%
Self-sufficiency of Agricultural Products	80.0%

## Marketing value of agricultural products. Value as received by producer (NIS million)

(1 US\$ = 3.58 NIS)

Table 1.2

Crops	17,370	60%
Livestock and livestock products	11,580	40%
Thereof raw milk	2,983	10%
<b>TOTAL</b>	<b>28,950</b>	<b>100%</b>

Israel's agricultural sector is characterized by an intensive production system, which stems from the need to overcome the scarcity of natural resources, particularly water, land and labor.

Half of arable land is irrigated. Israel is unique amongst developed countries in that land and water resources are nearly all state-owned. Growing labour productivity was a key contributor to the almost two-fold increase in total factor productivity in agriculture in 1990- 2012, much stronger than in any other sector of the Israeli economy. The agricultural sector's high level of development is due to the close cooperation and interaction among scientists, extension advisers, farmers, and agriculture-related industries.

These four elements have joined together to promote advanced technologies in all agricultural branches. The result is modern agriculture in a country, half of which is defined as desert.

Total agricultural produce in 2012 accounted for 1.6% of the GDP. Despite the decrease in the number of farmers' and agriculture's share in the GDP, agriculture plays a significant role as a major food supplier to the local market and is an important factor in Israeli export.

Some 60,000 people were directly employed in agriculture in 2012. This number represents 2.3% of the country's active labor force.

Over the last two decades, there was a strong increase in the number of foreign workers employed in the Israeli agriculture. Their total number and allocation are strictly regulated by the government, which is planning to reduce the number of working permits allocated to the agricultural sector from 25,900 in 2008 to 18,900 by 2015. As compensation, farmers will be offered investment support over 56 years (grants up to 40% of investment) for replacing labor with machinery.

# Dairy Farming in Israel

**No. of dairy farms, by farm type, and average annual milk quota per farm (x 1,000 ltrs.)**

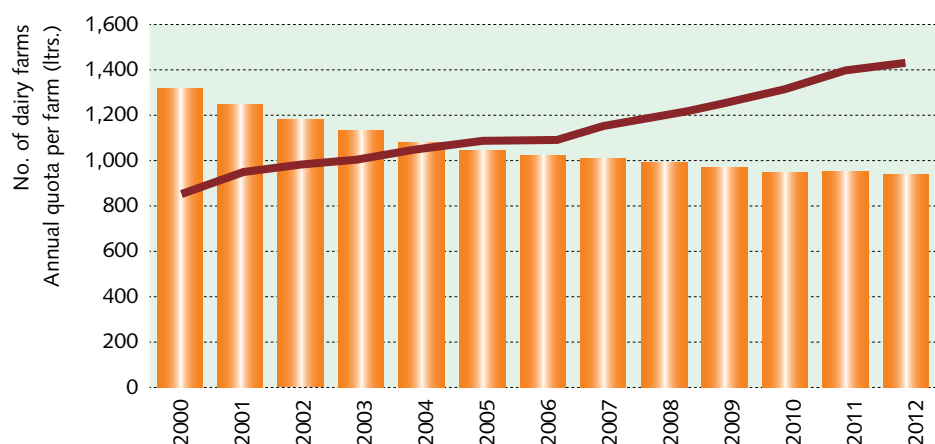
Table 1.3

	2005	2006	2007	2008	2009	2010	2011	2012
<b>Family farms (Moshav)</b>								
Number	855	843	830	811	787	774	775	762
Average quota (x 1,000 ltrs.)	560	555	587	648	641	672	715	732
<b>Cooperative farms (Kibbutz)</b>								
Number	176	167	165	165	165	163	163	163
Average quota (x 1,000 ltrs.)	3,747	3,859	4,156	4,451	4,241	4,408	4,728	4,745
<b>Agric. school farms</b>								
Number	16	15	15	15	15	15	15	15
Average quota (x 1,000 ltrs.)	746	781	810	866	848	865	906	889
<b>Total</b>								
Number of farms	1,047	1,025	1,010	991	967	952	953	940
Average quota (x 1,000 ltrs.)	1,098	1,096	1,174	1,285	1,258	1,315	1,404	1,430

**Number of dairy farms and average annual milk quota per farm, by year**

Fig. 1.1

No. of dairy farms —  
Average annual quota per farm —



## Types of Settlement

Much of Israel's agriculture is based on cooperative settlements, which were developed in the early 20th century. The Kibbutz is a large collective production unit. Kibbutz members jointly own the means of production and share social and economic activities. At present, most of the Kibbutz income comes from industrial enterprises owned by the collective unit. Another type of settlement is the Moshav, which is based on individual farms yet organized as a cooperative society. The residents in both types of settlements are provided with a package of municipal services. The Kibbutz and the Moshav currently account for 83% of the country's agricultural produce.

In addition to the Jewish agricultural sector, Arab villages are located in Israel's rural areas. These villages focus mainly on production of small livestock (sheep and goats), vegetables, field crops and olives.

All the Kibbutz dairy herds participate in the DHI system and represent 63% of the cows with recorded production. Their average milk yield in 2012 was 12,021 kg/cow/year and the average production of protein and fat was 834 kg/cow/year. Approximately 75% of the Moshav dairy herds participate in the DHI system and represent 37% of the cows with recorded production. Their average milk yield in 2012 was 11,155 kg/cow/year and the average production of protein and fat was 773 kg/cow/year.

# Annual Milk Quota and Milk Supply

Liron Tamir

Senior Economist, Israel Dairy Board [liron@is-d-b.co.il]

Milk production in Israel is carried out under a quota system, where the annual volume is divided into monthly quotas. Economic incentives have been set to encourage dairy farmers level-up production throughout months, so that milk supply to the industry is more uniform throughout the year.

The base price for the milk to the producer is agreed upon between government, farmers and dairy industries. The price reflects the average cost of production plus an agreed return for the farmers' labor and invested capital.

Cow milk – annual supply and quota (millions of ltrs.)

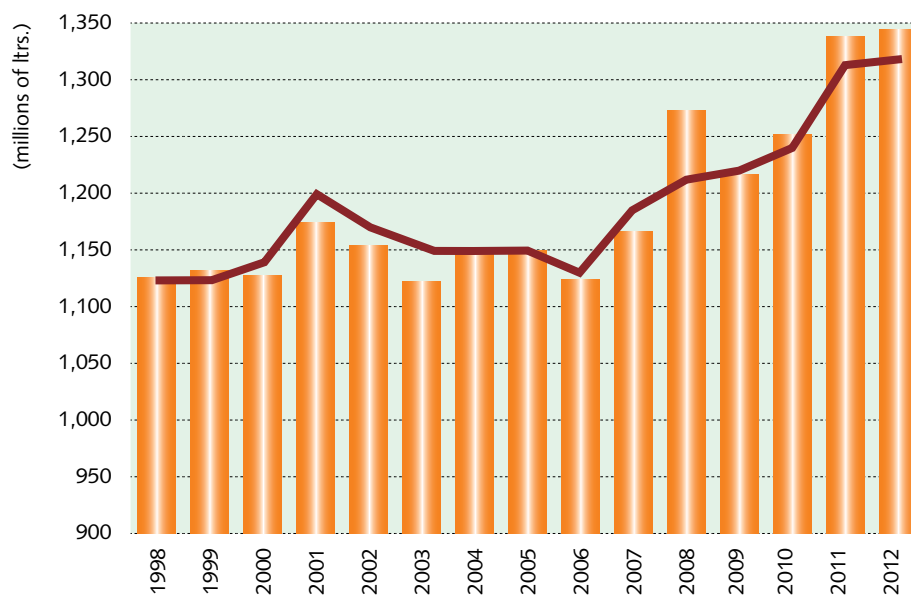
Table 2.1

Year	Milk supply (millions of ltrs.)	Milk quota (millions of ltrs.)
1999	1,132	1,124
2000	1,128	1,140
2001	1,174	1,200
2002	1,154	1,170
2003	1,122	1,150
2004	1,146	1,150
2005	1,150	1,150
2006	1,124	1,130
2007	1,166	1,185
2008	1,273	1,212
2009	1,217	1,220
2010	1,252	1,240
2011	1,338	1,313
2012	1,344	1,318

Cow milk – annual supply and quota (millions of ltrs.)

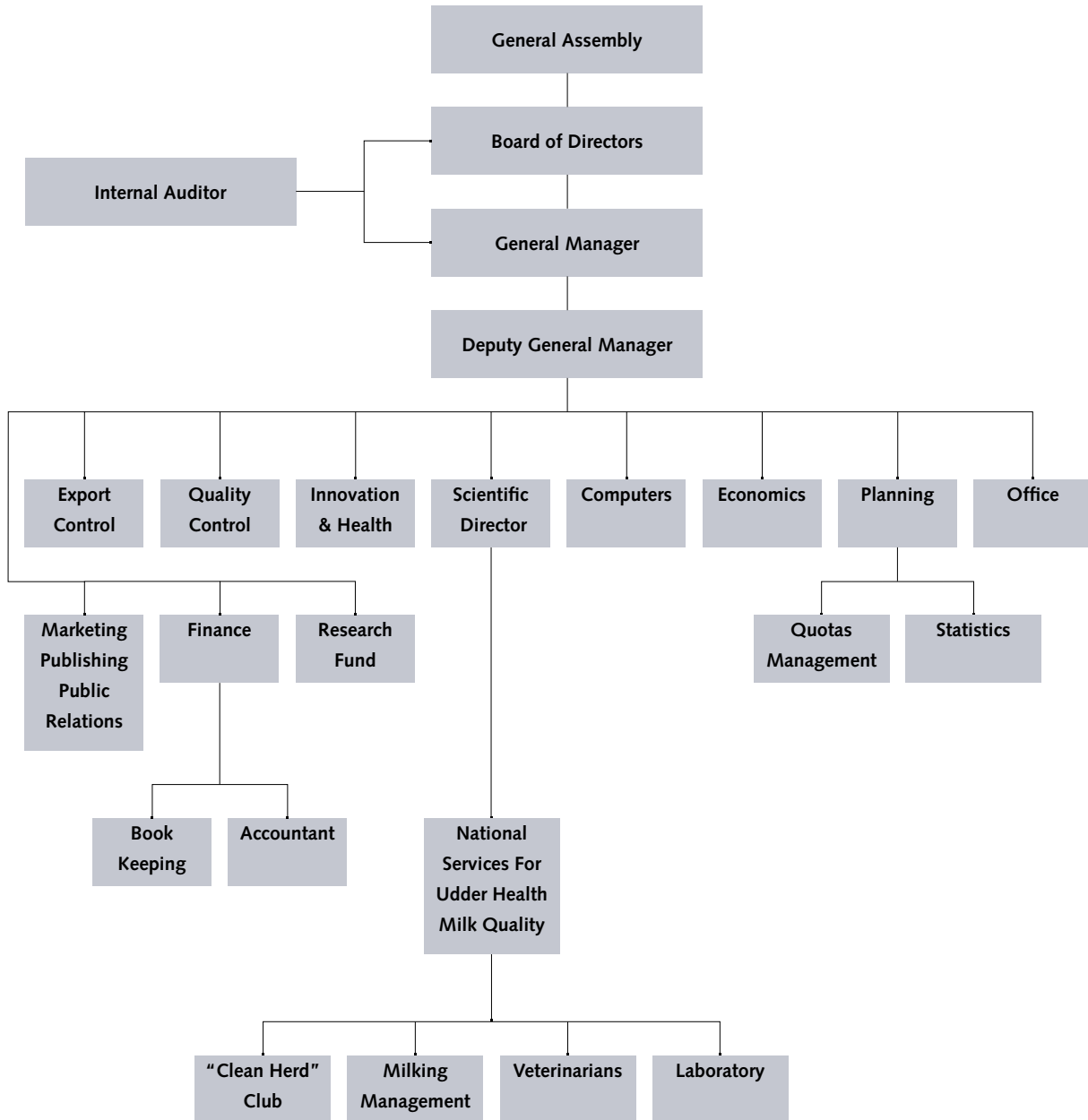
Fig. 2.1

Milk supply  
Milk quota





# Structure of the Israel Dairy Board



## Effective heat abatement in summer makes Israeli dairy sector more efficient, improve cows well-being and make them environment friendly

Dr. Israel Flamenbaum.....[israflam@inter.net.il]

The increase of recent years in the standard of living in developing countries has led to an increase in the demand for dairy products by their large populations. The increased demand for milk and the inability of world's dairy sectors to supply it, led to an increase in prices of international dairy commodities, like milk powders, butter and cheese. As a result of this situation, many developing countries have begun to develop their local dairy sectors for milk self-sufficiency. On the other hand, countries that have the potential for lower production costs, have recently expanded their dairy industries and their contribution in international commerce in dairy products.

Global warming and the constant increase in cow's level of production (more heat produced and need to be dissipated), bring the heat load in summer, to be a financial problem, which causes large losses to great part of the dairy sectors in the world, especially those located in warm

areas and make use of European breeds, under intensive production systems.

