THE DAIRY INDUSTRY IN ISRAEL 2006

Israel Cattle Breeders Association

Israel Dairy Board

The Dairy Industry in Israel 2006

Editors:

Daniel Hojman – Extension Service, Ministry of Agriculture

Yossi Malul – Israel Cattle Breeders Association

Tova Avrech – Israel Dairy Board

Design and Production:

Moshe Mirsky

Aknowledgments:

Rachel Borushek – Israel Farmers' Federation

Ephraim Ezra – ICBA, Israeli Herdbook

Israel Flamenbaum – Extension Service, Ministry of Agriculture

Shmuel Friedman – IDB – National Service for Udder Health and Milk Quality

Boaz Hanochi – ICBA

Ezra Shoshani – Extension Service, Ministry of Agriculture

Liron Tamir – Israel Dairy Board

Joel I. Weller – Department of Genetics, Institute of Animal Sciences, A.R.O.

Yoel Zeron – Sion A.I. Company

Doron Zilcer – Tnuva Dairy Industry

Sponsorships:

"Hahaklait", Mutual Society for Clinical Veterinary Services

Sion A.I. Company

S.A.E. Afikim

Ambar Feed Mills

Lachish Industries Ltd.

S.C.R. Engineers Ltd.

Tnuva

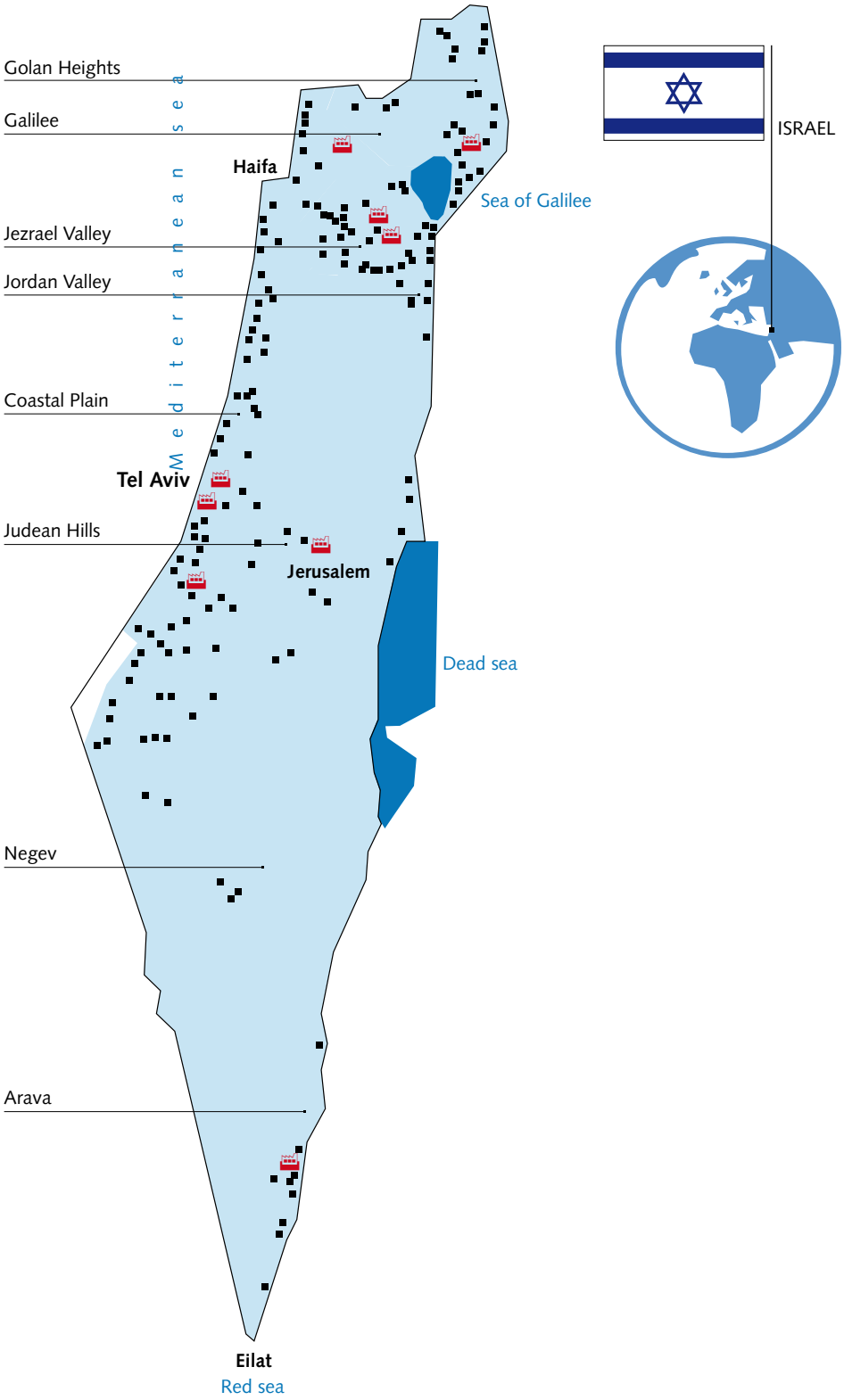
Contents

➤

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 Israeli agriculture, and a source of pride to all Israelis. It supplies most of the domestic demand for milk and dairy products, being the rest of the demand covered by imported supplies.

In 2006, Israel had a total annual output of approx. 1,124,000,000 liters of cow milk, 11,000,000 liters of sheep milk and 7,000,000 liters of goat milk.

The annual value of products being processed is about $1.5 billions. The Israeli milk shelves are filled with over 1,000 different products which are healthy, innovative, tasty, and in row with other state-of- the-art dairy industries.

Milk is produced on over 1,000 farms, spread countrywide. The national dairy herd is comprised of 110,000 head of the Israeli-Holstein breed, which has been developed by the Israeli Genetic Improvement system. Since this cow has been selected for generations in the harsh conditions of the Israeli climate, it is very well adapted to the local environment – a long and hot summer and several endemic diseases. Nearly all cows are bred by Artificial Insemination.

The Israeli Herdbook (DHI) receives and processes information from the official milk production control system, which includes 90% of the dairy cattle in the country. In addition to production figures, the Israeli Herdbook incorporates information from The Breeding System and from The Society for Veterinary Services – "HaChaklait". The comprehensive structure of the Israeli Herdbook provides the farmer with useful multi-disciplinary information and is used for evidence-based management analyses and decision making processes, which have 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 2006, the average annual milk yield per cow was 11,281 kg of milk, 358 kg of protein and 404 kg of fat.

We are pleased to present you with this summary of the Israeli Dairy Industry for 2006 and hope you will understand the reason why the Israeli Dairy Farm has become known as a source of knowledge and pride.

Sincerely

Shayke Drori
Israel Dairy Board
General Manager

Meir Brawn
Israel Cattle Breeders Association
General Manager

The Agricultural Sector in Israel

Rachel Borushek____Israel Farmers' Federation ► rachel_b@mail.netvision.net.il

➤

Table 1.1

Economic and financial data of Israel and its agricultural sector

(1 US$ = 4.45 NIS)

Population	7.05 million inhab.
GDP per cápita	88,760 NIS = 19,920 US$
GDP of Agricultural Sector	10.0 NIS Billions = 2.2 US$ Billions
Share of Agriculture in National GDP	1.6%
Share of Agriculture in the Business Sector GDP	2.2%
Direct Employment in Agriculture as share of National Labor Force	2.4%
Self-sufficiency of Agricultural Products	80.0%

➤

Table 1.2

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

(1 US$ = 4.45 NIS)

Crops	12,918	61%
Livestock and livestock products	8,259	39%
Thereof raw milk	1,909	9%
TOTAL	**21,177**	**100%**

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. 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.

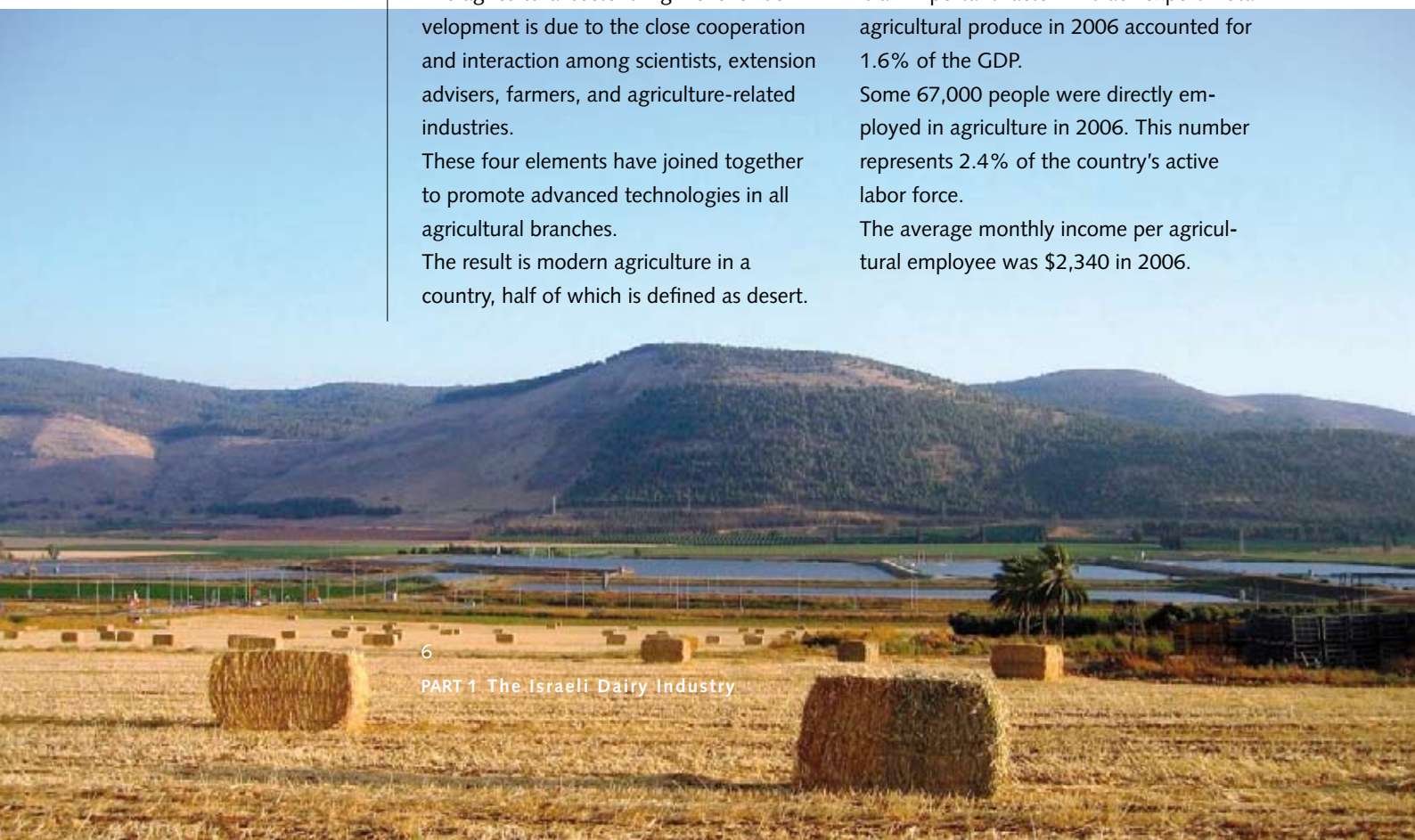
These four elements have joined together to promote advanced technologies in all agricultural branches.