The purpose of this paper is to present to the readers, the required information about how heat stress negatively affect the high yielding cows, the optimal ways of deal with the problem, the expected improvement from properly installing and operating heat stress abatement means and the cost effectiveness of the process. Bringing this information to dairy producers in different continent, as well as dairy companies, professional supporting systems and government officials, will help enhancing world milk production, improve farms profitability and reduce seasonality in milk supply to the consumers, caused mainly due to climatic factors.

The data presented in this article have been studied during the last 30 years in Israel. The reason we started working on this item were the combination of warm and



humid climatic conditions we face in summer and the high yields obtained by our cows (actually, averaging 12,000 kg/cow, annually), which means, the generation of more heat to be dissipated to the atmosphere. I believe that the knowledge and experience gained in Israel and presented in this article will be beneficial to dairy farms in different parts of the world, facing similar problems under similar conditions

The optimal temperatures for the dairy cow range between -5 and 22 degrees Celsius. In warm and humid areas, the high yielding dairy cow will start suffering from "heat stress" even at temperatures below 20 degrees. "Heat stress" is a physiological and behavioral situation, caused by cow's inability to dissipate all the heat she generates to the environment. Readers should know that the amount of heat emitted by the high yielding cow equals to that emitted by 20 lamps of W100 each, or alternatively, by three hair dryers operating continuously. The inability to lose all the heat generated, leads, in the first stage, to the operation of "defense mechanism" designed to reduce heat production (by reducing activity and feed intake), and later on, in second stage, by trying to increase heat loss (by panting and increase blood flow to cow's surface). In both cases, cows face a reduction in energy availability, needed to support energy demand for milk production.

Under heat stress conditions, cows can't equilibrate their body temperature to a normal level (ranging 38 to 39 degrees Celsius). Having body temperatures above 39 degrees, cows are considered as "heat stressed". The intensity and duration of heat stress during the day, as well as number of hot days during the year, are in close relation with the degree of summer decline in cow's performance and production losses. Heat stress can cause a reduction of about 20% in cow's daily feed consumption and a decrease of more than 10% in feed efficiency (food to milk conversion rate). As a result of these effects, milk production is expected to decrease at least by 10% to 20%, as compared to that obtained in the winter. Summer heat stress negatively affect cow's annual yield. Cows from high yielding herds are expected to lose between 500 to 1500 kg annually, as compared to similar cows raised in temperate parts of the world. Milk fat and protein content are falling as well, amounting to 0.4 and 0.2 percent units respectively, in summer, as compared to winter conditions. In parallel, and as a result of the "stressful" conditions, cows are expected to have also higher somatic cells count in milk of about 100 000 units. Conception rate of cows inseminated

in the summer may drop considerably compared to that obtained in those inseminated during winter months. Cows inseminated in summer months reach less than 10% conception rate, significantly different from the 40-50%, reached in winter inseminations. The poor conception rate reached in the summer increase "calving interval" which reduce milk production efficiency and also, cause higher proportion of cows leaving the herd due to infertility, creating large gap in milk supply between seasons.

Intensive efforts were made in Israel, during the last thirty years to develop effective means for heat abatement. Emphasis was made to the development of cooling means which suit the climatic conditions and housing characteristics, trying to reach it in the lowest cost, in order to be economically justified.

There are two main methods for cooling cows in summer. One is the "direct cooling" system, where we cool the cows by evaporating water over cow's skin, using a combination of alternating wetting and forced ventilation. Direct cooling should cool the cow, without any impact on ambient temperature. The second method is the "indirect cooling", where cowshed barns are cooled through mechanically means. Usually, indirect cooling system requires closed and, if possible, isolated barns. There are various ways to provide indirect cooling to the cows, among them, air conditioning (a method was examined and found to be not economically feasible), fogging and evaporative pads. These means are usually effective in dry areas, where the relative humidity do not exceed 30%. In more humid areas, cooling the air by water evaporation is limited to noon and afternoon hours, where, relative humidity tends to be low.

Direct cooling is the most common cooling method in use in world dairy farms today. This is mainly due to the fact that this is a relatively cheap to install and operate and the fact that it can easily be adapted to different climate types. Cooling through a combination of wetting and forced ventilation was implemented, and tested for the first time in Israel in early eighties. Cooling can be provides in the "waiting yard" before and between milking sessions, in the feed line and in the resting area. In a study we realized in Israel in the mid-eighties, we found that, by directly cooling the cows several times a day, for 30 minutes each, we prevented the expected increase in cow's body temperature, keeping them, during all day time below 39 ° C. In the same time, body temperatures of non cooled cows reached more than 40 ° C for most of the day.

Due to their high heat production, resulting from the high milk yield, it is necessary to cool the cows in Israel for several cooling sessions per day. In a survey conducted few years ago in large dairy farms in Israel, we examined the relationship between the duration of cooling treatment provided to high yielding cows and their milk production and conception rate. Average daily milk production of cows from farms intensively cooling the cows was decreased by only 0.5 kg per cow/day as compared to that obtained in winter months (a decline of only 1.5%), while, in farms without cooling, a drop of 3.5 Kg per day was registered (a decline of more than 10%).

Data analysis of last survey, led us to the development of a new index called the "Summer to Winter (S:W) ratio index". This index is used to assess the degree of "damage" caused by summer heat stress conditions to cow's performance and the improvement obtained, when cooling means were used. Investigating the Israeli dairy sector, we found that actually, close to 35% of the dairy farms have a S:W ratio of 96% and above (farms that probably properly cool the cows in summer), but, near 25% of the farms have S:W ratio lower than 90%, (indicating that they lose more than 10% of their production potential in the summer, probably due to the fact that they are not cooling the cows at all, or not cooling them properly). On national level, we found marked improvement through the years, in Israeli cow's summer performance. From 1994 to 2004, average daily yield per cow in the winter months was increased by 2.3 kg (6%), whereas in summer, the average daily yield was increased by 7.3 kg (23%). Average S:W ratio for all Israeli dairy farms was increased during this period from 82% in 1994 to 96% in 2008, indicating a significant improvement in the performance of the Israeli cow, probably in consequence of properly adopting and implementing intensive cooling measures in the farms.

Cooling cows in the summer is required to late pregnancy heifers and cows, as well as to milking cows, in all stages of lactation. Priority must be given to cows after calving and early stage of lactation, expected to be in high production level. Cooling cows in summer, impact positively their milk production in the entire lactation. A large scale survey carried out recently in Israel, with thousands of cows included, showed that annual milk yield of cows, intensively cooled in summer, was by 800 kg higher than that of cows in farms with minimal cooling (11,800 and 11,000 kg/year, respectively), an addition of 6.5% in their annual production. By intensively cooling both late pregnancy

heifers and cows, as well as milking cows in all stages of lactation, we expect cow's annual milk production to increase by 10%, as compared to cows in farms which do not cool the cows.

### **Is cooling the cows cost effective?**

To give an answer to this important question, we have recently developed a special computer program that calculates the "cost – benefit" ratio and the additional net income per cow and farm, reached from effectively cooling the cows in summer. The software takes into account in one hand, the cost of cooling, which includes the investment on cooling equipment and its operation along the summer, as well as the additional feed, required to support the increase in milk production. On the other hand, it takes in account the extra income resulting from the additional milk production, the improvement in milk composition and quality, the improvement in feed efficiency and in reproductive and health traits, reached by cows, cooled in the summer. In the last five years, I calculated the cost effectiveness of cooling cows in Israel and in more than 20 countries in different parts of the world. Based on data provided by local dairy experts from every country, the additional annual income per cow and farm as calculated, assuming that cooling improves cow's annual yield and feed efficiency by 5% and 10%. The results of these studies are presented in table 1.

**Table 1**  
**Additional annual income per cow (U.S \$) as a result of the implementation of intensive cooling means in the summer in various countries around the world.**

Country / % improvement	5% improvement in milk and feed efficiency	10% improvement in milk and feed efficiency
Israel (Coast)*	170	340
USA (South)	150	345
México (North)	165	380
China (South)	140	310
Argentina (Santa Fe)	80	200
Peru (Coast)	145	240
Brazil (Minas Garais)	145	310

\* Under quota system

From the data described in table 1 we learn that, cooling the cows in summer is cost effective in all countries studied. Differently from the rest of the countries studied, the results from Israel are based on the production under “production quota” system, where, the benefit from cooling must be calculated differently from that in non quota system. In countries under production quota system, the economical benefit from cooling is expected to be lower as compared to countries without quota limits, as the economical benefit in this case is only the saving in maintenance expenses, when producing the milk quota by lower number cows and heifers. A greater economical benefit to cooling can therefore be expected in Israel, in case of future liberalization of quota system.

Until now, we dealt with the productive and economic aspects of cooling cows in the summer, but there are as well, other aspects of cooling effect on cows welfare and environment sustainability.

It is thought that waking and standing in the cooling process, negatively affect cow’s rest time and well-being. Apparently, the reality is totally different. A recent study, carried out in Israel examined the effect on milk production, resting and ruminating time, between cows receiving 5 versus 8 “cooling sessions” per day (225 and 360 cumulative minutes of cooling per day, respectively). Cooling cows for a longer period contributed to additional 8% in daily feed consumption and 10% in daily milk production. Surprisingly, cows, cooled for longer period,

spent significantly more time per day resting and laying down (480 and 430 minutes per day) and ruminated for significantly longer time (445 and 415 minutes per day). The results of this study indicate that cooling the cows in summer, in addition to its economical value also contribute to cow’s welfare in the warm season.

### **What about the environment? How does cooling influence the environment?**

It is well known that the process of milk production is involved with the emission greenhouse gases (GHG) into the atmosphere (mainly methane CH<sub>4</sub> and oxygen dioxide CO<sub>2</sub>). Apparently, GHG emission is highly correlated to level of production. Anyhow, GHG emission to the atmosphere per liter of milk produced is reduced, in parallel to the increase in cow’s level of production. GHG emission by Israeli cows, producing approximately 12,000 kg/year, is expected to be 40% of that emitted by New Zealand cows, producing 5000 kg/year and 80% of European cows, producing 9,000 kg of milk per year. By increasing their milk production through cooling in summer, Israeli cows are considered more “environmentally friendly”, due to the lower amount of GHG to be emitted to the atmosphere for every unit of milk produced.

In Conclusion, effective and efficient cooling systems, developed and successfully implemented in the last 3 decades in Israel are available today to dairy producers all over the world. These cooling means are capable to reduce the negative impact of summer heat on cow’s performance. Proper installation and operation of cooling systems on farm level, can increase by about 10% cow’s annual milk production, as well as milk composition and quality and feed efficiency. By this, cooling the cows significantly reduces cost of production in the summer, leading to remarkable increase in per cow and farm’s annual income and profitability. At the same time, cooling contribute to improving cow’s welfare, allowing them to rest and ruminate for longer time in warm summer days and makes milk production more sustainable, by reducing green house gases emissions into the atmosphere for every unit of milk produced.



# National Service for Udder Health & Milk Quality

Dr. Shmuel Friedman .....National Service for Udder Health and Milk Quality, Israel Dairy Board [shmulik@milk.org.il]

The National Service for Udder Health and Milk Quality is a non-profit organization, whose objective is to improve the udder health and milk quality of all milk producers (cows, sheep & goats) in Israel. The organization consists of a Mastitis Control Laboratory, veterinarians and instructors who are responsible for all farms in Israel that wish to employ their services. Payments for the services provided by the National service for Udder Health and Milk Quality derive from the Israeli Dairy Board budget. The following services are provided to all dairy herds:

## Laboratory diagnosis and services

- The lab is certificated with the Quality Management Standard ISO 17025 (since 2007)
- During 2012 the lab analysed a total of 116,081 samples.
- Analysis of samples from clinical mastitic cows sent by dairy farmers: 14,019 (+10.6%).
- Analysis of samples sent by farmers from pre-partum cows & sub-clinical mastitis: 38,935.
- Analysis of samples sent by farmers from sheep & goats: 12,223.
- Antibigrams providing information to the clinical veterinarian: 4,921 tests.
- Evaluation of teat dip samples from dairy herds: 836 samples.
- Bulk tank analysis for total bacteria count :219 tests
- Analysis of bedding samples: 16.
- Para-tuberculosis milk test by ELIZA from individual cows and herd level: 42,722.
- RtPCR Bulk tank analysis: 1142 test.

## Udder Health

- Planning and tracing the eradication of contagious mastitis e.g. Strep. Agalactiae: 0.3% of the cows are infected
- Staph. Aureus: less than 3% of the cows from all the milk samples send by the farmers.
- Advice during the eradication phase.
- Advice to producers with high Somatic Cell Counts and/or high cell plate counts.
- Planning, implementation, and follow up on programs to treat and eradicate mastitis in individual cows and in herds.