The result is modern agriculture in a country, half of which is defined as desert.

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. Total agricultural produce in 2006 accounted for 1.6% of the GDP.

Some 67,000 people were directly employed in agriculture in 2006. This number represents 2.4% of the country's active labor force.

The average monthly income per agricultural employee was $2,340 in 2006.



Dairy Farming in Israel

➤

Table 1.3

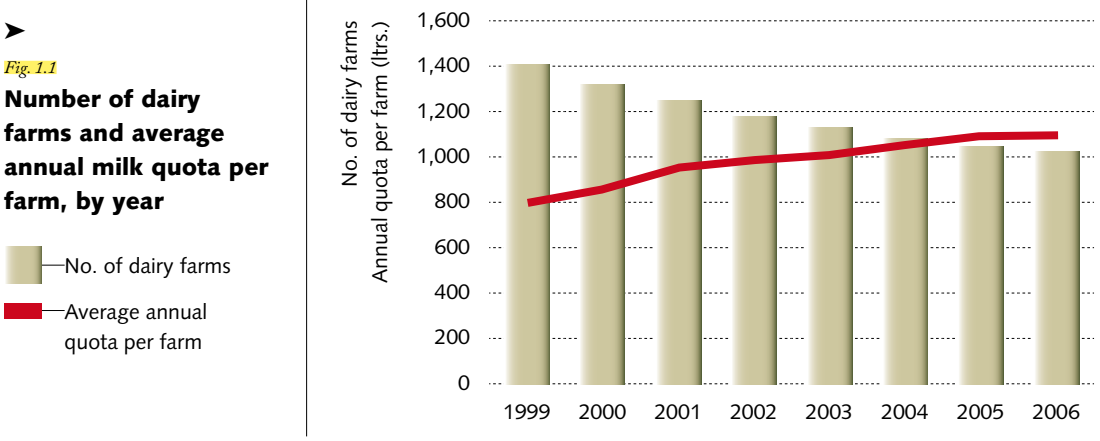
No. of dairy farms, by farm type, and average annual milk quota per farm (x 1,000 ltrs.)

	1999	2000	2001	2002	2003	2004	2005	2006
Family farms (Moshav)								
Number	1,175	1,091	1,025	962	921	880	855	843
Average quota (x 1,000 ltrs.)	402	439	492	511	524	541	560	564
Cooperative farms (Kibbutz)								
Number	216	214	209	200	196	187	176	167
Average quota (x 1,000 ltrs.)	2,966	3,036	3,273	3,335	3,344	3,524	3,747	3,851
Agric. school farms								
Number	16	16	16	16	16	16	16	15
Average quota (x 1,000 ltrs.)	703	713	750	731	719	733	746	784
Total								
Number of farms	1,407	1,321	1,250	1,178	1,133	1,083	1,047	1,025
Average quota (x 1,000 ltrs.)	799	863	960	993	1,015	1,059	1,098	1,102

➤

Fig. 1.1

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



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. Theses 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 61.7% of the cows with recorded production. Their average milk yield in 2006 was 11,695 kg/cow/year and the average production of protein and fat was 792 kg/cow/year.

Approximately 75% of the Moshav dairy herds participate in the DHI system and represent 39.1% of the cows with recorded production. Their average milk yield in 2006 was 10,607 kg/cow/year and the average production of protein and fat was 713 kg/cow/year.

The Israel Dairy Board Production & Marketing

Tova Avrech____International Collaboration ► tova@is-d-b-co.il

www.milk.org.il

The Israeli Dairy Board (IDB) is a private organisation, jointly owned and managed by the Government of Israel, the major processing companies, and the dairy farmers.

The Board consists of representatives of

The Government:

- The Ministry of Agriculture and Rural Development
- The Ministry of Health
- The Ministry of Finance
- The Ministry of Industry, Trade and Labour

The processors:

- Tnuva Dairy – CEO & economy
- Strauss Dairy
- Tara Dairy - CEO

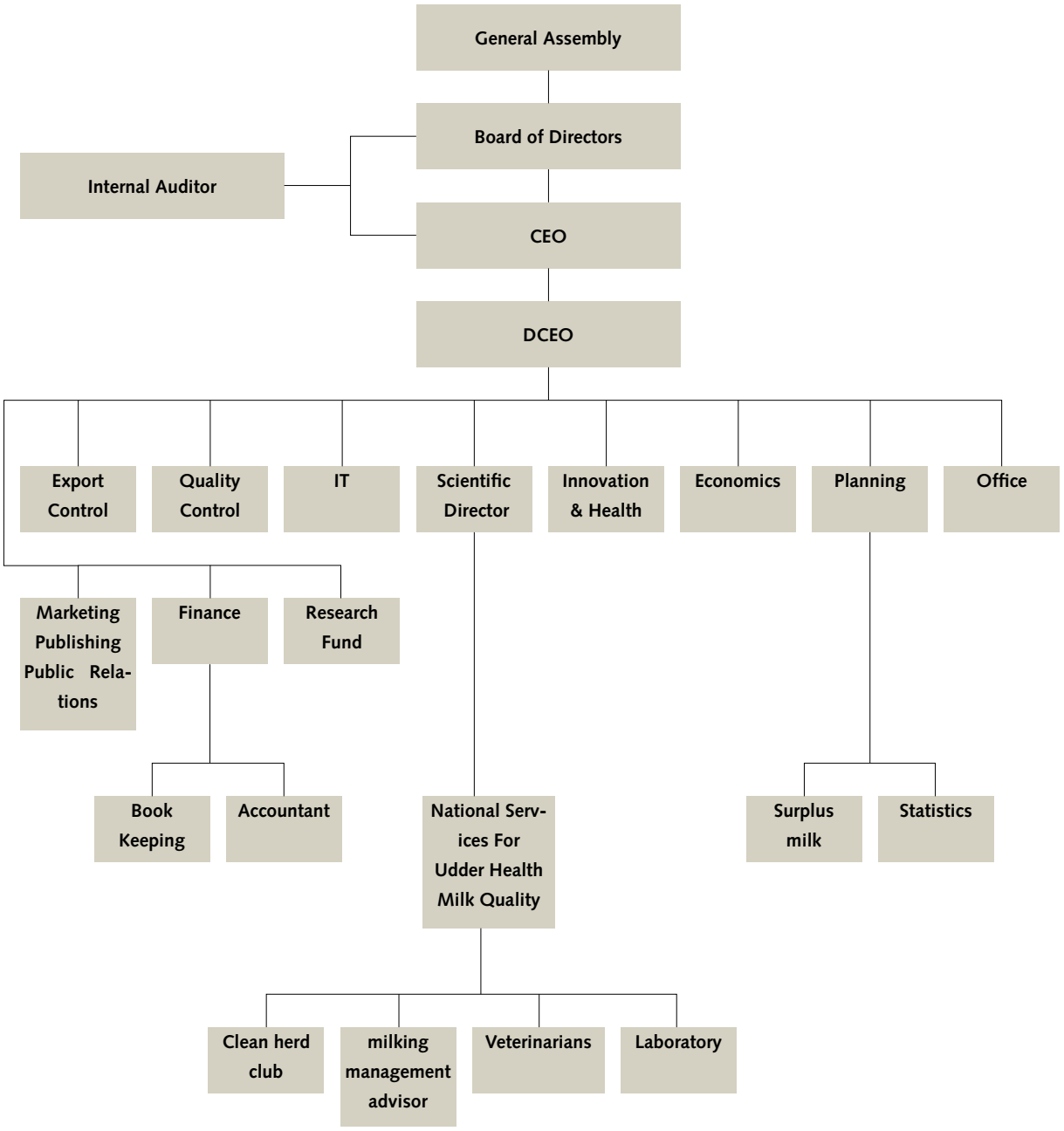
The farmers:

- The Israel Cattle Breeders Association – CEO & members
- Israeli Farmers Federations - members
- Israeli Farmers Association
- The Jewish Agency

The IDB has the following objectives:

- To generate and organize cooperation among all entities active in the sector.
- To implement the government policy regarding milk-production planning and marketing (including management of quotas).
- To deal with and dispose of surplus milk.
- To improve the professional standards of the dairy industry.
- To promote the consumption of milk and dairy products.
- To manage the beef-cattle market.

Structure of Israel Dairy Board



Annual Milk Quota and Milk Supply

Liron Tamir 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.

➤

Table 2.1

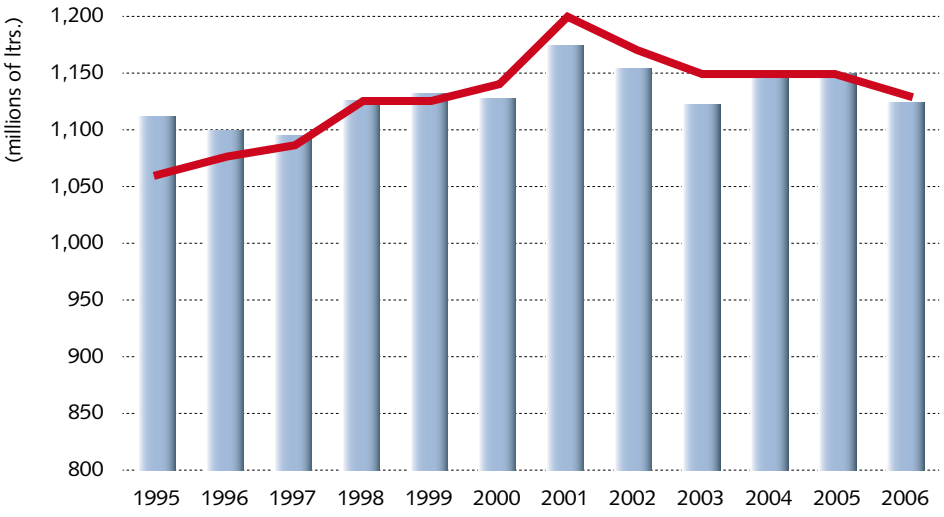
Cow milk – annual supply and quota (millions of ltrs.)

Year	Milk supply (millions of ltrs.)	Milk quota (millions of ltrs.)
1995	1,112	1,060
1996	1,099	1,075
1997	1,095	1,085
1998	1,126	1,124
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

➤

Fig. 2.1

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



The Reform in the Israeli Dairy Farms 1999-2006

Tova Avrech____International Collaboration ▸ tova@is-d-b-co.il

Between the years 1999 and 2006 the Israeli Dairy Farms underwent a major reform. Its purpose was to make milk production more efficient, and to accommodate milk production to environmental requirement standards, in order to decrease pollution of land and water.

This reform was made possible with the aid of government grants: 50%-65% for investments concerning environmental adjustments and 30%-40% for investments concerning the enlargement of production units. Environmental requirements were to enlarge covered spaces, build concrete floors in farms; separate running water from cow spread areas and prevent slurries from reaching the farm's periphery.

Enlarging the production unit was made possible in two ways: Encouraging small farms to merge with other farms or to sell quotas to other farms, according to demands of the Dairy Board. Between 1999 and 2006, in the Family dairy farms sector, 161 partnerships were created, including 395 producers, and thus today there is an overall of 177 partnerships including 469 producers. In the Cooperative dairy farms sector, during the same time, 39 partnerships were created, owned by 70 producers. By now, in the Cooperative sector there are 41 partnerships altogether.

Between 1999 and 2006, selling quotas caused 353 farmers to retire in the Family sector, 3 cooperative farms sold their quotas and one agricultural school gave up its quota.

Both ways – merging and selling the quotas caused a decline in the number of farms and increased the average production unit, while keeping the dairy sector planned.

The government gave those grants as a special budget via the Ministry of Agriculture.

Until the end of 2006, 98% of Israeli farms received letters of agreement for operation but only 473 farms (46%) fulfilled all investment requirements and received full grants.

National Service for Udder Health & Milk Quality

Shmuel Fridmann——Israeli Dairy Board, National Service for Udder Health and Milk Quality ▸ shmulik@is-d-b.co.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

- During 2006 the lab analysed a total of 152,037 samples.
- During 2006 the lab was found to comply with the Quality Management Standard ISO 17025 and received accreditation.
- Periodic sampling and analysis of dairy herds.
- Analysis of samples from mastitic cows sent by dairy farmers.
- Analysis of samples sent by farmers from pre-partum cows for sub-clinical mastitis.
- Antibiograms providing information to the clinical veterinarian (1800 tests).
- Evaluation of teat dip samples from dairy herds.
- Bulk tank analysis for Strep. Agalactiae (1679 samples taken).
- Analysis of bedding samples.
- Analysis of water for Pseudomonas.
- Para tubercolosis milk test by ELIZA from individual cows and herd level: About 2.6% of Israeli cows were found to be infected with Para tuberculosis; the amount of problematic herds is 14% (a problematic herd has over 5% infectivity).

Udder Health

- Tracing and planning the eradication of contagious mastitis e.g. Strep. Agalactiae (0.3% of cows are infected), Staph. Aureus (less than 3% are infected).
- 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 combat mastitis in individual cows and on a herd basis.

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

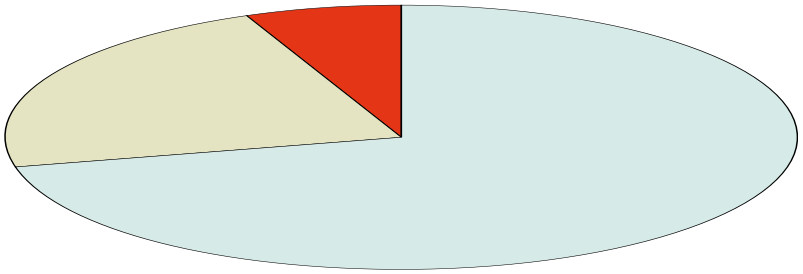
- Advice on laboratory facilities and laboratory examinations.
- Organisation of workshops for producers and for dairies.
- Publication of technical news letters.
- Promotion of research projects.
- Field studies.
- Advice, co-ordination, and follow up of all services provided.

Milk Quality

➤

Fig. 2.2

Milk supply, by somatic cell count categories, in 2006

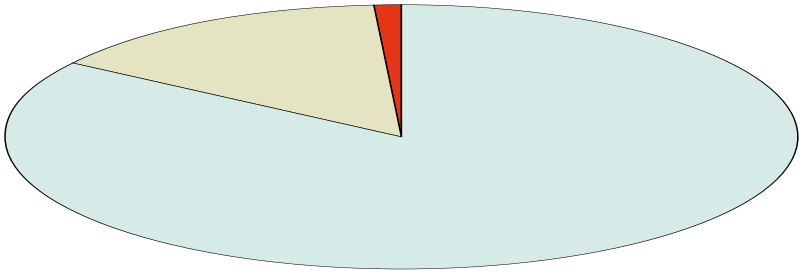


SOMATIC CELL COUNT		
Quality Grade	**Count per ml**	**% of supplied milk**
Premium	Less than 220,000	71.5
Grade A	220,001 – 290,000	22.2
Grades B, C and D	over 290,001	6.3
Total		100.0

➤

Fig. 2.3

Milk supply, by bacterial count categories, in 2006

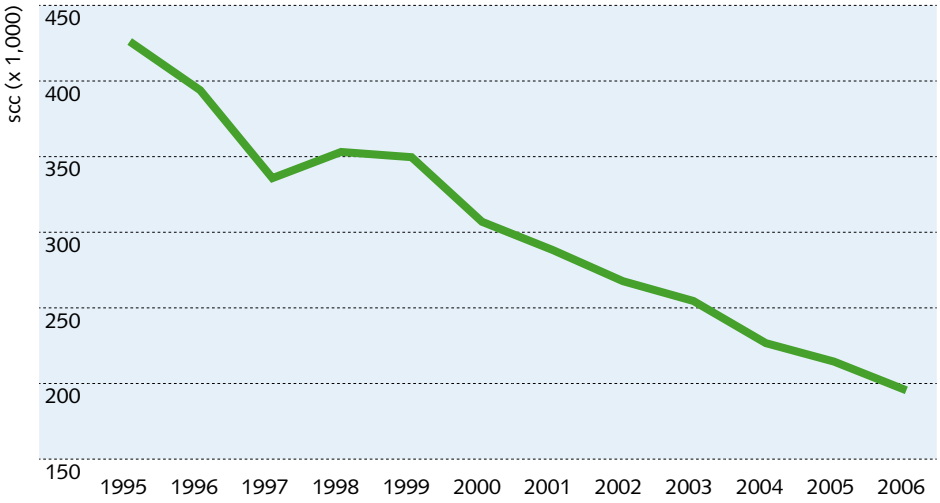


BACTERIAL COUNT		
Quality Grade	**Count per ml**	**% of supplied milk**
Premium	Less than 20,000	84.5
Grade A	20,001 – 100,000	14.5
Grade B	over 100,001	1.0
Total		100.0

➤

Fig. 2.4

Average somatic cell count, by year



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 196,000/ml in 2006 (data from milk processing plants).

Milk Marketing

Tova Avrech____International Collaboration ▸ tova@is-d-b-co.il

Every dairy in Israel does its own marketing and promotes its own brands. The IDB, however, promotes only generic milk and generic milk products.

The IDB adopted the "three-a-day" concept as the main concept, and the three-a-day logo appears on every IDB publication. "Three-a-day" will be the main message in the near future, as part of a long-term educational program. The concept has been promoted on the radio and in brochures, in cooperation with the biggest HMO in Israel – Ha'Klalit – directed towards the entire population. It was also adapted for special sectors, such as children aged 4-11, as well as doctors and dietitians. Focused activity for these target audiences is discussed below.

2006 was the third year in which the IDB, together with all dairy farms in Israel celebrated "The Joy of Milk" festival. In February, during which milk yields are very high, dairy farmers open their doors and invite visitors in to watch milking, feeding, handling and caring of the cows, as well as sheep and goats.

During 2006 the IDB started an extensive educational programme in kindergartens, called "Sida & Dan" (Sidan is Hebrew for calcium). As the name suggests, the programme deals with the importance of consuming milk and milk products three times a day as part of a balanced diet. The IDB has put together a kit which consists of a book telling the story of Sida & Dan, two imaginary characters that help strengthen the bones, a memory game, colouring-in pages, stickers, letters to parents and several other activities, all dealing with health and nutrition.

The "Sida & Dan" kit was distributed free of charge to 9,500 kindergartens in Israel, including 2000 kits adapted for the Arab sector, and 1500 adapted for the Orthodox sector. Letters were sent to all teachers several months after the kit was received, with additional nutrition information as well as games for the kids.

Pediatricians, gynecologists, gastroenterologists and dietitians were given a great deal of information about nutrition during 2006, including facts and figures about osteoporosis, the connection between eating dairy products and weight loss, and the importance of the "three-a-day" concept.