## Analysis of milking parlours and milking equipment

- Advice on milking parlour construction.
- Advice to dairy farmers on milking machine specifications.
- Supervision of companies supplying milking equipment, teat dips and detergents.
- Static and dynamic testing of milk parlours.
- Milk parlor troubleshooting.
- 

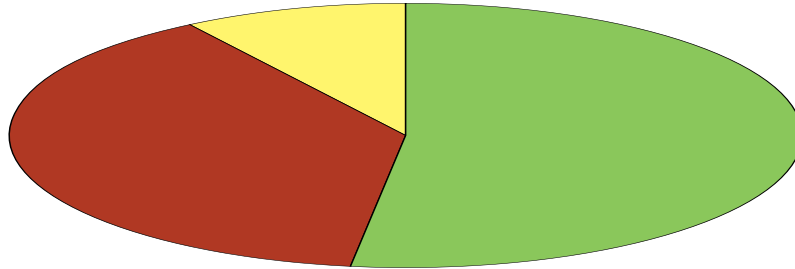
## Education

- Advice on laboratory facilities and laboratory examinations.
- Organisation of workshops for producers and for dairies.
- Publication of technical news letters.
- Promotion of research projects.
- Field studies.
- Advice, co-ordination, and follow up of all services provided.

# Milk Quality

Milk supply, by somatic cell count categories, in 2012 **Fig. 2.2**

- Premium ■
- Grade A ■
- Grade B, C and D ■

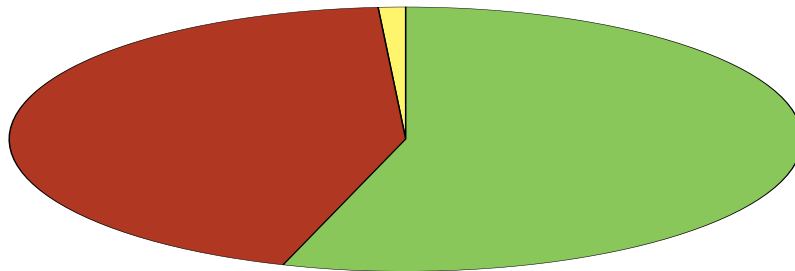


### SOMATIC CELL COUNT

Quality Grade	Count per ml	% of supplied milk
Premium	Less than 220,000	51.20
Grade A	220,001 – 280,000	37.50
Grades B, C and D	over 280,000	11.20
<b>Total</b>		<b>100.0</b>

Milk supply, by bacterial count categories, in 2012 **Fig. 2.3**

- Premium ■
- Grade A ■
- Grade B ■

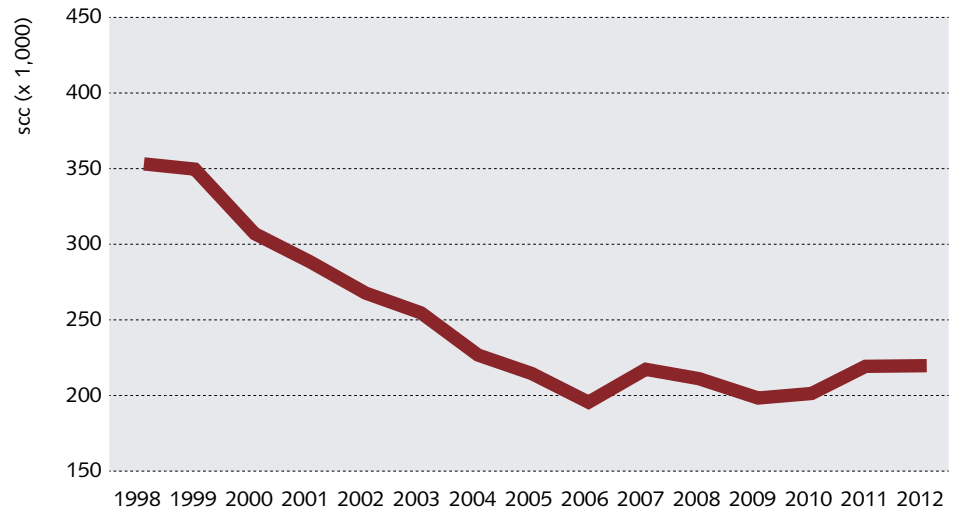


### BACTERIAL COUNT

Quality Grade	Count per ml	% of supplied milk
Premium	Less than 10,000	55.3
Grade A	10,001 – 50,000	43.7
Grade B	over 50,000	1.10
<b>Total</b>		<b>100.0</b>



Average somatic cell count, by year **Fig. 2.4**



A firm and constant policy was established by the Israeli Dairy Board in the 90s with the aim of improving milk quality. Economic incentives were set in order to lower the somatic cell count in the milk supplied to the industry and a threshold of price

categories was progressively lowered along years. The farmers' response caused the average SCC (annual average for all farms) to decrease from 428,000/ml in 1995 to 220,000/ml in 2012 (data from milk processing plants).

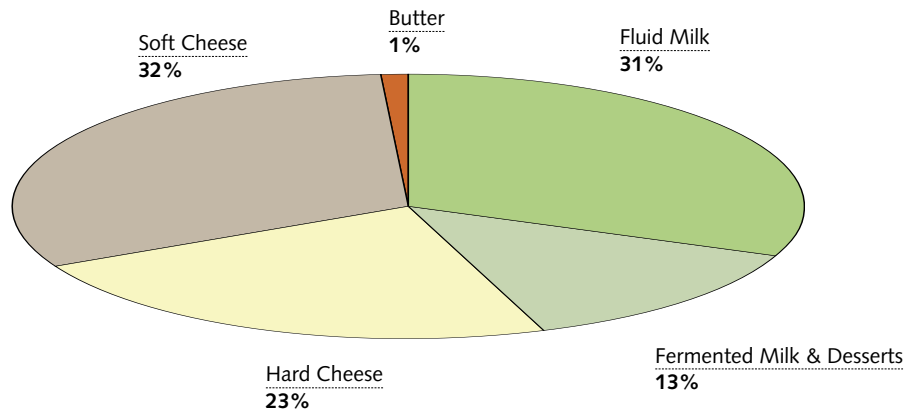


## Annual Marketed Milk

Year	Cow Milk					Sheep & Goat Milk		
	Fluid Milk	Fermented Milk and Desserts	Soft Cheese Ton	Hard Cheese Ton	Butter Ton	Soft Cheese Ton	Hard Cheese Ton	Yoghourt and others, Ton
2002	359,598	148,808	79,252	22,435	5,423	925	1,140	546
2003	359,861	147,307	80,100	22,550	5,443	1,041	1,131	776
2004	370,266	146,820	80,817	22,813	5,713	1,266	1,200	1,139
2005	378,957	151,766	82,359	23,528	5,816	1,273	1,236	1,387
2006	402,276	164,363	87,330	25,210	6,217	1,361	1,173	1,530
2007	405,928	166,610	88,177	26,473	6,175	1,703	1,096	1,782
2008	405,736	170,378	91,535	27,641	5,146	1,665	1,092	2,028
2009	410,595	172,358	92,737	28,344	5,334	1,646	1,062	3,109
2010	422,035	179,708	94,564	29,023	5,016	1,857	1,080	3,867
2011	424,281	180,523	96,144	30,741	5,906	2,061	1,116	4,659

▲ **Table 2.5**  
Distribution of annual marketed milk, by dairy products. (tons)

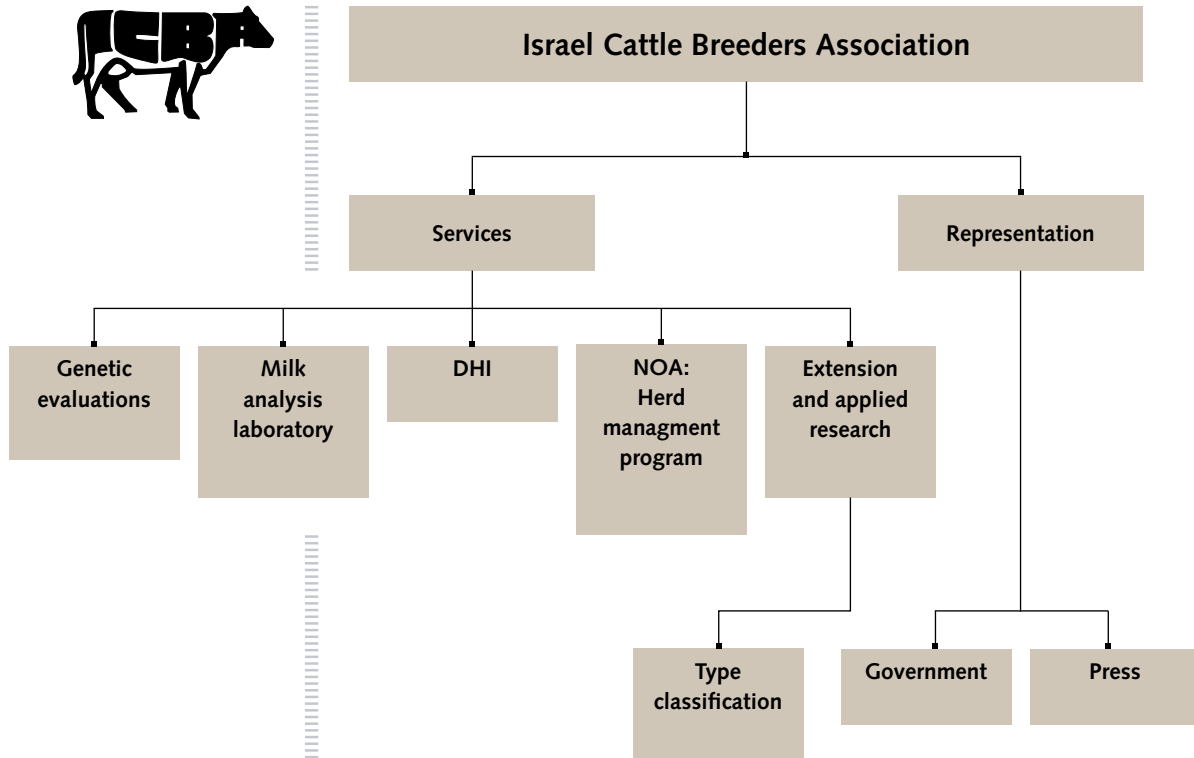
▶ **Fig. 2.5**  
Distribution of annual marketed milk, by dairy products (% of total, based on skimmed milk equivalent)



# The Israel Cattle Breeders Association

Yossi Malul

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The Israel Cattle Breeders Association represents all dairy cattle farmers in Israel. For the past 85 years the organization has been the sole representative of all milk producers in the country, taking care of all their professional needs and sustaining a vibrant and modern industry.

The organization supplies essential assistance to its members and the satellite organizations connected to the industry. The pivot point of the organization is the National Herdbook, which is one of the most comprehensive herdbooks in the world.

## The ICBA Database

**Ephraim Ezra**.....Herdbook Manager, ICBA [[hmb-efraim@icba.org.il](mailto:hmb-efraim@icba.org.il)]

In 2012 the Israeli Dairy Herdbook collected information from 107,117 cows in 670 herds, 90% of the dairy cows in the country. The ICBA database gathers information and merges additional data from other related sources, and aims to integrate all relevant information regarding the Israeli dairy herd. This integrated database allows farmers, extension advisors, veterinarians, the Sion A.I. institute and others, access to controlled and accurate information. Sources and users of this system are listed below:

### Input sources

**DHI** – Milk recording is performed by two methods. In herds with > 150 cows (70% of the cows), recording is done monthly by an ICBA representative (A4 method), who records the relevant information on a hand-held terminal. On the remaining 30% of cows, the farmer manually records milk yield (B4 method) and sends the information to the central computer. For all milk-recorded cows, a monthly sample of milk is sent to the Central Milk Laboratory.

**Central milk Laboratory** – This laboratory, presently equipped with three FOSS analyze-instruments, analyzes milk components (fat, protein, lactose, SCC, MUN and casein rate) in the DHI milk samples. This laboratory also analyzes milk samples from daily shipments to the dairies. These results are used to determine payment for farmers.

**A.I. technicians** - Technicians of the Sion A.I. cooperative services inseminate 98% of the cows in Israel. All cows from the herds included in the DHI system have bar-coded insemination cards containing information on the cows and their pedigree. Before selecting a semen straw, the technician checks bloodlines of the cow and candidate sires, using a hand-held terminal. Inseminations are performed only if inbreeding coefficient is under 3.125%. Details of the inseminations are transferred to the ICBA database, via the terminals.

**National Service for Udder Health and Milk Quality** – The “Udder Health” database is located on the Israel Dairy Board server, and is regularly updated with information on





all cows included in the DHI system. Bacterial cultures are matched to other information of the cow; including days in milk, SCC, milk yields, milking status, and calving dates. Results are sent to the farmer and the veterinarian, and merged into the ICBA database.

**Processing plants** – Samples of all milk supplied to dairy processing plants in Israel is assayed for fat, protein, lactose, and SCC. For each shipment, the dairies send the farmer a summary including the milk quantity shipped, fat and protein content, and SCC of the milk. This information is transferred to the ICBA database. Once a month the dairies send each farmer and the ICBA a summary of marketed milk volume and payment details.