Annual Marketed Milk

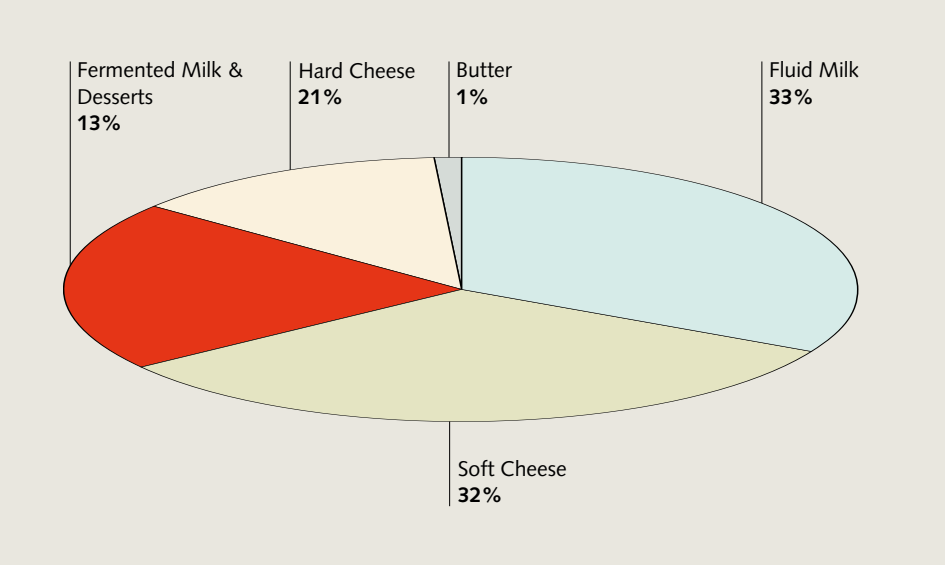
Year	Cow Milk					Sheep & Goat Milk	
	Fluid Milk	Fermented Milk and Desserts	Soft Cheese	Hard Cheese	Butter	Soft Cheese	Hard Cheese
2001	357,277	144,787	78,116	22,042	5,155	971	1,136
2002	359,594	148,743	79,252	22,435	5,423	925	1,140
2003	359,859	147,151	79,900	22,547	5,444	1,040	1,131
2004	370,266	146,820	80,703	22,813	5,713	1,266	1,200
2005	378,957	151,766	82,359	23,528	5,816	1,273	1,236
2006	402,251	164,220	87,266	25,112	6,209	1,361	1,173

Table 2.2

Annual marketed milk, by dairy products – domestic demand (tons)

Fig. 2.5

Distribution of annual marketed milk, by dairy products (% of total, based on skimmed milk equivalent)



Research Fund 2006

The goal of The Dairy Board Research Fund for Dairy and Beef Cattle is to support mainly applied research, provide the farmers with advanced tools to improve productivity and health conditions and to significantly reduce their expenses.
Also, it aims at promoting the quality of dairy and beef products for consumer health.
The professional reviewing committees and the supreme steering committee are appointed to examine all grant proposals in the light of these aims.

The total research budget for 2006 was approximately 4 million NIS.

MILK LOSS RESULTING FROM SUBCLINICAL MASTITIS IN HIGH-YIELDING ISRAELI COWS

S. Friedman[1#], E. Shoshani[2], E. Ezra[3]

1- Udder Health and Milk Quality Laboratory, Israel Dairy Board.

2- Extension Service, Ministry of Agriculture and Rural Development.

3- Herd Book, Israeli Cattle Breeders' Association.

#E-mail: Shmulik@mba-labs.org.il

INTRODUCTION

Mastitis is a well known disease that impairs milk production. A retrospective epidemiological study was carried out, based on milk recording data (1995-1999) and bacteriological tests that were performed on all dairy herds in Israel annually.

GOALS OF THIS STUDY:

To determine rates of sub clinical infection on national level;

To diagnose the dominant pathogens causing the sub clinical infections in Israeli herds;

To quantify the milk loss caused by sub clinical mastitis in Israeli herds.

MATERIALS AND METHODS

400,000 Bacteriological tests of composite milk were analyzed. Type of pathogen were defined according to NMC, 1999. In addition data of over 1,600,000 records of monthly SCCs and milk production were collected from the Israeli Herd Book for the years 1995-1999. Three statistical models, using the GLM procedure of SAS were used:

1. **MODEL 1** - The dependent variables were SCC or milk production. The independent variables were: Herd type (HT) – 1 cooperative farm (more than 250 cows) 2 – family farm (less than 100 cows). Categories of days in milk (CDIM) were divided among three categories: 5-100, 101-200 and 201-305 days. Lactation number – lactations 1, 2, 3, and 4 and above. Udder Infection Pathogen (UIP) - Bacterial group ; Month of calving (Mn) where n = 1-.....12.

2. **MODEL 2** – same as in model 1 but SCC was divided into six groups and lactation number into two groups.

3. **MODEL 3** – same as in model 1 but SCC was divided into two groups: "non infected" cows – SCC < 200,000 somatic cells/ml, and " infected" (sub clinical infections) cows – SCC > 200,000 somatic cells/ml milk.

Distribution of the pathogens (%) involved in sub clinical mastitis as diagnosed by yearly routine bacteriological samples during lactation in primiparous and cows in the years 1995-1999

(n = 414,363)

Diagnosis result	Primiparous	Cows
Streptococcus non-agalactia	3.2	7
Staphylococcus aureus	2.3	3.4
Environmental (Gram negative)	1.2	2.7
CNS (Micrococci)	33	18.1
Corynebacterium bovis	2.9	5.1
Others (fungi, yeasts, algae)	1.8	2.9
No growth	55.6	60.8
Total	100	100

The main sub clinical bacterial infections are environmental and opportunistic bacterial groups. In all bacteria, apart from CNS, the infection rate increased with increasing lactation number.

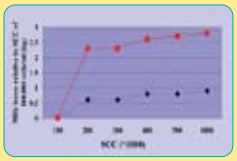
The effects of lactation no. of "non-infected" and "infected" cows on SCC and corrected milk production

SCC groups	Lactation no.	No. of observation	SCC (*1000)	Milk (kg/day)
below 200,000	1	413,246	81	30.9
	2	279,319	85	36.7
	3	165,167	91	38.9
	4+	171,312	97	39.4
Total		1,029,044	86	36.5
Above 200,000	1	134,161	714	29.5
	2	135,715	773	33.2
	3	118,079	833	35.1
	4+	194,903	948	35.0
Total		582,858	830	33.2

"Non-infected" - SCC below 200,000
"Infected" - SCC above 200,000

High relationship (P<0.01) was found between lactation number, milk yield and "infectious" category derived from SCC only.

Effect of SCC on milk losses (kg) /day of primiparous (♦) and cows (■) during 305-d lactation period.



The biggest effect of SCC on daily milk yield loss was between 100,000 and 200,000 cells/ml in all lactations (0.6 kg – primiparous, 2.4 kg – adults). Milk losses at higher SCC was relatively small.

CONCLUSIONS

1. The main pathogenic factors causing sub clinical udder infections in the Israeli dairy herd are environmental and opportunistic bacteria.
2. The average infection rate for a dairy herd was between 40 and 60%. The infection rate by these bacteria rises with the age of the cow, except for the CNS group that was dominant in the primiparous (with a rate almost twice as high as those in the other lactation groups).
3. The rate of milk loss is directly correlated to the SCC level. In primiparous with SCC levels between 100,000 and 1,000,000 cells/ml the milk loss was between 2 and 4%; for the older cows milk loss was higher – between 5.5 and 9%.

Dairy Processing Companies in Israel

Doron Zilcer——Tnuva Dairy Industry

The Israeli Milk Industry was founded in 1926 by the time "Tnuva" was launched as a cooperative, with the purpose of handling milk production. Since then, Tnuva has been the largest leading producer of milk in Israel. It has provided stability to the dairy sector and promoted its growth, to the point where in 2006 a total of 1,130,000,000 liters of milk were delivered.

Tnuva's dairies annually receive and transform 850 million liters of milk into dairy products. The winter milk surplus is converted into milk powder and butter. In 2006, 4,550 tons of milk powder were produced.

Tara and Strauss Dairies collect and process 120 million and 115 million liters of milk per year, respectively. In addition, 54 small dairies in Israel collectively produce 40 million liters of milk annually.

Over the last 5 years, the Israeli milk industry has passed comprehensive reforms that include:

- Specialization and renovation of most dairy plants.
- Construction of the Alon Tavor plant, a modern milk processing facility that is the most advanced in the world, equipped with state of the art technology and automation.

As the Alon Tavor dairy plant became operational, Tnuva closed the Tel-Aviv and Haifa processing plants, and converted the Rehovot facilities into a dairy plant specializing in milk and dairy beverage production. Moreover, the company has renovated production lines specializing in hard cheese processing at the Tel-Yosef dairy plant, salty cheeses at the Tene-Noga plant as well as at the Jerusalem dairy, which is geared towards the stricter kosher regulations for the ultra-orthodox market.

Strauss has established new dairy facilities in Ashdod and Netivot and has renovated its Yotveta plant. Tara, recently bought by the Coca-Cola Company, is planning to establish a new dairy plant. Many small dairies are also undergoing a renovation process.

The milk industry has also modernized its storage and distribution capabilities, moving from small storerooms in the inner cities to large automatic logistics centers where the extensive variety of products is stored and organized for distribution throughout Israel (see below: Petach-Tikva Logistics Center).

All the new sites are ecologically friendly. For example, recycling has been largely implemented. A good illustration of this approach has been the construction of a new factory to process whey, the Ba'emek plant, which collects whey from all of the dairies and produces milk protein and lactose.

Other improvements relate to quality control and strict regulations to avoid risking any health hazards.

The produced raw milk meets the highest international quality standards. Milk transportation specifications have been set to preserve the quality of the product delivered by dairy farmers that compares with the highest international standards.

Production lines at dairy plants use state of the art cleaning technologies to maintain milk quality levels and extend the shelf-life of products.

Finally, distribution of processed products has been upgraded: delivery trucks are fully refrigerated and equipped with cooling control.

This updated dairy industry, distinguished by innovative packaging and a large variety of products, is both the result of intense competition and concern for the consumers' welfare. Strong emphasis is placed on the consumer. In fact, the customers' satisfaction is our main objective.

The intense competition and the limited size of the Israeli market have encouraged the largest dairies to initiate activities overseas. Currently, milk products are exported to the United States market, especially for the kosher consumer sector.

Sheep and Goat Milk Production

➤

Table 2.3

Sheep and goat milk – Annual production

Year	Sheep milk (x 1000 ltrs.)	Goat milk (x 1000 ltrs.)
1995	7,878	2,269
1996	8,735	2,315
1997	9,021	2,581
1998	8,695	2,982
1999	8,716	2,940
2000	8,736	3,375
2001	9,758	3,579
2002	10,389	4,147
2003	9,931	5,142
2004	10,446	5,407
2005	11,527	6,171
2006	10,966	7,027

Raising sheep and goat for milk and meat is one of Israel's oldest agricultural branches. Today, approximately 2,500 families* raise sheep and goats under a wide range of production systems: from extensive, traditional, semi-nomadic, and transhumant flocks to the intensive, zero-grazing dairy and meat units of moshav and kibbutz farms in various parts of the country. The evolution of the Israeli sheep sector is a good example of how modern technology has been integrated into a traditional farming system through research and development.

Milk production

Some 11.0 million kg of sheep milk and 7.0 million kg of goat milk are produced annually. The milk is used for a diverse range of cheese and yogurt products. Due to their high quality and properties, sheep and goat cheeses are exported, mainly to the USA.

* sheep for meat included.