**Interbull** –Three times a year a file of genetic evaluations of all recorded bulls in the participating countries is forwarded by Interbull. Information of bulls whose semen has been imported to Israel, but do not have local evaluations, is updated automatically at the central computer, and this information is distributed electronically to the farmers.

**Farms** – Approximately 85% of the cows registered on the DHI are located at farms that use a management computer program. About 94% of those farms use the “NOA” program that was developed and is maintained by the ICBA. The farmer enters data on calvings, cows that are “dried off”, new acquisitions, culled cows, veterinary pregnancy check results, diagnostic codes, veterinary treatments, etc. Once a month all information is transferred to the Herdbook database, and a series of logical checks is applied to correct mistakes. Farmers that do not use a computer management program send paper reports that are manually entered into the central database.

### Reports

Genetic evaluations of bulls and cows are computed bi-annually in conjunction with the Department of Ruminant Science of the Institute of Animal Sciences of the Agricultural Research Organization. Results are distributed to the farmers, forwarded to Interbull, and published on the ICBA Hebrew Internet site ([www.icba.org.il](http://www.icba.org.il)) that includes an FTP server. Files including data on cow birth, calving and culling dates, milk yields and laboratory results are sent to the “Udder Health” laboratory. Files including data on cow birth, calving and culling dates, results of pregnancy checks and genetic evaluations, including the Interbull evaluations are sent to Sion A.I. Company. Milk recording results, records of the milk shipments to the dairies, results of bacterial analyses from the “Udder Health” laboratories, and genetic evaluations, including the Interbull evaluations, are sent to the dairy farms. Monthly summaries are forwarded to the Ministry of Agriculture extension advisors, feed centers, and regional dairy farmers associations. Files including milk recording results, diagnostic codes, and treatments are sent to the “HaChaklait” veterinary cooperative.

### Summary

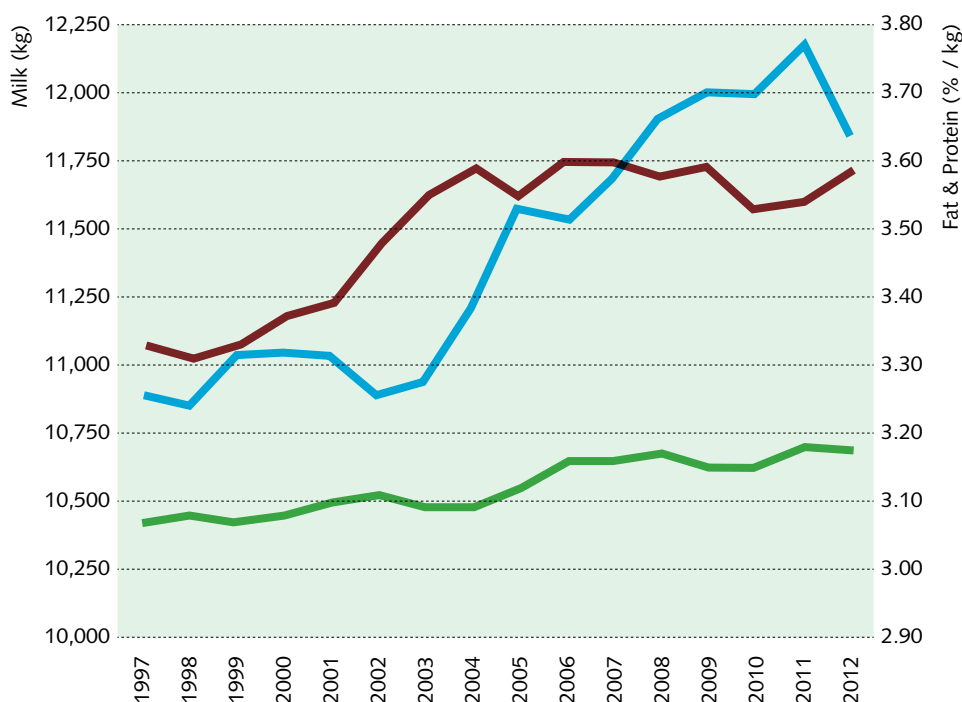
The Israel Cattle Breeders Association database is the hub for all information on dairy farming in Israel. All data are subject to logical checks, so that the dairy farmer and other end-users receive accurate and reliable information. The intensive computer application in Israeli dairy farming enables all of the entities involved to access the large database at a relatively low cost.

Production averages of Israeli-Holstein cows, by calving year 305-day adjusted lactations (1-5)

Table 3.1 & Fig. 3.1

Calving year	No. of cows	Milk, kg	Fat, %	Protein, %
1997	82,117	10,885	3.33	3.07
1998	82,672	10,835	3.31	3.08
1999	83,691	10,929	3.32	3.07
2000	81,820	11,048	3.37	3.08
2001	86,152	10,945	3.41	3.10
2002	86,496	10,887	3.48	3.11
2003	84,698	10,935	3.55	3.09
2004	84,069	11,230	3.59	3.09
2005	82,916	11,567	3.55	3.12
2006	80,137	11,574	3.6	3.16
2007	82,683	11,794	3.6	3.16
2008	87,419	11,939	3.58	3.17
2009	83,581	12,033	3.59	3.15
2010	86,234	11,991	3.53	3.15
2011	90,246	12,175	3.54	3.18
2012	90,845	11,843	3.59	3.17

Milk—█  
 Fat (%)—█  
 Protein (%)—█



Due to a policy which encouraged the production of milk rich in protein and fat there was an increase in their percentages over the years.

The high fat content in raw milk became opposite to the consumers trend, which gives preference to low-fat milk products.

Thus, arose a need to suppress the growth in fat content in the milk. Starting August 2005 a policy of lower payment per fat above a specific level (4.2% in 2010) has been determined.

The average fat content during 2012 was 3.746%/milk lt.

	1st lactation cows	2nd lactation cows	Adult cows	Total
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#### Complete lactations

No.	27,174	19,381	26,370	72,925
Milk yield, kg	11,984	13,674	14,230	13,247
ECM* yield, kg	12,152	13,807	14,263	13,357
Fat yield, kg	440.7	497.1	519.0	484.1
Fat, %	3.68	3.63	3.65	3.65
Protein yield, kg	390.2	445.0	456.1	428.6
Protein, %	3.26	3.25	3.20	3.24

#### Adjusted 305-d lactations

No.	26,046	18,733	25,393	70,172
305-d adjusted ECM, kg	12,091	12,492	12,445	12,326
Days in milk	364	356	357	359
Milk yield, kg/day in milk	33	38.4	39.9	36.9
Feed days	423	416	420	420
ECM yield, kg/cow in herd-day	28.7	33.2	34	31.8
Dry period, days	59	59	62	60
Days open	148	140	145	145

#### Calvings

Total No. of calvings	34,234	27,246	45,028	106,508
Calves born	34,565	28,638	48,537	111,740
Age at calving, months	24	38	67	46
Normal calvings	30,748	25,460	41,959	98,167
Normal calvings, %	89.8	93.4	93.2	92.2
Premature calvings	797	647	1209	2653
Premature calvings, %	2.3	2.4	2.7	2.5
Abortions, %	11.2	11.3	10.3	10.8
Stillborn calves, %	6.9	6.5	7.8	7.2

\* ECM = Economic Corrected Milk, according to the formula for milk payment :  
up to 4.07% Milk Fat:  $0.10 * \text{kg Milk} + 9.48 * \text{kg Fat} + 17.61 * \text{kg Protein}$

20 cooperative herds  
with highest average  
annual milk yield  
per cow (3x milkings)  
in 2012

Table 3.3

No.	Herd	ECM kg	Milk kg	Fat %	Protein %	F+P kg	SCC x1000	No. of cows in herd
1	Sa'ad	14,462	14,129	3.62	3.34	984	187	311
2	Shutfut Ran	14,038	14,017	3.63	3.21	959	195	955
3	Givat Hayim	13,849	13,130	3.90	3.37	954	205	343
4	Urim	13,835	13,937	3.60	3.17	945	149	388
5	Mefalsim	13,713	13,749	3.56	3.23	933	200	315
6	Gevim	13,681	13,729	3.48	3.26	926	212	311
7	Galil Ma'aravi	13,671	13,460	3.65	3.28	933	158	826
8	Ein Hasheloshah	13,588	13,532	3.67	3.21	930	162	314
9	Nahal Oz	13,532	13,516	3.62	3.21	924	145	331
10	Yavne	13,430	13,210	3.70	3.26	919	130	397
11	Alumim	13,421	12,999	3.79	3.30	922	237	343
12	Carmiya	13,401	12,856	3.85	3.33	922	220	391
13	Ayelet Hashahar	13,360	13,450	3.61	3.17	912	226	276
14	Tse'elim	13,245	12,901	3.72	3.31	906	152	286
15	Alonei Aba	13,189	13,104	3.67	3.22	902	200	289
16	Refet Ma'ale	13,143	12,977	3.73	3.22	902	217	270
17	Habonim	13,131	13,116	3.61	3.22	896	160	275
18	Or haNer	13,111	13,141	3.62	3.19	895	260	298
19	Carmel Ma'on	13,072	12,702	3.62	3.37	889	268	484
20	Be'erot Itzhak	13,059	12,813	3.77	3.24	898	144	264





20 Family herds with highest average annual milk yield per cow (2x + 3x milkings) in 2012

17/06/14



No.	Village	Herd	ECM kg	Milk kg	Fat %	Protein %	F+P kg	SCC x1000	No. of cows in herd
1	Shfeyia Ag. School	Shfeyia Ag. School	13,472	13,349	3.69	3.22	923	176	78
2	Merhavia, Moshav	Novitz Farm	13,457	13,572	3.61	3.17	919	124	65
3	Patish	Kadoori Farm	13,311	13,017	3.80	3.24	916	225	53
4	Nahalal	Gabay Farm	13,258	12,979	3.57	3.36	899	339	74
5	Kanaf	A.A.A. Farm	13,223	12,869	3.86	3.24	913	203	120
6	Kefar Hasidim	Charash Farm	13,101	13,166	3.60	3.19	894	131	113
7	Shadmot Debora	Tenenbaum Farm	13,081	13,138	3.66	3.16	896	119	49
8	Nir Israel	Fodor Farm	13,037	12,649	3.79	3.29	896	182	240
9	Bet Hilqiya	Dubdevani Farm	13,018	13,030	3.55	3.24	885	233	197
10	Tzippori	Shmueli Bros. Farm	13,002	13,091	3.57	3.19	886	134	143
11	Neot Golan	Cohen Farm	12,969	12,830	3.76	3.19	892	251	47
12	Beit Hillel	Steinfeld Farm	12,893	12,670	3.58	3.33	876	242	54
13	Kannot Ag. School	Kannot Ag. School	12,874	12,576	3.76	3.27	884	184	77
14	Hayogev	Haydman Farm	12,771	12,592	3.66	3.26	872	191	58
15	Tzippori	David Farm	12,751	12,814	3.46	3.26	862	115	63
16	Be'er Tuvia	Ya'ari Farm	12,750	12,454	3.75	3.27	875	180	38
17	Kefar Vitkin	Shvil Hachalav Farm	12,742	12,748	3.62	3.21	870	176	362
18	Amatz	Reuven Farm	12,705	12,545	3.67	3.26	868	243	103
19	Sde Ya'akov	Levin Farm	12,699	12,646	3.65	3.21	868	213	115
20	Ramat Tzvi	Rodberg Farm	12,691	12,944	3.62	3.09	869	156	54

20 cows with highest adjusted ECM yield in 2012

Table 3.5

No.	Herd	Cow No.	Sire	Lact. No.	Milk kg	Fat %	Protein %	ECM kg
1	Sa'ad	877	Badon	2	18,245	3.89	3.33	19,087
2	Nahal Oz	264	Germin	3	18,265	3.72	3.33	18,835
3	I.L.Shani Farm	7100	Midan	4	20,741	3.04	2.95	18,681
4	Urim	5310	Tenet	1	17,792	3.83	3.37	18,668
5	Shrizada Bros. Farm	2581	Sofon	5	18,524	3.48	3.24	18,382
6	Gevim	701	Cigar	3	17,387	3.97	3.34	18,358
7	Urim	5872	Midan	4	18,151	3.90	3.11	18,343
8	Sa'ad	5442	Aise	3	19,199	3.47	3.03	18,336
9	Galil Ma'aravi	3480	Torpedo	4	17,207	4.25	3.22	18,270
10	Sa'ad	6679	Jordan	3	17,898	3.79	3.23	18,266
11	Or-haNer	7527	Patour	3	18,699	3.61	3.07	18,240
12	Sa'ad	93	Cigar	3	18,573	3.79	3.00	18,216
13	Galil Ma'aravi	1100	Marseye	2	17,854	3.52	3.37	18,207
14	Baranawsky Bros. Farm	8656	Piton	2	18,454	3.72	3.07	18,201
15	I.L.Shani Farm	5483	Aise	3	16,271	4.24	3.52	18,126
16	Galil Ma'aravi	844	Ratzuf	4	18,398	3.85	3.00	18,117
17	Sa'ad	379	Midan	3	15,690	4.84	3.43	18,106
18	Or haNer	7961	Cigar	2	18,881	3.35	3.10	18,063
19	Ein haShelosh	4146	Caliber	4	20,159	3.10	2.89	18,054
20	Yad Hail	5535	Midan	6	18,830	3.52	3.02	18,043