Housing for High Yielding Cows in Israel

Ezra Shoshani____Extension Service, Ministry of Agriculture ► ezrasho@shaham.moag.gov.il

Barns housing high yielding cows should provide optimal environmental conditions in order to enable full potential milk production levels for cows.

This goal has not always been taken into consideration. The first dairy farmers in Israel, who emigrated from Eastern European countries over a century ago, constructed barns based on previous concepts suitable for their traditional European background.

Initially, the basic barn type built was "tied stalls". In addition to the fact that the cows were tied for most of the day, this barn type was ill-suited because of its low roof, resulting in poor ventilation. At that time, cows were of smaller stature and milk production was lower. Later, due to the intensive breeding programs, cows increased their body size as well as milk production. Consequently, cows became more exposed to heat-stress conditions. One way of alleviating heat stress was to construct open yards to enable greater heat dissipation. These open yards were used for many years up until the year 2000, until environmental restrictions prohibited their use to prevent underground water contamination caused by slurries.

The following step in designing dairy cow barns was to build a loose housing barn with a straw bedding area of approximately 5 to 8 square meters per cow. During those days, the price of straw was low and almost all dairy farmers switched to this system of housing cows. However, this type of construction did not relieve cows from unsuitable physiological conditions throughout the year because the required addition of straw for bedding increased the cows' proximity to the roof. Moreover, changing the level of the bedding surface caused the cows to be ill- positioned regarding the feed manger, resulting in ineffective feed consumption, which inhibited optimal milk yields.

During the 70s, a new housing system was "imported" from California: the corral. This type of barn included a narrow bedding area under the roof, situated from east to west, allowing for appropriate drying of the straw bedding. It also maintained a low roof and small bedding area per cow. A concrete floor surrounding the bedding area enabled cows to use open yards for heat dissipation during the cooler hours of the day. Cows had to walk across the sun-exposed open yards in order to gain access to the feeding alleys, thus limiting, once again, optimal food consumption and consequently - milk yields. Covering this area with mesh netting during the summer months helped to substantially reduce the impact of heat stress on the cows. However, the environmental requirements set at the beginning of the year 2000, basically enforcing farmers to prevent rain water to combine with manure, caused the farmers to adopt a barn design that had been initially developed in the Lachish region (semi-arid conditions) in the southern region of Israel. This barn type took its name (Lachish) from the name of the region. It allocates a larger resting area per cow-under-roof in order to save bedding costs. The feeding table was constructed along one side of the barn with an adjacent corridor of concrete, with a roof having but one slope. This type of barn was later upgraded and renamed "loose-housing" barn.

The loose-housing barn is characterized by a two-sloped roof with a feeding table in the middle, serving two sides at a time. On each side there is a feed alley built of concrete with water troughs located between the feeding alley and the bedding area. The previously existing aforementioned "corrals" were upgraded to these types of barns.

During the past forty years, another type of barn was constructed: the free-stall barns. In the beginning, they were built solely on farms located in hilly regions. The main reason for the preference of this type of barn was due to the scarcity of available land. The original model consisted of a barn with concrete slats, so that manure could be accumulated underneath and pumped out bi-annually. The free-stalls were adjacent to the concrete slats. Straw above the concrete floor served as a bedding layer and years later rubber mats were used in substitution of the straw. However, cows in those barns did not use the stalls as was expected, due to errors in design, and they preferred lying down on the concrete slats. Consequently, many cows suffered from injured teats as a result of being trodden upon

by the other cows. In many farms, stalls were removed and replaced with open yards that were reconstructed to enable cows to lie down in a more comfortable area. By the 1980s, the construction of this type of barn was discontinued.

During the past five years, this type of barn has been readapted according to the recommended dimensions from the United States. However, there is great diversity among farms regarding the success in implementing this type of barn. In some large farms where both the loose-housing and free-stall type of barns were built, field experiments have shown the advantages of the loose-housing type in terms of milk production, fertility, and physical condition of hooves and legs. In fact, loose-housing is the predominant type of barn used in Israel.

The question regarding which features would be the most efficient in barn building was still unanswered until three years ago, when a comprehensive study was conducted based on data collected from meteorological stations. The study was carried out in 40 barns located all over the country during the summers of 2004 and 2005. In each barn, two meteorological recording devices were installed inside the barns, 2.2 meters above the bedding level, in the direction of the predominant wind and another device was placed in the open field. Ambient temperature, relative humidity, radiation, wind velocity and direction were measured every minute, and then averaged at ten- minute intervals. A heat-stress model simulating the ambient temperature where the cow begins to increase its respiratory rate as a response to heat-stress conditions was employed. This model took into account: wind velocity, relative humidity and physiological parameters relating to cows with a milk yield of 45 kg. and 3.5%milk fat, fur depth of 3 mm, and calculated the threshold temperature (TT) at which the animal begins to increase its respiratory rate.

Results showed that the optimal barn type for high milking cows is loose-housing (vs. free-stall), which is situated perpendicular to the predominant wind, open-roofed, open ridged, with roof margins of approximately 5 meters in height, roof slope with a gradient of 19% - 22%, and a width between 30 – 35 meters. A barn situated parallel to the predominant wind requires higher roof margins and a narrower width.

Thus, after many years of improvement and modernisation we now know what the optimal features are for barns built for high yielding cows. Proper installation and cooling systems contribute in enabling the Israeli Holstein cow to reach its potential for milk production and support the fact that the Israeli Holstein cow has the highest level of milk production in the world.

Cooling cows in summer almost eliminates seasonality in milk production and fertility

Israel Flamenbaum____Ministry of Agriculture, Extension Service ▸ israflam@shaham.moag.gov.il
Ephraim Ezra____Israel Cattle Breeders Association (ICBA) ▸ hmb-efraim@icba.org.il

Heat stress influences production and fertility of high producing dairy cows. In Israel, milk production declines in summer to almost 90% of winter level. Conception rate in summer reaches levels of 20%, compared to more than 40% in winter months. The summer decline in production and fertility creates a significant seasonality in milk supply to the market and an additional cost to the consumers, caused by the need for drying milk in winter and using it in summer.

A "summer to winter performance ratio" index was developed to evaluate the efficiency in which each farm deals with summer heat stress by implementing management tools which are mainly based on the use of cooling methods. The "summer to winter performance ratio" compares average herd summer results to average herd winter results regarding milk, Economical Corrected Milk (ECM), milk fat and protein percentage, somatic cell count (SCC), and conception rate. Calculation of this index is based on data from the Israeli Dairy Herdbook Database.

Recently, a large scale survey was carried out to study effects of production level and heat stress relief on the performance of dairy cows in Israel. The survey was based on data for the year 2005 and included 22 dairy herds, averaging 300 cows each and a total of 6,600 cows. All the dairy herds were located in the coastal part of Israel. Cows in all the herds were held under similar housing systems, milked 3 times per day and fed for ad libitum TMR intake, distributed twice daily. Twelve of the herds were of high production level and ten were of low production level (previous year winter ECM yields averaged 41 and 35 kg/d, respectively). In eleven herds of each production-level group, cows were intensively cooled (IC) during the summer, using a combination of wetting and forced ventilation for 10 cooling periods for a total of 7 cumulative hours/d. In the other eleven herds of each production-level group, cows were moderately cooled (MC) by a combination of wetting and forced ventilation in the holding pen, only before milking. Winter production averages and the summer to winter production ratio, which were used for allocating herds to different groups, are presented in Table 1 and averages of milk production for the different seasons and groups are presented in Table 2.

➤

Table 1

Ranges of winter production averages (Kg/d) and of summer to winter production ratios for the different groups in the year prior to the survey

Level of production	High		Low	
	Intensively cooled	Moderately cooled	Intensively cooled	Moderately cooled
Winter production average (Kg/d)	41 – 43	38 – 40	35 – 38	33 – 36
Summer to winter ratio (%)	96 – 100	86 – 88	97 – 103	84 – 90

➤

Table 2

Average milk production (Kg/cow/d) for the different seasons and groups

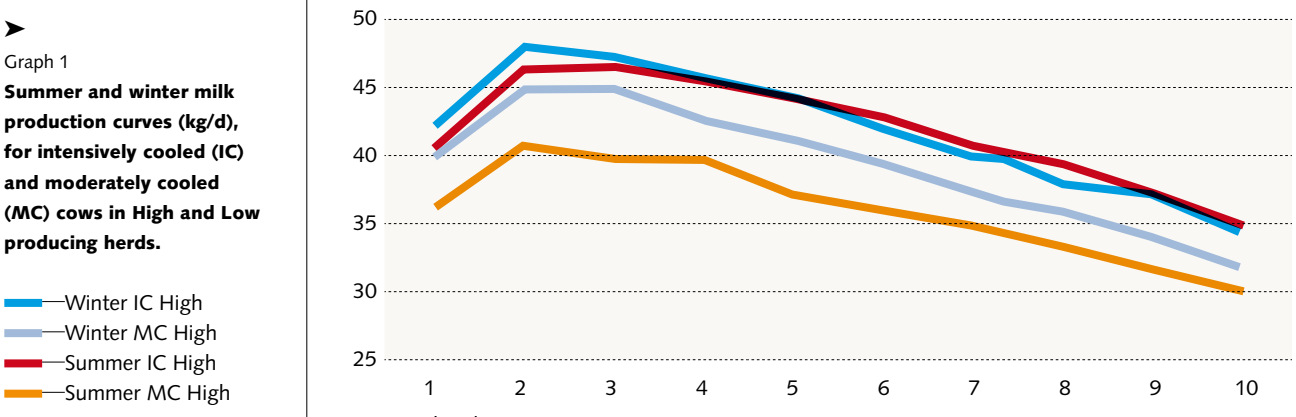
Level of production	High		Low	
Season	Intensively cooled	Moderately cooled	Intensively cooled	Moderately cooled
Winter	42.0	39.1	37.1	35.3
Spring	42.3	39.2	39.1	36.2
Summer	42.0	35.7	38.0	32.0
Autumn	42.1	36.9	38.1	34.1

Lactation curves in the first 10 months in lactation for the different groups of high and low producing herds are presented in Graphs 1 and 2, respectively.

➤

Graph 1

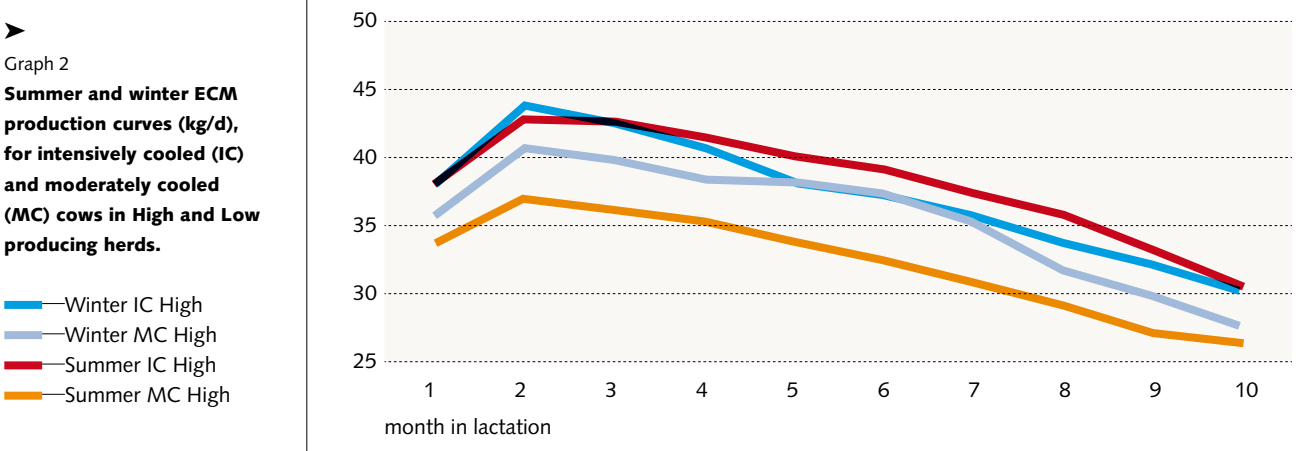
Summer and winter milk production curves (kg/d), for intensively cooled (IC) and moderately cooled (MC) cows in High and Low producing herds.



➤

Graph 2

Summer and winter ECM production curves (kg/d), for intensively cooled (IC) and moderately cooled (MC) cows in High and Low producing herds.



Averages of conception rates (CR) for the different seasons and groups are presented in Table 3.

➤

Table 3

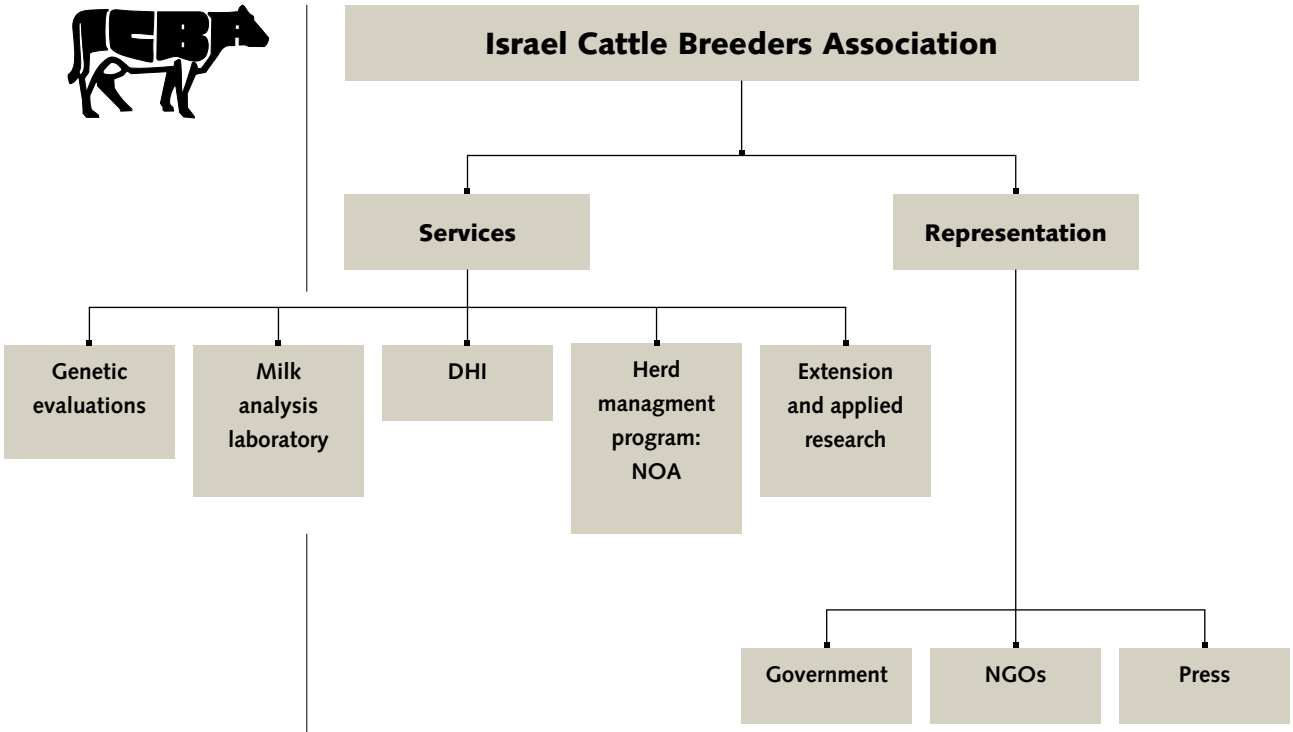
Summer and winter averages of conception rates (%), for intensively cooled and moderately cooled cows of High and Low producing herds

Level of production	High		Low	
Season	Intensively cooled	Moderately cooled	Intensively cooled	Moderately cooled
Winter	39	39	40	39
Spring	31	30	38	25
Summer	19	12	25	3
Autumn	29	29	40	29

The results of this survey indicate that intensive cooling almost eliminated the summer decline in milk production regardless of the level of production and reduced about half of the summer decline in conception rate. Intensive cooling had greater impact on improving conception rate in low producing herds, than in high producing herds.

The Israel Cattle Breeders Association

Yossi Malul____ICBA Publishing Department Editor ► hmb-malul@icba.org.il



The Israel Cattle Breeders Association represents all dairy cattle farmers in Israel.
For the past 80 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____ICBA, Herdbook Manager ► hmb-efraim@icba.org.il

In 2006 the Israeli Dairy Herdbook collected information from 93,720 cows in 724 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** – Every three months 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 80% of the cows registered on the DHI are located at farms that use a management computer program. About 90% 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 Genetics 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) 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.

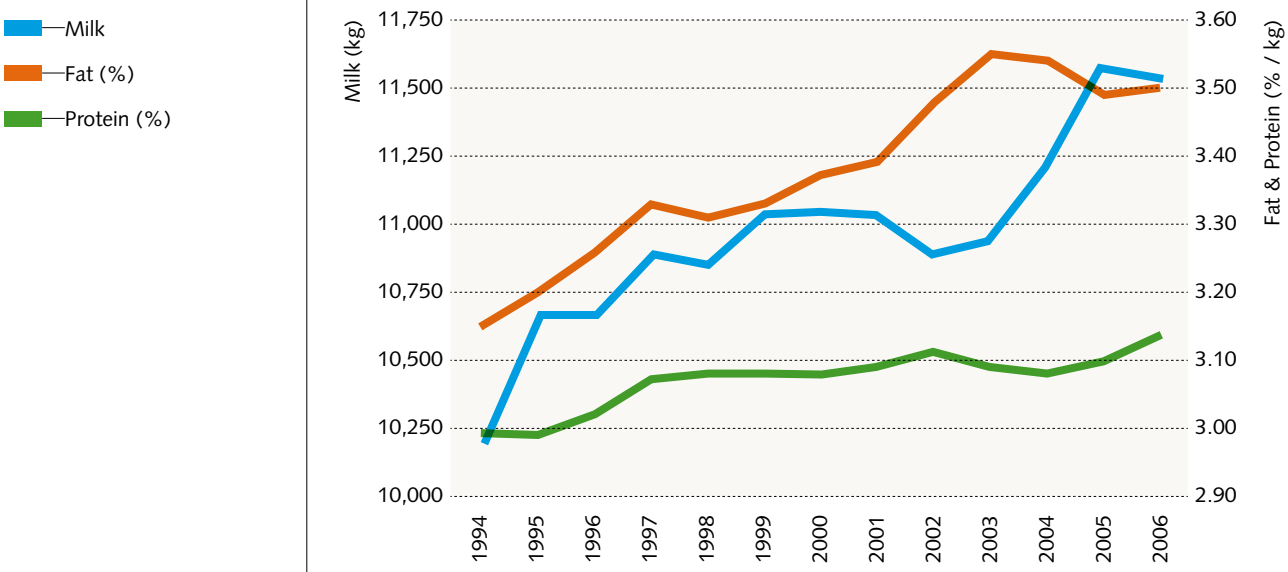
➤ ⮟

Table 3.1 & Fig. 3.1

Production averages of Israeli-Holstein cows, by calving year

305-day adjusted lactations (1-5)

Calving year	No. of cows	Milk, kg	Fat, %	Protein, %
1994	80,525	10,195	3.15	2.99
1995	83,696	10,665	3.20	2.99
1996	81,477	10,665	3.26	3.02
1997	81,507	10,887	3.33	3.07
1998	82,004	10,850	3.31	3.08
1999	81,742	11,029	3.33	3.08
2000	81,622	11,048	3.37	3.08
2001	80,787	11,031	3.39	3.09
2002	86,554	10,890	3.48	3.11
2003	84,696	10,938	3.55	3.09
2004	84,694	11,200	3.54	3.08
2005	83,456	11,565	3.49	3.10
2006	77,334	11,506	3.52	3.14



In 1991, the milk payment formula was changed in order to promote an increase in milk fat and protein content. Since then, steady progress has been achieved: fat and protein concentration rose 0.62 % and 0.20 %, respectively. Until the year 2000 there was a constant increment of average annual milk yield per cow, then a slight decline and in the last two years a renewed increase.