20 cows with highest lifetime yield, producing in 2012

Table 3.6

No.	Herd	Cow No.	Sire	Lact. No.	Days in milk	Milk kg	Average milk yield kg/day	Fat %	Protein %
1	Heftzibah	5700	Scorer	10	3,980	173,853	43.68	3.12	2.79
2	Sa'ad	4560	Dalia	8	3,540	166,435	47.02	3.27	3.15
3	H.S.G. Farm	195	Scorer	12	4,303	162,568	37.78	3.55	2.96
4	Hazorea	677	Tamim	8	4,822	162,548	33.71	3.01	2.76
5	Beit Yatir	74392	Scorp	11	3,665	161,689	44.12	3.30	3.00
6	Be-Rishtenu	5814	Scorer	11	3,635	161,214	44.35	3.16	2.69
7	Sofer Farm	942	Bul	8	3,922	159,595	40.69	3.83	3.24
8	Ma'ale Gilboa	7424	Noris	12	4,117	156,816	38.09	3.29	3.04
9	Alumin	398	Ross	8	3,061	156,283	51.06	3.25	2.87
10	Tefen-Tuval Farm	1071	Scorer	11	3,658	155,793	42.59	3.50	3.02
11	I.L.Shani Farm	144	Boiler	8	3,787	155,218	40.99	3.36	3.10
12	Shdamot (Dorot)	1470	Pitzpon	10	3,732	154,976	41.53	3.37	3.02
13	Zamir & Boren Farm	986	Unknown	9	4,006	154,564	38.58	3.19	2.90
14	Ein Gev	2435	Sorbonne	11	3,611	153,967	42.64	3.08	3.02
15	Carmiya	5495	Scorp	9	3,654	152,833	41.83	3.86	3.25
16	South Dairy Farm	595	Siam	10	3,673	152,158	41.43	3.09	2.87
17	Revadim	3921	Teva	9	4,039	152,045	37.64	3.44	2.91
18	Carmiya	5505	Scorer	11	3,411	150,345	44.08	3.63	3.14
19	South Dairy Farm	6142	Pitzpon	9	3,484	150,332	43.15	3.43	2.84
20	Cohen Farm	2078	Bul	12	3,912	150,134	38.38	3.39	3.02



# NOA – The Israeli Dairy Herd Management Program

**Boaz Hanochi**.....Product Manager of NOA Software, ICBA [hmb-hboaz@icba.org.il]

**NOA** is a comprehensive program for dairy herd management which was developed by the Israeli Cattle Breeders Association (ICBA). **NOA** addresses all aspects of dairy farming. **NOA** has been designed to give the herd manager up-dated information regarding all aspects of dairy activity and useful tool for decision making.

## Major features of NOA

- **Herd management** – This module allows the user to record all the cow's reproduction events. Data on new acquisition of animals to the herd, culling, dry off, calving, BCS, group change. All Veterinary data including automatic preparation of Vet check list and input of diagnosis, treatments and drugs. Noa fully supports synchronization and vaccinations protocols.
- **Feeding** – Linear programming and feed ration formulation, feed production and TMR planning, inventory management and reports. Communication with feeding controllers. Complete tracking and monitoring of feed consumption. Dry matter intake reports at different levels. Milk over feed reports and feeding cost per cow and per liter
- **Milk production** – Recording of milk marketing, milk recording (milk test) and summary reports including lactation summaries. Communication with different brands and types of commercial milk-meters (on-line milk data).
- **Reproduction** – Almost all the Herdbook reproduction KPI's are available in **NOA**. Simple predefined reports give a reliable updated picture of the reproduction status and trends to the dairy farmer. Numerous reproduction indicators are calculated: days open, pregnancy rate, heat detection rate, conception rate, waste days, calving interval, days open, service per conception etc.
- **Genetic management** – Graphical presentation of cows and bulls pedigree data. Mating program is implemented to optimize the breeding value progress of the herd and to minimize the risk of inbreeding. Simple tools to implement breeding program according to particular herd goals.
- **Quota production planning** – Special interactive module for better managing of the milk quota production along the year. Simulation of the herd milk production on a monthly level, with a sophisticated prediction algorithm. The prediction is based on the actual herd performance in the last 2 years.
- **Lactation curve analysis** – Special report for analyzing the periodic lactation curve of the entire milking cows. Seasonal production is also analyzed and the effectiveness of the cooling system can be evaluated by this report. Graphic presentation of the lactation curve is provided for each lactation number separately. Production level ratio of first lactation cows to second and third lactation cows is calculated.





- **Economic module** - Gives the farmer the opportunity to record all the financial transactions including delivery notes and invoices. Dynamic profit and loss report can be easily derived. This module gives the dairy farmer an efficient tool for better controlling current management
- **iNoa** – New application developed specially for iPod, iPhone and iPad. The farmer can view all the cows' data everywhere and also to record data in the field. The data from the device is synchronizing with the office PC.

**NOA** coordinates import and export of files to the national Herdbook database, dairy processing plants, central milk laboratory, livestock insurance companies, Udder Health laboratory, feed mills, feed centers and others.

**NOA** uses a Windows user interface and is user-friendly, despite its complexity and sophistication. The program was developed by top Israeli dairy herd professionals in order to meet the needs of both small and large dairy enterprises.

**NOA** was introduced in Israel in April, 2000. Today, more than 700 dairy farms and feed centers use the program, including all large dairy farms with over 250 dairy cows in Israel.

Each month new dairy farms install the program and the total number of cows which are managed under NOA software in Israel is nearly 100,000.

**NOA** interfaces with all aspects of dairy production control, including milking robots and feeding controllers.

For the first time, comprehensive dairy farm management is possible with a single integrative and user-friendly program. The program is maintained by an ICBA professional team that includes experienced field advisers, phone support for software users. Communication between the dairy farm computer and the national Herdbook database is carried out via an Internet website maintained by ICBA. Numerous dairy farmers and entities in the dairy industry are connected via the "Milk net", which facilitates two-way interactive exchanges and provides E-mail, a bulletin board and other services.

**International cooperation** – ICBA cooperates with DeLaval Company globally. In the coming year's dairy farmers around the world will be able to utilize many of the features of NOA system.

# The Israeli Selection Index

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The Israeli breeding program is monitored by the Israeli Breeding and Herdbook Committee, which includes representatives of the Sion A.I. Company, the Israeli Cattle Breeders Association, and scientists of the Department of Ruminant Science of the Institute of Animal Sciences of the Agricultural Research Organization.

## PD11 – THE ISRAELI BREEDING INDEX

Index coefficients for milk, fat, and protein were computed to maximize expected farmer profit. Profit was computed as income, less cost of feed required to produce the three milk components, transportation costs for fluid milk, and the fixed costs per cow, which were set so that the net profit would equal zero. The index coefficients were computed by differentiating the profit equation with respect to each component. The index coefficients were normalized so that one standard kg of milk with 3.574% fat and 3.186% protein, would have a unit value. The index coefficient for somatic cell score (SCS) was computed so that expected changes for SCS would be close to zero. The index coefficients for daughters' fertility, herdlife, persistency, dystocia, and calf mortality were computed to account for the economic value of those traits relative to milk

production. The current Index PD11 was updated in January 2012, to adjust for the increase in the price for milk fat in the world market. PD11 is as follows:

$$PD11 = 7.9 \text{ (kg fat)} + 23.7 \text{ (kg protein)} - 300 \text{ (SCS)} + 26 \text{ (\% daughters' fertility)} + 0.6 \text{ (days herdlife)} + 10\% \text{ (\% persistency)} - 3 \text{ (\% dystocia)} - 6 \text{ (\% calf mortality)}$$

Expected genetic gains after ten years of selection using this index are: 509 kg milk, 20.0 kg fat, 17.7 kg protein, - 0.11 SCS, 1.2% daughters' fertility, 107 days herdlife, 1.7% persistency, -0.83% dystocia, and -0.67% calf mortality.

Genetic evaluations for milk, fat and protein production, SCS, daughters' fertility and persistency are calculated by the multitrait animal model, using parities 1 to 5, with each parity considered as a separate trait. Herdlife is calculated by a single trait animal model. "Persistency" is persistency of milk production. Dystocia and calf mortality refer to the effect of the cow calving, and include only first parity records. Dystocia and calf mortality are calculated by sire and maternal grandsire models. The base for all genetic evaluations is the mean breeding value for cows born in 2005.



# Israeli Breeding in 2012

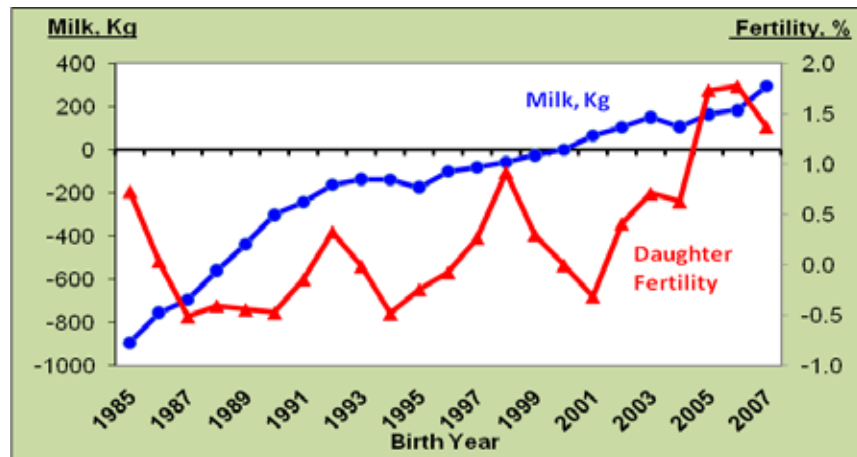
Dr. Yoel Zeron ..... Director of Science and Production, Sion A.I. Company [yoel@sion-israel.com]

The Israeli dairy cattle population has the highest average milk and milk solids production in the world, despite the fact that dairy production conditions are sub-optimal due to heat stress in most areas during most of the year. Israeli bulls transmit outstanding genetic ability for milk yield and components and excel in fertility, longevity and udder health traits. During 2009, SION successfully maintained its volume of activity, comprising 95% of all inseminations in Israel. Approximately 50 young bulls are tested every year, some of which are Israeli bloodlines and others North American, Scandinavian and European strains. Semen from approximately 20 proven bulls is available to the Israeli dairy farmers for general service. Most are proven bulls with

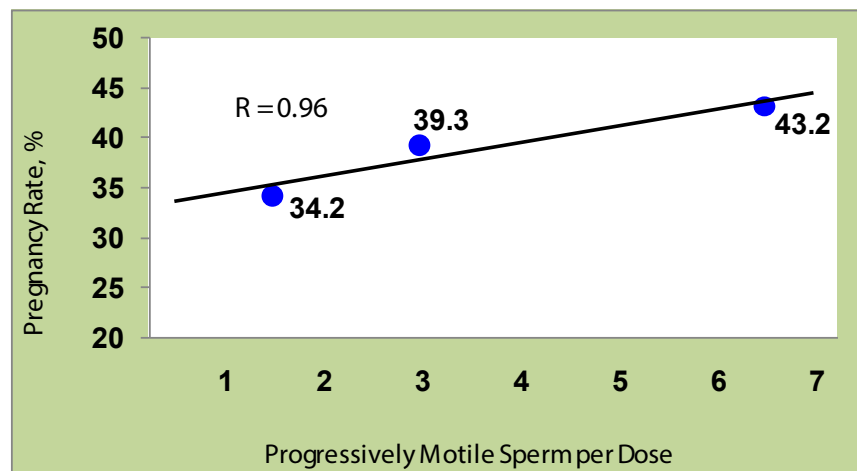
evaluations based on daughter-production records, and the rest are high-pedigree or "promising" young bulls. In spite of the increase in milk production, no reduction was noted in fertility rates during the past year. In fact, a slight increase was recorded in 2009 in relation to 2008. This increase was due primarily to improvements in the dairy farm management and environment, and to the application of superior Israeli genetics. In this regard, it is important to stress that since 2001 SION has consistently selected bulls with high PTA for daughter fertility. The results have been most impressive.

Heat stress during the Israeli hot season has a highly negative effect on dairy production. Great efforts have been

Graph 1.  
Average breeding value of cows for milk production and for daughter fertility



Graph 2.  
Results of the field trial on Progressive motility



made to install and implement technologies with the aim of reducing heat stress. Dairy farms that implement appropriate methods for cooling the herd have reached milk-production rates during the summer months that exceed winter levels.