➤

Table 3.2

Production averages in 2006, by parity number

	1st lactation cows	2nd lactation cows	Adult cows	Total
Complete lactations				
No.	22,918	16,855	22,336	62,109
Milk yield, kg	11,228	12,977	13,370	12,471
ECM* yield, kg	11,389	13,057	13,239	12,506
Fat yield, kg	409	464	472.8	446.9
Fat, %	3.64	3.58	3.54	3.58
Protein yield, kg	359	412.2	415.5	393.7
Protein, %	3.20	3.18	3.11	3.16
Adjusted 305-d lactations				
No.	22,174	16,283	21,600	60,057
305-d adjusted ECM, kg	11,474	11,793	11,684	11,636
Days in milk	357	353	350	353
Milk yield, kg/day in milk	31.5	36.8	38.2	35.3
Feed days	420	416	414	417
ECM yield, kg/cow in herd-day	27.1	31.4	32	30
Dry period, days	63	62	63	63
Days open	144	139	138	140
Calvings				
Total No. of calvings	31,121	23,165	39,576	93,862
Calves born	31,408	24,128	42,289	97,825
Age at calving, months	24	38	66	45
Normal calvings	27,833	21,955	37,408	87,196
Normal calvings, %	89.4	94.8	94.5	92.9
Premature calvings	622	459	829	1910
Premature calvings, %	2.0	2.0	2.1	2.0
Abortions, %	10.1	10.6	9.0	9.8
Stillborn calves, %	7.9	5.9	7.0	7.0

* ECM = Economic Corrected Milk, according to the formula for milk payment:
up to 3.779% Milk Fat: 0.1 * kg Milk + 7.67 * kg Fat + 20.21 * kg Protein
over 3.779% Milk Fat, the index for kg Fat is 3.56

➤

Table 3.3

20 cooperative herds with highest average annual milk yield per cow (3x milkings) in 2006

No.	Herd	ECM kg	Milk kg	Fat %	Protein %	F+P kg	SCC x1000	No. of cows in herd
1	Habonim	14,497	14,280	3.56	3.18	962	172	203
2	Sa'ad	14,167	13,525	3.61	3.32	937	211	261
3	Carmiya	13,704	13,350	3.65	3.21	915	175	290
4	Shadma (Dorot)	13,609	13,511	3.59	3.14	907	198	356
5	Shutfut Ran	13,489	13,105	3.60	3.24	895	138	809
6	Nachal Oz	13,434	13,059	3.58	3.24	890	117	272
7	Yavne	13,412	13,114	3.65	3.19	896	108	356
8	Carmel Ma'on	13,350	13,000	3.67	3.21	893	135	386
9	Alumim	13,309	12,946	3.67	3.22	890	149	264
10	P.R.Ch.	13,271	12,967	3.61	3.21	883	170	441
11	Tze'elim	13,207	12,922	3.59	3.21	877	139	237
12	Horshim	13,195	13,205	3.51	3.12	875	209	227
13	Hof HaSharon	13,174	13,150	3.45	3.16	868	153	773
14	Refet Ma'ale	13,140	12,927	3.66	3.16	881	190	455
15	Migdal Oz	13,069	12,829	3.60	3.18	870	185	219
16	Ma'ale HaKamisha	13,067	12,900	3.62	3.15	872	120	236
17	Refet Darom	13,060	12,987	3.58	3.13	870	143	512
18	Nir Yitzhak	13,037	12,845	3.55	3.19	864	195	265
19	Kefar Gil'adi	13,024	13,042	3.50	3.13	863	129	252
20	Nitzanim	13,021	12,784	3.53	3.21	861	155	251

Table 3.4

20 Family herds with highest average annual milk yield per cow (2x + 3x milkings) in 2006

No.	Village	Herd	ECM kg	Milk kg	Fat %	Protein %	F+P kg	SCC x1000	No. of cows in herd
1	Givat Yoav	Eliezer Farm	13,179	12,843	3.84	3.20	904	104	41
2	Givat Yoav	Sofer Farm	13,118	13,042	3.56	3.14	872	181	40
3	Havat HaShkafim	Havat HaShkafim	12,739	12,624	3.56	3.16	846	118	63
4	Kfar Haro'eh	Peleg Farm	12,718	12,464	3.55	3.21	842	86	80
5	Amatz	Sahar Farm	12,713	12,567	3.51	3.18	840	285	70
6	Sde Ya'akov	Baranawski Farm	12,691	12,357	3.50	3.27	835	164	121
7	Amatz	Israel Farm	12,691	12,417	3.60	3.20	844	210	85
8	Neot Golan	Cohen Farm	12,649	12,638	3.52	3.13	839	129	38
9	Ramat Tzvi	Landau Farm	12,553	12,889	3.23	3.11	815	111	63
10	Be'er Tuvia	Golan Farm	12,546	12,443	3.48	3.18	828	116	136
11	Kefar Vitkin	Preker Farm	12,523	12,347	3.78	3.15	854	157	42
12	Shfeyia Ag. School	Shfeyia Ag. School	12,501	12,069	3.83	3.25	854	178	74
13	Nir Banim	Strashnov Farm	12,489	12,119	3.65	3.23	832	162	74
14	Kefar Yehezkel	Gafni Farm	12,485	12,615	3.52	3.07	831	129	59
15	Kefar Vitkin	Boltiansky Farm	12,353	12,594	3.62	2.99	832	177	116
16	Beit Itzhak	Mayer Farm	12,331	12,157	3.81	3.14	844	593	60
17	Kefar Yehezkel	Vered Farm	12,282	12,508	3.46	3.06	814	126	59
18	Tzipori	Shmueli Bros. Farm	12,267	12,003	3.70	3.19	826	125	130
19	Kefar Yehoshua	Agmon-Israel Farm	12,244	12,210	3.47	3.16	808	192	43
20	Neot Golan	Refet Association	12,235	12,255	3.64	3.08	821	206	102

* x3 milkings/day

➤

Table 3.5

20 cows with highest adjusted ECM yield in 2006

No.	Herd	Cow No.	Sire	Lact. No.	Milk kg	Fat %	Protein %	ECM kg
1	Sofer Farm	703	Teva	6	18,723	4.49	3.55	20,696
2	Refet HaNegev	4477	Kapel	4	17,979	3.93	3.04	17,990
3	Alumim	2157	Geoffry	4	17,171	4.15	3.17	17,626
4	Refet Darom	4044	Scorer	4	18,725	3.23	2.92	17,470
5	Refet Ma'ale	3837	Glenwood	4	17,027	3.95	3.16	17,442
6	Nahal Oz	4398	Meidan	4	16,944	4.23	3.17	17,404
7	Nitzanim	4555	Marcie	2	17,836	3.70	2.94	17,351
8	Habonim	5542	Avsha	2	17,304	3.64	3.11	17,337
9	Alumim	450	Avsha	2	18,116	3.50	2.94	17,335
10	Heftzibah	2153	Gabon	3	18,026	3.33	3.00	17,259
11	Tze'elim	4974	Sefel	2	17,865	3.44	2.99	17,220
12	Nir Itzhak	4490	Scorer	2	17,909	3.37	2.94	16,984
13	Gan Shmuel	2189	Manof	3	16,300	3.81	3.25	16,968
14	Alumim	498	Avsha	2	17,769	3.35	2.98	16,968
15	Habonim	5533	Avsha	2	17,441	3.33	3.08	16,965
16	Refet Darom	4236	Arrow	4	16,542	3.64	3.22	16,944
17	Habonim	5006	Scorer	5	16,021	4.09	3.31	16,899
18	Sa'ad	4851	Avsha	2	17,546	3.46	2.97	16,856
19	Carmiya	5724	Mo'ed	4	16,495	3.61	3.21	16,848
20	Gan Shmuel	2363	Avsha	2	18,154	3.44	2.81	16,833

No.	Herd	Cow No.	Sire	Lact. No.	Days in milk	Milk kg	Average milk yield kg/day	Fat %	Protein %	Culling date
1	Ma'ale Gilboa	6492	Lasso	12	4,588	186,988	40.8	3.24	2.88	
2	Maoz Haiym	3405	Ginat	12	3,634	156,212	43.0	3.32	2.82	
3	Givat HaShelosha	3284	Boteach	9	4,043	154,510	38.2	3.42	2.72	05/09/06
4	Hof HaSharon	1201	Amzar	11	3,670	154,447	42.1	3.43	2.83	
5	Alumim	1299	Tamim	9	3,484	150,829	43.3	3.46	3.02	
6	Ma'ale Hagilboa	6817	Boteach	9	3,669	149,839	40.8	3.32	3.16	
7	Givat HaShelosha	3405	Ginat	9	3,494	147,460	42.2	3.58	2.94	15/02/06
8	Ramat Hakovesh	4844	La'am	8	3,278	145,407	44.4	3.78	3.15	17/12/06
9	Refet Hanegev	5572	Lime	8	2,939	142,020	48.3	3.60	3.06	
10	Gazit	3044	Ginat	12	3,753	141,704	37.8	3.09	2.86	
11	O.To.To. Halav	659	Boteach	9	3,547	141,585	39.9	3.43	3.17	02/06/06
12	Refet Hatabor	3501	Ginat	9	3,806	140,737	37.0	3.50	3.30	14/09/06
13	Shluchot	4131	Bosna	13	3,701	140,167	37.9	3.25	2.86	
14	Yagur	9449	Pitzpon	11	3,726	139,547	37.5	3.27	3.04	
15	Neveh Eitan	3671	Boteach	8	4,022	138,914	34.5	3.25	2.95	19/05/06
16	Refet Tefen	998	Bum	9	3,246	138,113	42.5	3.10	3.09	
17	Refet Hof Hasharon	16420	Boteach	11	4,304	137,787	32.0	3.65	3.14	
18	Kvutzat Schiller	3599	Pitzpon	10	3,436	137,111	39.9	3.69	3.15	22/03/06
19	Refet Arava Halav	3090	Pitzpon	12	3,667	136,768	37.3	3.07	2.90	27/03/06
20	Refet Dan	290	Boteach	11	4,147	136,376	32.9	3.27	3.02	19/11/06

Table 3.6

20 cows with highest lifetime yield, producing in 2006

NOA – The Israeli Dairy Herd Management Program

Boaz Hanochi____ICBA, Product Manager of NOA Software ► 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.

Major features of NOA

- **Herd management** – Updating of lactation, production and reproduction events. Cows entry (acquisition), culling and moving between groups within the herd. Veterinary data: input of diagnosis, treatments, medications and automatic synchronization protocols.
- **Feeding** – Linear programming and ration composition, feed production and TMR planning, stock management and stock reports. Communication with feeding controllers. Complete tracking and monitoring of feed consumption.
- **Milk production** – Milk marketing updating, milk recording and summary reports including lactation summaries. All the Herdbook parameters are available in **NOA**. Communication with different brands and types of commercial milk-meters (on-line milk data).
- **Genetic management** – Graphical presentation of cows and bulls data. Mating program is implemented to optimize the breeding value progress of the herd. 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 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.
- **Additional features** – Shared database (network), powerful report generator, PDA application for pocket pc (IPAQ-HP) that includes all cows' data.

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, 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, nearly 600 dairy farms use the program, including 98% percent of all dairy farms with over 250 dairy cows.

Each month new dairy farms install the program and the total number of cows which are managed under **NOA** software in Israel is nearly 80,000.

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 and programmers. 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 "Dairy Web", which facilitates two-way interactive exchanges and provides E-mail, a bulletin board and other services.