#### Improved Evaluation of Sperm Cells in SION Labs

SION, together with MES (Medical Electronic System) has conducted a field trial in order to assess the effect of progressive motility on sperm fertility rates. 2,500 inseminations from four bulls were divided into four categories:

- 1.5 million progressive cells per dose
- 3 million progressive cells per dose
- 7 million progressive cells per dose
- The control dose with a total of 15 million cells

Doses with 7 million progressive cells per dose proved to achieve significantly better fertility levels in comparison to the other categories, including the control dose. Accordingly, SION and MES are developing a laboratory work model to enable the effective assessment of the bulls' sperm. The aim is to supply sperm which maintains high progressive motility levels after the analysis of only 3-4 ejaculations. We expect that this procedure will lead, both effectively and efficiently, to a significant increase in fertility rates.

#### Leading Bulls According to the Number of Inseminations

Among the ten leading bulls with the highest number of inseminations were three bulls used especially for heifers: **Loop, Asa** and **Hodel**. The leading bloodlines among Israeli bulls are still local ones which have excelled in production levels. About 30% of these bulls have sires from Europe and USA. The number of inseminations per bull is fairly equal, without preference towards any particular bull. This fact is unique to the Israeli system and is the result of the generalized use of a mating program (a module of "NOA", developed by ICBA) which is used by most farmers. Dairy farmers select the bulls by themselves, while taking the mating results into consideration.

**Table 1**  
**Bulls that were most largely used in 2009**

Bull Name	Bull Number	Sires	Inseminations
SADASH	7122	SEDEK x AVSHA	25,061
DIGI	7334	DANDAN x PATZIL	19,438
MEKARER	7276	MOON x SCORER	17,555
SYROP	7212	SATURN x PITZPON	17,127
DUGIT	7267	DALIA x GUPI	15,289
ASE	7053	AVSHA x SIDON	15,127
LOOP	7261	DALIA x GUPI	12,572
ASA	7085	AVSHA x SCORER	11,996
LIKER	7140	LYNCH x SCORER	11,897
HODEL	7343	HARY x DALIA	10,702
KOREN	7075	SEDEK x SCORER	10,574
SILVAN	7365	BOY x DALIA	9,367
KRAK	7077	SEDEK x SCORER	9,126



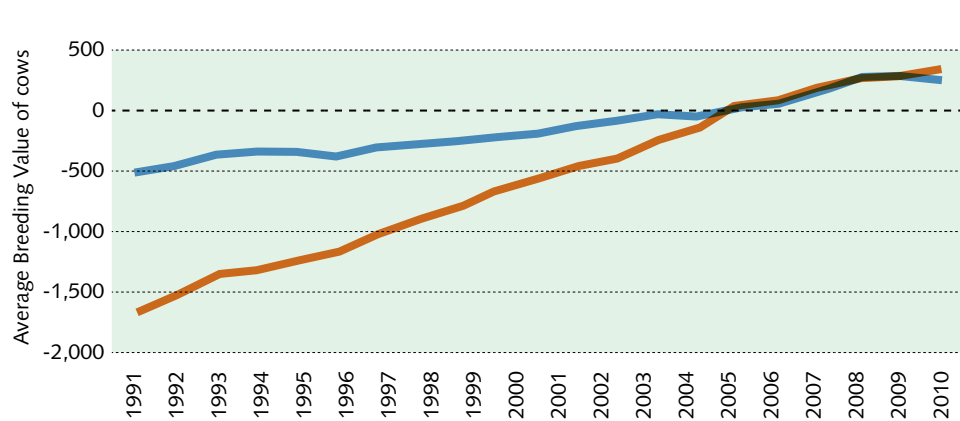


Birth Year	Milk kg	Fat kg	Fat %	Protein kg	Protein %	SCS	Daughters' Fertility	Productive Longevity	Calf Mortality	Calving diff.	Lactation Persist. %	PD11
1991	-479	-43.2	-0.23	-39.0	-0.22	0.25	-1.59	-234.8	0.76	0.80	-2.37	-1553
1992	-397	-38.3	-0.21	-34.8	-0.20	0.28	-1.11	-193.1	1.41	1.54	-2.17	-1388
1993	-373	-37.4	-0.21	-32.9	-0.19	0.35	-1.42	-195.1	1.34	1.31	-1.47	-1362
1994	-375	-36.0	-0.20	-30.1	-0.16	0.33	-1.88	-189.3	1.59	1.49	-1.28	-1285
1995	-409	-33.1	-0.16	-28.8	-0.14	0.29	-1.66	-183.9	1.32	1.25	-1.49	-1212
1996	-335	-30.8	-0.17	-25.5	-0.13	0.24	-1.51	-152.4	1.36	1.30	-1.01	-1071
1997	-310	-26.9	-0.14	-22.8	-0.12	0.19	-1.21	-132.0	1.11	1.03	-1.22	-944
1998	-285	-26.4	-0.14	-20.0	-0.10	0.17	-0.60	-106.5	1.20	1.10	-0.89	-832
1999	-250	-23.5	-0.13	-17.4	-0.08	0.12	-1.22	-107.2	1.09	1.41	-0.83	-748
2000	-218	-19.2	-0.10	-13.8	-0.06	0.11	-1.59	-104.9	1.05	1.46	-0.60	-633
2001	-145	-15.6	-0.09	-10.4	-0.05	0.13	-1.88	-85.8	0.82	1.46	-0.08	-520
2002	-100	-13.2	-0.08	-9.1	-0.05	0.13	-1.24	-67.1	0.48	1.76	-0.12	-439
2003	-46	-8.8	-0.06	-5.8	-0.04	0.10	-0.90	-52.6	0.18	1.82	-0.19	-300
2004	-68	-3.7	-0.01	-3.5	-0.01	0.05	-1.04	-45.4	0.01	2.01	-0.18	-189
2005	0	0.0	0.00	0.0	0.00	0.00	0.00	0.0	0.05	2.61	0.00	-8
2006	19	-2.4	-0.02	1.4	0.01	-0.02	0.19	7.5	0.16	2.75	-0.07	19
2007	156	1.5	-0.03	6.3	0.01	0.02	-0.22	17.5	0.70	3.78	-0.02	144
2008	261	4.1	-0.04	8.8	0.01	0.02	-0.09	33.9	0.60	3.85	0.20	240
2009	281	4.4	-0.04	9.7	0.01	0.01	-0.17	41.8	0.38	3.55	-0.13	269
2010	260	4.3	-0.04	10.9	0.03	0.05	0.48	57.4	0.29	3.22	0.37	318

▲ **Average Breeding Value of cows, by birth year – Genetic Trends** Table 3.7

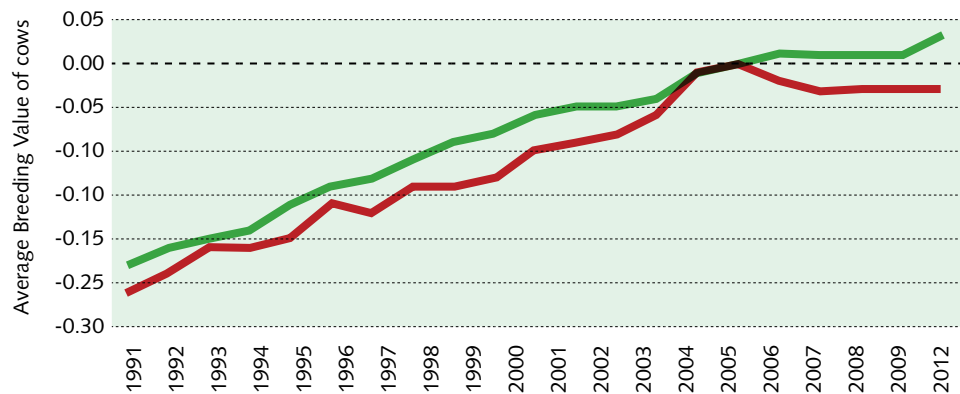
▶ **Average Breeding Value of cows for PD07 and Milk, by birth year – Genetic Trends** Fig. 3.2

Milk — █  
 PD11 — █



▶ **Average Breeding Value of cows for Fat and Protein percentages, by birth year – Genetic Trends** Fig. 3.3

Protein % — █  
 Fat % — █



Birth year	Number of bulls	Milk kg	Fat kg	Fat %	Protein kg	Protein %	SCS	Daughters' Fertility	Productive Longevity	PD11
1988	49	-304	-20.0	-0.08	-19.1	-0.09	0.10	-1.28	-140	-784
1989	33	-238	-17.7	-0.08	-18.4	-0.10	0.10	-0.65	-121	-725
1990	32	-272	-18.9	-0.08	-18.6	-0.09	0.09	-0.11	-128	-730
1991	41	-148	-16.9	-0.10	-12.8	-0.07	0.20	-0.88	-115	-614
1992	42	-312	-15.7	-0.04	-14.0	-0.04	0.18	-1.43	-128	-660
1993	53	-345	-18	-0.05	-15.3	-0.04	0.18	-0.64	-103	-667
1994	47	-235	-15.4	-0.06	-11.7	-0.04	0.14	-1.85	-114	-587
1995	38	-144	-6.9	-0.01	-7.2	-0.02	0.15	-1.49	-92	-389
1996	53	-251	-10.7	-0.01	-9.2	-0.01	0.19	-1.87	-104	-496
1997	31	-224	-8.6	0.00	-6.0	0.01	0.04	-0.57	-68	-297
1998	58	-48	-3.6	-0.01	-0.6	0.01	0.10	-1.68	-69	-177
1999	22	-108	-9.8	-0.05	-4.0	0.00	0.13	-1.02	-62	-293
2000	28	-148	-4.5	0.01	-2.2	0.02	0.03	-0.83	-65	-180
2001	44	56	-3.9	-0.05	0.2	-0.01	0.19	-1.00	-57	-158
2002	55	14	-0.1	0.00	0.8	0.00	0.06	-1.01	-61	-88
2003	45	-35	2.4	0.03	1.8	0.03	-0.05	-0.95	-48	-6
2004	52	-81	0.3	0.03	2.8	0.05	-0.06	-0.43	-34	31
2005	47	95	0.8	-0.02	5.6	0.02	0.03	0.31	7	127
2006	49	181	3.9	-0.02	7.0	0.01	-0.05	-0.81	6	177
2007	47	211	8.1	0.01	8.8	0.02	-0.02	-1.08	31	253
2008	13	180	4.6	-0.01	7.1	0.01	0.00	-1.01	2	161

Average Breeding Value of bulls, by birth year

Table 3.8



**Bulls that performed  
largest number  
of inseminations  
(all years)**

**Table 3.9**

Bull No.	Bull name	Sire	No. of inseminations
3274	Scorer	Thonyma Secret	199,301
829	Gyus	Oren	198,997
2132	Gaby	Arlinda Jet Stream	181,527
783	Pirchach	Hason	160,375
3651	Avsha	Sea-Mist Bell Extra	150,543
3212	Sinbad	Sunran Sundacer	145,711
2124	Shoeg	Shofet	128,094
787	Amir	Icar	119,631
3258	Shenef	Pony	115,990
2357	Flor	E-Z-Acres Starlite Bachelor	114,112
7053	Aise	Avsha	112,497
3241	Teva	Kingstead Valiant Tab	111,922
3089	Pitapon	Gyus	111,182
3123	Tamim	Crescent Mead Chief Stewart	110,645
3811	Sofon	Scorer	110,274
3080	Pirate	Sabal	110,058
2122	Shats	Shofet	110,046
3304	Goopi	Goliat	108,771
2176	Genosar	Gyus	103,848
2278	Mefi	Marshfield Elevation Tony	98,673



# Fertility Statistics

Information on insemination and pregnancy checks enable a thorough analysis of fertility performance at national and herd level. Reports are issued to farmers and are

the basis for practical decisions regarding fertility management.

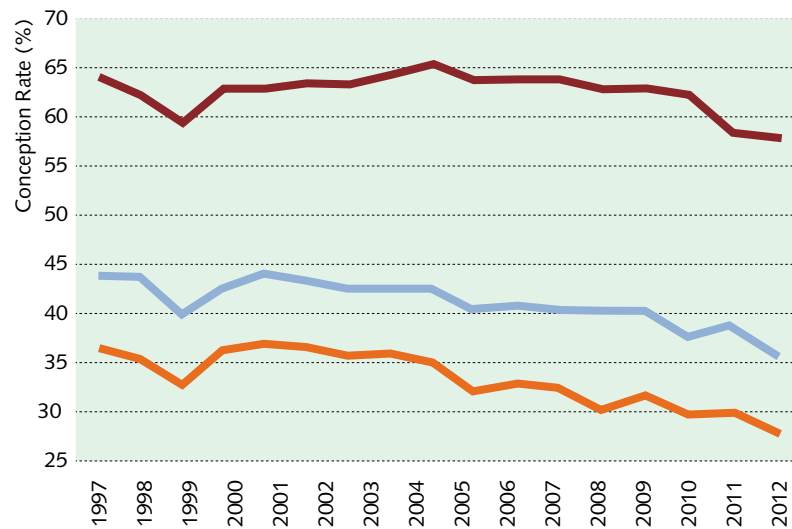
Data is presented as average results by parity categories.

▶ ▼  
**Average Conception Rate at 1st service, for Heifers, 1st Lact. cows and Adult cows (all herds), by years**  
*Table 3.10 & Fig. 3.4*

**Conception Rate at 1st service (%)**

Year	Heifers	1st Lact. cows	Adult cows
1997	62.7	43.9	35.7
1998	59.6	40.4	33.2
1999	63.3	43.1	36.7
2000	63.2	44.5	37.4
2001	63.9	44.0	37.1
2002	63.8	43.0	36.1
2003	64.6	43.0	36.4
2004	65.9	43.0	35.6
2005	64.2	40.7	32.6
2006	64.3	41.2	33.3
2007	64.3	40.9	33.0
2008	63.1	40.7	30.5
2009	63.1	40.6	32.0
2010	62.3	37.7	29.8
2011	58.4	38.8	30.0
2012	56.9	35.9	27.2

Heifers —■—  
 1st Lact. cows —■—  
 Adult Cows —■—





Fertility summary for  
heifers, all herds  
(period: 11/11-10/12)

TABLE 3.11

**Number of heifers and Conception Rate, by age at 1st service**

	N	% of total	C.R. (%)
< 13 months	9,450	24.4	56.5
14-15 months	23,935	61.8	57.4
16-17 months	4,686	12.1	55.9
18-23 months	658	1.7	52.2
Total	38,729	100.0	56.9

**Number of heifers and Conception Rate, by insemination number**

	N	% of total	C.R. (%)
First inseminations	38,729	53.1	56.9
Second inseminations	16,926	23.2	50.1
Third inseminations	8,322	11.4	45.6
Fourth + more inseminations	8,970	12.3	33.0
Total of inseminations	72,947	100	51.1

**Heat detection**

Distribution of cycles length (days):

5-17	1,303	4.4	
18-25	18,177	61.5	
26-35	1,513	5.1	
36-60	5,226	17.7	
Total of natural cycles	26,219	88.8	
Induced cycles	3,315	11.2	
Average days between inseminations	26		
Rejections by inseminator		16.9	
Preg.checks with negative results		13.7	

**Distribution of heifers by age at pregnancy onset**

<13 months	5,639	15.3	
14-15 months	19,745	53.6	
16-17 months	8,187	22.2	
18-19 months	2,516	6.8	
20-21 months	739	2.0	
Average age at effective insem. (mo)	15.5		
Average age at 1st. Insem. (mo)	14.8		

Fertility summary for first-calvers, all herds (period: 11/11-10/12)

Table 3.12

Number of first-calvers and Conception Rate, by days post-partum at 1st service

	N	% of total	C.R. (%)
< 70 days	3,897	12.3	34.5
71 - 100 days	18,026	56.9	37.5
101 - 130 days	8,047	25.4	34.5
131 - 150 days	1,711	5.4	33.4
Total	31,681	100.0	35.9

Number of first-calvers and Conception Rate, by insemination number

	N	% of total	C.R. (%)
First inseminations	31,681	34.5	35.9
Second inseminations	20,603	22.4	32.2
Third inseminations	13,685	14.9	29.9
Fourth + more inseminations	25,879	28.2	25.2
Total of inseminations	91,848	100.0	31.2

Heat detection

Distribution of cycles length (days):

5-17	2,404	4.7	
18-25	29,632	57.9	
26-35	4,739	9.3	
36-60	8,846	17.3	
Total of natural cycles	45,621	89.2	
Induced cycles	5,547	10.8	
Average days between inseminations	27		
Rejections by inseminator		12.2	
Preg.checks with negative results		27.7	

Distribution of first-calvers, by days post-partum at effective insemination

< 75 days	2,129	8.2	
76 - 110 days	9,105	35.2	
111 - 150 days	6,764	26.2	
151 - 180 days	3,079	11.9	
181 - 270 days	4,789	18.5	
Average Open days	132		
Average Rest days	92		



Fertility summary for  
adult cows, all herds  
(period: 11/11-10/12)

Table 3.13

**Number of Cows and Conception Rate, by days post-partum at 1st service**

	N	% of total	C.R. (%)
< 50 days	447	0.7	15.3
51 - 80 days	27,360	42.8	26.6
81 - 110 days	27,680	43.3	27.6
111 - 150 days	8,438	13.2	28.7
Total	63,926	100.0	27.2

**Number of Cows and Conception Rate, by insemination number**

	N	% of total	C.R. (%)
First inseminations	63,926	31.9	27.2
Second inseminations	45,245	22.6	28.9
Third inseminations	30,493	15.5	28.1
Fourth + more inseminations	53,142	30.0	23.4
Total of inseminations	192,806	100.0	26.7

**Heat detection**

Distribution of cycles length (days):

5-17	7,227	6.5	
18-25	57,388	51.9	
26-35	12,579	11.4	
36-60	18,531	16.7	
Total of natural cycles	95,725	86.5	
Induced cycles	14,912	13.5	
Average days between inseminations	27		
Rejections by inseminator		8.5	
Preg.checks with negative results		34.0	

**Distribution of first-calvers, by days post-partum at effective insemination**

< 75 days	5,136	10.8	
76 - 110 days	15,009	31.7	
111 - 150 days	12,606	26.6	
151-180 days	5,908	12.5	
181-270 days	8,680	18.3	
Average Open days	131		
Average Rest days	87		



## Hachaklait – Mutual Society for Clinical Veterinary Services

Written by Dr. Benny Sharir – Chief Veterinarian

### The Beginning

Hachaklait was established back in 1919 by a handful of enthusiastic pioneer farmers. The vision they had was to combine a mutual insurance policy with comprehensive veterinary medicine. The initial motive was to protect valuable cattle, which were imported to a hot climate land, burdened with disease. Hachaklait was founded as a cooperative, which was owned and managed by the farmers for the benefit of the farmers. The veterinarians were contracted as the employees of the cooperative. From its small beginning with a few farms around the Sea of Galilee, Hachaklait grew hand in hand with the Israeli Food Animal Industry to encompass the entire country.

### Our Mission

Today, above 90 years later, Hachaklait is still a strong and thriving unique organization both in size and philosophy, in the veterinary world. Hachaklait is a farmer cooperative, still owned and managed by the farmers for their benefit. Our basic goal is to give our clients the best veterinary service at a reasonable cost. Each farm pays a yearly fixed rate per animal in order to cover all routine and emergency medical needs and is entitled to purchase one year prepaid contract of laboratory evaluation. Thus, Hachaklait has a long term and stable contract with the farm, and is committed to the well being of the animals, and the sound economy of the farm.

### Our Services

Hachaklait believes in intensive proactive service at all levels: sick individual cows, herd health, prevention and control of infectious and production diseases, as well as food safety and animal welfare. Our vets visit each farm two to three times a week, and each cow receives several routine visits per lactation, to make sure she is producing at maximal efficiency. All cows are checked after calving for both clinical and sub clinical diseases, for reproductive status and before drying off. All the data from each individual cow is collected at the farm and processed by Hachaklait. Hachaklait has its own clinical research unit to perform clinical field trials in collaboration with local as well as international companies and research bodies.

### Clientele

Hachaklait serves more than 800 dairy farms with over 110,000 milking cows, which comprises about 85% of the dairy cattle population in Israel. These are made up of 163 large Kibbutz herds and 650 smaller Moshav (family) dairy farms. There are some 60 beef herds with 20,000 dams and some 300 feedlots with 30,000 steers, as well as 200 sheep and goat farms.

### Personnel

Thirty-six of Hachaklait vets serve as district practitioners throughout Israel.

Ten junior vets operate as relief (locum) for the district vets and for special tasks. Some of our vets operate part time as consultants for: disease eradication and control (MAP, BVD, and BLV), clinical nutrition, dermatology, parasitology, lameness, young stock, ultrasonography, beef, feedlot, animal welfare, robotic milking

and small ruminants. Hachaklait encourages the vets' to acquire PhD, VMPH degrees funded by the Hachaklait as well as carry out mandatory monthly continuing education seminars. Currently, five of our vets are already specialists in Bovine Health Management. In addition, fourteen vets are at various stages of this four year program.

### Department of Herd Health

Hachaklait Department of Herd Health issues monthly and annual herd reports for each computer- managed farm, monitoring and analyzing its production, reproduction and economical performance. Our herd health experts meet with the manager and staff of every farm to present and discuss their findings and advise on future improvements.

### Clinical Research Unit

Hachaklait Clinical Research Unit functions as a CRO, GCP for national and international companies. Additionally, the unit provides epidemiological and statistical support to Hachaklait veterinarians involved in research projects.

### Pharmaceuticals

Since almost all veterinary drugs in Israel are imported, Hachaklait handles registration, import and distribution of a wide range of drugs, vaccinations and equipment. In order to perform this task, Hachaklait operates a large and modern, GMP central drug warehouse. Being the major drug buyer in the country and one of the largest veterinary groups in the world, we can offer our clients drugs at very competitive wholesale prices. In addition, drugs are sold without any surcharge. We advocate low and rational drug use and prevention of drug residues from entering into the food chain. Hachaklait strongly believes that it's the intensive farm visits routine and herd-monitoring activities that are the main cause of reduced drug use by our clients', low drug costs and increase in product safety.

### Our Affiliations

Hachaklait Head Office and its Chief Vet keep close ties and work relations with the following bodies: The Milk Board, the Israeli Cattle Breeders Association, the National Herd Book, Sion (the Israeli A.I. company), the Milk Quality and Udder Health Lab, The National Veterinary Services and the Kimron Veterinary Institute, the Koret Vet School of the Hebrew University, the Ministry of Agriculture Extension Service and some other international organizations including the WAB, IDF.

Hachaklait promotes various means of continuing education for our clients, in the form of conferences, meetings and formal studies, to keep them up-to-date with the vast changes in veterinary knowledge.

Once a year in autumn, Hachaklait organizes a Herd Health workshop in English for large animals' vets from all over the world. For details please refer to our site (address below).

### Our Address:

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# *S.A.E. Afikim (afimilk®)*

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## **Description**

Founded in 1977, **afimilk Ltd.** (S.A.E. Afikim) has become a global leader in developing, manufacturing and marketing advanced computerized systems for the modern dairy farm, and for herd management. The company, since its inception, has been a leader through innovation: **afimilk** introduced the world's first electronic milk meter more than 30 years ago, the first **pedometer** to monitor cows, the first dairy farm management software and the first online milk analyzer (**AfiLab**). These tools have enabled farm managers to improve performance and maximize efficiency, ultimately increasing profits.

## **A Global Presence**

**afimilk** systems and products are in use worldwide. The company is active in more than 50 countries: thousands of farms, hundreds of thousands of milk meters, millions of pedometers.

## **Solutions**

**afimilk** leading product line, is an automated modular system for intensive dairy farm management. The fully integrated software program, **AfiFarm**, collects information about each animal, builds a database and generates reports. This gives the farmer real-time information about herd health, milk quality and other critical factors, and enables well-informed decision-making.

## **R&D**

**afimilk** is firmly committed to R&D. Investing heavily in R&D, the company maintains topnotch research resources, and a large, advanced, experimental dairy farm. These assets, together with **afimilk** contacts with industry leaders and opinion-makers worldwide, enable development of practical, effective tools that fulfill the dairy farmer's needs.

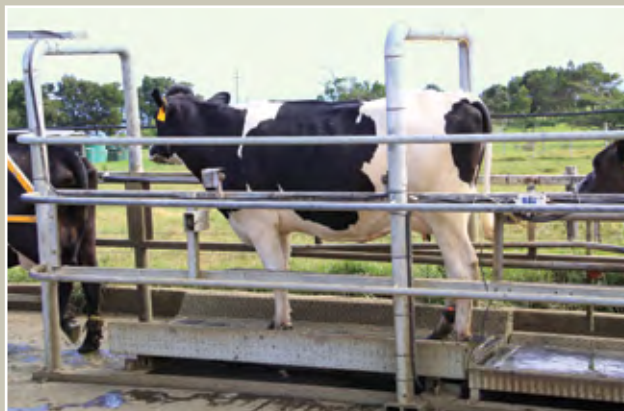
## **Sheep and Goat Systems**

In recent years, **afimilk** has moved into a new arena: small ruminant dairy farms. Now marketing its innovative systems to sheep and goat farms, **afimilk** helps ensure high herd productivity, good health and successful reproduction, all vital for profitable livestock farms.

## **Entrepreneurial Assistance**

**afimilk** new division, AfiEnterprise, provides entrepreneurs and early stage dairy investors with the structural elements and technical components needed to establish a profitable dairy farm enterprise.

**afimilk** is currently involved in the world's largest dairy farm project, in Vietnam. To date, the project has been implemented in six of 12 farms with 12,000 heads of cattle. By 2015, 32,000 cows will be milked with **afimilk** system. The company's project team plans and constructs milking parlors, sheds, field crops and feed centers, and provides management.



# THE CUTTING EDGE TECHNOLOGY



**RMH**  
LACHISH INDUSTRIES LTD.  
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ISRAEL

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# *Lachish Industries*

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Greetings,

Lachish Industries is a leading company in its field, developing, manufacturing and marketing cattle feeding machinery, ration planning software and management packages for dairy farms, operating in a competitive market around the world.

The company maintains leading technology and produces the widest variety of machines that include trailers, stationary and self-propelled mixers, having volumes that range from 4 to 50 cubic meters. During the course of the 54 years of its operation, Lachish has developed great expertise together with an experienced, skilled team in cooperation with the Israeli dairy farms - a principal factor in terms of milk production; thus, the company has taken a leading role from a technological standpoint. The dairy farm in Israel is one of the most advanced in the world, maintaining high performance and production levels, implementing accrued knowledge and managing activity interaction with great professionalism, all of which are contributing factors in making this industry a great economic success.

Total cost of feed in dairy farms may reach as high as 75% of the global expenses of the dairy farm; in fact, proper feed management is the most influential factor in the output and economy of the dairy farm and is crucial for the general health of the cows. For decades a concept that has been operating worldwide - TMR- Total Mix Ration, deems that if all of the feed ingredients are combined and cut to a specified size, the cow will obtain an improved feed that will be optimally digested, resulting in high milk yield and healthy cows. Most of the leading farms in the world are already working according to this concept and this is

precisely where Lachish's expertise comes into play. Lachish has developed a variety of heavy duty and long lasting equipment which provides complete feeding solutions for numerous types of farms, varying in size and required conditions, throughout many geographical areas in the world.

The Israeli farm constitutes a seminal factor in equipment development and in fact, functions as a "beta-site" for Lachish, posing challenges for the company to develop innovative and advanced products that are marketed first to the Israeli farms, and then later launched throughout the world. This gives the Israeli farm the additional advantage of having a local manufacturer available that provides high-quality solutions for different technological needs. In the last few years Lachish has invested in developing more sophisticated, heavy duty and low-energy consumption machines to suit the growing need to save on overall costs and to provide the best solution to the modern farms. Since the extreme changes in the past few years of high fuel costs, saving energy has become an important issue in all the markets.

Lachish is seeking suitable distributors in different countries. Distributors can arrive from two different fields of expertise: The dairy farm business sector; selling equipment for dairy farms, such as milking equipment, cooling tanks and feed, or from the agricultural equipment business sector, having contact with dairy farmers and are familiar with dairy-farm business procedure.

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More information can be found in our site.

You are welcome to contact us with any questions:

**[www.rmhmixer.com](http://www.rmhmixer.com) – [www.lachish.com](http://www.lachish.com)**



## SCR Heatime® HR System

Boost herd-wide productivity with **real-time**, individual animal status monitoring



- Early detection of health issues, enabling preemptive action
- **Real-time** health monitoring at high-risk times - calving and distress alerts
- Fast insight into the effectiveness of veterinary treatment
- Insight into ration and nutrition issues
- Analyze environmental factors for optimal decision making
- **Real-time** heat detection reports for optimized insemination timing
- Actionable information – optimal time window for insemination





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# About SCR

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**B**uilding on over 35 years of meaningful innovation, SCR is the leading pioneer of Cow, Milking and Herd Intelligence.

Monitoring millions of cows worldwide, our data-driven solutions are trusted by successful dairy farmers to deliver the insights and analytics needed to optimize the productivity of every cow. Improving efficiency and driving growth, we help to ensure a secure and prosperous future for their farms and families. Our pioneering solutions enable smarter and more sustainable dairy farming through leadership in:

## Cow Intelligence

Our advanced cow monitoring systems collect and analyze critical data points, from activity to rumination, on every individual cow, delivering the heat, health and nutrition insights farmers need, when they need them.

## Milking Intelligence

Our advanced milking solutions, led by best-in-class milk measurement technologies, simplify and streamline the milking process to save time, improve accuracy and drive overall efficiency.

## Herd Intelligence

Our advanced and scalable management system, enabling intelligent utilization of the data provided by SCR cow and milking intelligence solutions and compatible with third party solutions, provides integrated, pre-analyzed, actionable information, for efficient and profitable herd management.

Our innovations are guided by the following principles:

- **Expertise:** Deep industry experience, with a focus on enhanced cow productivity
- **Commitment:** Focus on efficient tools that answer farmers' most pressing challenges.
- **Practicality:** Grounded approach, ensuring ease of use and actionable information.
- **Agility:** Scalable and modular systems designed to adapt as farms grow in size.

With a global partner network, all of our products are backed by responsive support programs and highly trained staff.

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**SCR. Make every cow count.**



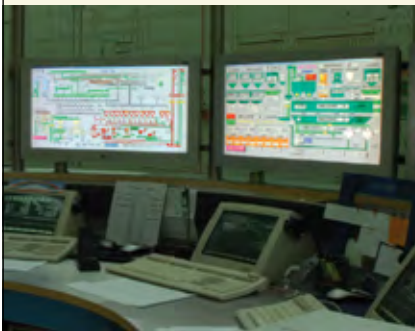
## Discover Livestock Potential with Feed Expertise

**Ambar Feed Mill is Israel's largest livestock feed enterprise and is run in compliance with the world's most advanced manufacturing methods and regulations.**

In addition to its standard production line, Ambar produces animal feed for several sectors including broilers, turkeys, breeders, layers, fish, dairy herds, beef calves, sheep and goats.

Ambar is capable of complying with specific demands from its customers in everything pertaining to feed composition or specific requirements.

Ambar owns several feed centres all over the country which provide T.M.R (total mix ration) to dairy herds, feedlots and small ruminant farms.



AMBAR Feed Mills

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# *Ambar Feed-Mills*

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Ambar Feed-Mills, the largest feed-mill enterprise in Israel, is run and managed in compliance with the world's most advanced manufacturing methods and regulations. It was founded in 1961 as a regional facility, jointly owned by the 39 kibbutzim that comprise the Granot regional organization, and collective moshavim in central Israel. Over the years, the list of owners grew and now, the owners are farming communities of three other regional organizations, a total of 148 kibbutzim and moshavim, from the Haifa district in the north, down to Eilat area, on the far south. Ambar owns two major production sites: Ambar North—located in Granot industrial area, and Ambar South—near Kibbutz Dvir in the north-eastern Negev.

In 2010, Ambar marketed over 830,000 tons of feed, aiming for the one-million ton mark. Ambar produces concentrates for all branches of poultry, large and small ruminants and fish, mostly standard line, but also customer designed concentrates for ruminants. Ambar's mission is to serve all sectors of the livestock, supplying optimal formulation of concentrates in term of economical feasibility and nutritional requirements. In accord to the poultry breeder's specific demands, Ambar has launched a special feed mill, operating according to strict bio-security regulations.

Ambar's large-scale laboratory is equipped with state-of-the-art equipment, and is working closely with the nutrition department and production-line under strict QC procedures. Ambar's shipping department operates a large fleet of the latest, clean and sterilized trucks. Ambar holds its own premix plant, producing vitamins premix from totally secured sources; the plant offers reliable and accurate vitamins and minerals premixes for Ambar's concentrates, as well as to external customers.

Apart from its activity in feed, Ambar is involved in other operations interfacing with this area such as:

## **1. Ambar Feed Centers (100% ownership):**

Ambar's 8 feed centers, located throughout Israel, produce and deliver TMRs for all branches of ruminants – dairy cows, dry cows, heifers, fattening bulls, goats and sheep – a total of ~ 250,000 tons/year. Ambar's feed centers were the first to introduce to Israel the on-bunk-delivery TMR truck, and the unique TMR compounded feeds tailor-made-concentrate method;

## **2. Ownership of Alef Bar (100%):**

Alef Bar is a branch of Ambar and currently produces over 30,000 tons of poultry meat/year. The company is managed by Ambar and includes cooperative projects with Cornish Hen Ltd, Efrat and Mishmar Ha'emek;

## **3. Partial ownership (50%) of the Ramit and Efrat companies:**

Efrat and Ramit represent the international companies Ross Breeders, and BUT; they operate parent stock for broilers and turkeys;

## **4. Partial ownership (50%) of Cornish Hen Ltd:**

Cornish Hen Ltd owns slaughter-houses for broilers and turkeys, operating in few sites – Off Hanegev, which produces 42,000 tons of broilers, Ma'of – 30,000 tons of turkeys, Hod Hefer slaughters 26,000 tons of broilers, and 8,000 tons of turkeys, and Kfar Menachem – high kosher 10,000 tons broilers yearly;

## **5. Partial ownership (50%) of Mekorit Bar Ltd:**

Mekorit Bar Ltd breeds and markets light layers chicks.

Setting the highest standards on issues of quality and customer service has brought Ambar to its current status as Israel's top feed mill in livestock feed market. Ambar believes it vital to continue maintaining that commitment to its customers as a reliable, professional, and effective organization – for its customers to successfully breed and raise livestock.

# Taste



## Labaneh Cheese

A Mediterranean Diet Favorite



0g trans fat  
Low in cholesterol  
No artificial colors



[www.tnuva.com](http://www.tnuva.com)



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# *Tnuva Innovation Spurs American Success*

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TnuvaUSA's auspicious entry into the North American marketplace widened the offerings for those subscribing to a Mediterranean diet augmented by low-fat dairy products and cheeses. Priding itself on responding to the changing needs of consumer lifestyles, Tnuva introduced to North American consumers premium quality hard and soft cheeses, Mediterranean feta cheeses, puddings and pastries. Tnuva's distinguished Labaneh collection of sour cheese spreads is available now in three flavors: Labaneh (original), Labaneh with Piquant Peppers Seasoning and Olive Oil, and Labaneh with Za'atar Seasoning and Olive Oil. These delectable specialty cheeses offer North American consumers with uniquely delicious and nutritious cheeses straight from the Land of Milk and Honey. The healthy Labaneh collection extended the opportunity for North Americans to partake in the famous Mediterranean diet. Noticing the growing popularity of Mediterranean-style foods in the North American marketplace, Tnuva introduced a wide selection of Feta cheese products including Sheep and Cow Milk Feta Cheeses that are available to consumers in a variety of packaged options. In addition, the company offers a premium Pasteurized Goat Cheese Roll.

Health-conscious North American consumers are purchasing Tnuva's array of soft cheeses, which are sold in four types of Quark-Creamy Soft Cheese and three types of Cheese Spreads. Low in fat, the Quark Soft Cheeses are packed with bone-fortifying calcium and are made without artificial preservatives. Quark is versatile, as it can be the perfect breakfast item, a key ingredient in an exquisite cheesecake or made into dips or quiches. The soft cheeses are a premium alternative to locally produced sour cream cheeses, while the spreads are showcased as the Israeli version of rich cream cheeses, which are Sabbath afternoon and Sunday morning staples amongst the North American Jewish community.

In frozen aisle, Tnuva unveiled a line of unique frozen and phyllo dough pastries. These bourekas, Malawach, Jachnun and mini-pizza bites have become a popular treat for American consumers, who relish products that are both simple-to-use and simply delicious. Likewise, Tnuva debuted a line of delectable blintzes, a traditional Jewish stuffed crepe-like treat, and puff and short pastries.

Additionally, parents have lauded Tnuva for introducing low-fat puddings for youngsters as a healthy snack alternative that is also rich in bone-building calcium. The four pudding flavors are: chocolate, vanilla, chocolate and vanilla, and a chocolate pudding with vanilla mousse. Tnuva's strategic marketing, advertising and public relations campaigns have focused on the Holy Land's pastoral Galilee region where dairy and cheese products are made at the state-of-the-art Alon Tavor facility. The image of dairy cows roaming freely across the Galilee and producing perhaps the finest milk in the world has resonated among all consumers, showing North Americans how Israel is similar to the dairy capital of Wisconsin. Tnuva brands itself as an Israeli company delivering specialty products from the Land of Milk and Honey.

TnuvaUSA's colorful and informative website, [www.Tnuva.com](http://www.Tnuva.com), provides consumers with nutritional information about each product, store locations, delicious recipes and useful tips. The website also has been a focal point for promotions and contests, where consumers can win valuable prizes, including trips to Israel. Tnuva also understands the importance of contributing to the community. This Shavuot, Tnuva seized the blitz around the dairy-filled holiday and published a colorful booklet of recipes for the holiday, informing families how to enhance their holiday festivities using Tnuva's delicious dairy products. In previous years during Hanukah, the company provided thousands of colorful dreidels to 50 Chabad branches across the USA. The Chabad branches handed out the dreidels to children of all ages during the course of the 8 day festive Chanukah holiday, bringing smiles to the faces of thousands of Jewish youngsters from all walks of life across the country.

In the company's years of experience, Tnuva never compromises on taste and quality. Tnuva's commitment to showing off to the American market Israel's best gourmet dairy treats has led to revolutionary success in the dairy industry. Tnuva continues to distribute affordable gourmet cheese products to North American grocery stores due to the company's expertise in producing extraordinary dairy products.



**Israel Cattle Breeders Association**