International cooperation – ICBA cooperate 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

Ephraim Ezra____ICBA, Herdbook Manager ► hmb-efraim@icba.org.il
Joel I. Weller____A.R.O. – Institute of Animal Sciences – Dept. of Genetics, Genetist ► weller@agri.huji.ac.il

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 Cattle and Genetics of the Institute of Animal Sciences of the Agricultural Research Organization.

PD07 – 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 3.50% fat and 3.13% protein would have a unit value. The index coefficient for somatic cell score (SCS) was computed so that expected changes for 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, PD07, was updated in December 2006 and is as follows:

PD07 = 6.3 (kg Fat) + 25.4 (kg Protein) – 300 (SCS) + 26 (% Daughters' Fertility) + 0.6 (Days Herdlife) + 10(% Persistency) – 3(% Dystocia) – 6(% Calf mortality)

Expected genetic gains after ten years of selection using this index are: 725 kg milk, 26.5 kg fat, 26.5 kg protein, -0.14 SCS, 1.7 % daughters' fertility, 150 days herdlife, 2.4 % persistency, -1.2 % dystocia, and -1.0 % calf mortality.

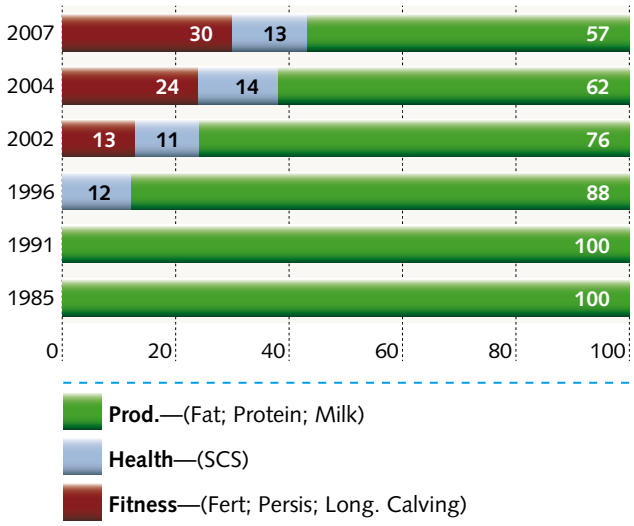
Genetic evaluations for milk, fat and protein production, SCS, daughters' fertility, and persistency are calculated by the multitrait animal model, using parities 1 to 5, with each parity considered as a separate trait. Herdlife is calculated by the single trait animal model. "Persistency" is persistency of milk production. Dystocia and calf mortality are 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 2000.

The Israeli Breeding Program

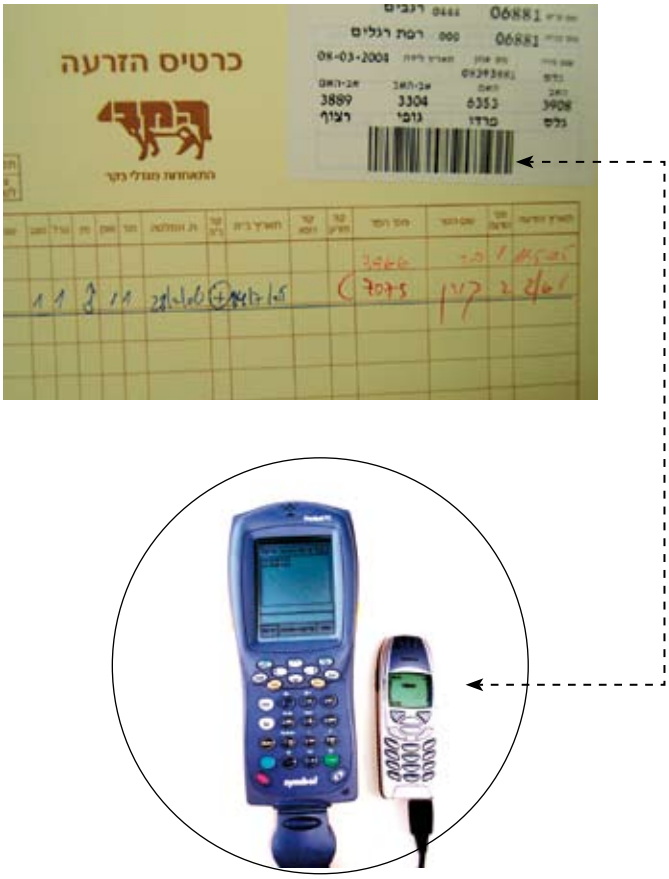
Yoel Zeron____Sion A.I. Company, Director of Science and Production ► yoel@sion-israel.com

Sion Artificial Insemination company was founded in 2001 by the merging of On and Hasherut A.I. cooperatives. "Sion" currently houses 250 bulls located in three different sites. Approximately 50 young bulls are tested every year. Semen from approximately 20 pruven 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 index young bulls. Genetic evaluations are performed bi-annually. Bulls and cows are ranked by the Israeli Selection Index PD07.

The Israeli breeding selection index – changes along the years



Each year, approximately 350,000 inseminations are performed in Israel - 92.5% with local semen of the Israeli-Holstein breed. "Sion" employs 36 insemination technicians. The 900 dairy farms are divided into 30 insemination districts, and the remaining six technicians work as substitutes. Currently, 88% of dairy herds are involved in the DHI system. Insemination information is recorded by the technicians on hand-held computer terminals. This system allows for error-free transfer of data to the central herd book computer, and prevents mating of closely related animals. The technician first enters the details of the proposed mating. The proposal is rejected if the inbreeding coefficient is greater than 3.125% (calculated 3 generations).



The bulls are housed at three different sites: Young bulls are in two locations in the north of Israel, active and waiting bulls are kept at the central A.I. center, south of Tel Aviv. Insemination of elite dams is programmed by the "Meytal" mating program, which tracks expected matings and calving dates.

The elite dams, which are owned by the dairy farmers and kept at the farms, are inseminated by "Sion" with some of the highest ranked bulls in the world based on Interbull evaluations, or with the best local bulls. Male calves born

Bulls in the main facility of SION

from those inseminations are bought by "Sion" at the age of one week. Semen collection starts when bulls are 14 months old. When bulls are 16 months old, their semen is used to inseminate approximately 1,000 first-parity cows in DHI herds. This process is generally completed within three months. Semen from the young bulls is collected bi-weekly during a period of 18 months, and stored in the semen bank. This system ensures a large semen bank for each bull, that can be used immediately after the bull is approved for general use at the age of five years, even if the bull is unable to produce semen at a later age.

Genetic evaluations are computed bi-annually, and the status of the bulls and cows are reevaluated after each new genetic evaluation.

The Israeli breeding program encourages the extensive use of young bulls with outstanding genetic value based on pedigree. These bulls are used for general service and perform 3-5 times more inseminations than the regular young bulls. Extensive use of these bulls increases the mean breeding value of the national population. In addition, the evaluations of these bulls at the age of five years will have higher reliability due to the greater number of daughter records.

The Israeli dairy cattle population has the highest mean milk and milk solid production in the world, even though dairy production conditions are suboptimal due to heat stress in most areas during most of the year. Israeli bulls transmit outstanding genetic ability for milk yield and milk components and excel in fertility, longevity and udder health traits. This impressive achievement is the outcome of the long-term cooperation among farmers, Sion A.I. company, the Israeli Cattle Breeders Association, the Agricultural Research Organization, and the Ministry of Agriculture Extension Service (Sha'ham).

Average per-cow yields in Israel, in 2006

Milk, Kg	11,281
Fat, Kg	404.1
Fat, %	3.58
Protein, Kg	357.5
Protein, %	3.17
P/F Ratio	0.88
SCC * 1,000	224

Birth Year	Milk kg	Fat kg	Fat %	Protein kg	Protein %	SCS	Daughters' Fertility	Productive Longevity	Calf Mortality	Calving Diff.	Lactation Persist. %	PD04 kg
1985	-854	-36.9	-0.07	-38.3	-0.12	-0.08	0.35	-274	0.34	0.58	-3.10	-1371
1986	-715	-33.9	-0.08	-35.1	-0.12	0.02	-0.33	-247	-0.19	0.26	-3.21	-1298
1987	-654	-34.0	-0.10	-33.6	-0.13	0.05	-0.88	-232	-0.45	-0.14	-3.29	-1274
1988	-521	-33.3	-0.14	-31.4	-0.14	0.12	-0.77	-207	-0.60	-0.65	-2.62	-1208
1989	-401	-31.7	-0.16	-29.1	-0.16	0.15	-0.79	-181	-0.44	-0.54	-2.16	-1130
1990	-266	-28.5	-0.18	-27.5	-0.18	0.14	-0.80	-159	0.00	0.00	-2.07	-1057
1991	-208	-23.4	-0.15	-23.7	-0.16	0.16	-0.49	-146	0.76	0.80	-1.79	-922
1992	-129	-18.5	-0.13	-19.5	-0.14	0.19	-0.01	-105	1.41	1.53	-1.59	-761
1993	-102	-17.5	-0.13	-17.5	-0.13	0.26	-0.34	-106	1.34	1.30	-0.87	-728
1994	-105	-16.1	-0.11	-14.7	-0.10	0.24	-0.81	-98	1.60	1.48	-0.67	-647
1995	-144	-13.3	-0.07	-13.6	-0.08	0.20	-0.54	-91	1.33	1.23	-0.86	-577
1996	-72	-11.0	-0.07	-10.3	-0.07	0.14	-0.31	-60	1.36	1.27	-0.36	-433
1997	-54	-7.2	-0.05	-7.9	-0.06	0.10	0.09	-37	1.11	1.02	-0.57	-311
1998	-39	-6.7	-0.05	-5.4	-0.04	0.07	0.69	-9	1.19	1.10	-0.27	-201
1999	-16	-4.2	-0.03	-3.3	-0.02	0.01	0.27	-8	1.08	1.40	-0.20	-123
2000	0	0.0	0.00	0.0	0.00	0.00	0.00	0	1.04	1.39	0.00	-10
2001	54	3.0	0.01	2.7	0.01	0.01	-0.22	15	0.81	1.33	0.55	84
2002	73	5.3	0.03	3.4	0.01	0.00	0.46	29	0.48	1.68	0.58	145
2003	108	9.1	0.05	5.6	0.02	-0.03	0.77	39	0.14	1.55	0.39	250
2004	89	14.5	0.11	7.7	0.05	-0.04	0.78	44	-0.07	1.61	0.54	346

Table 3.7

Average Breeding Value of cows, by birth year – Genetic Trends

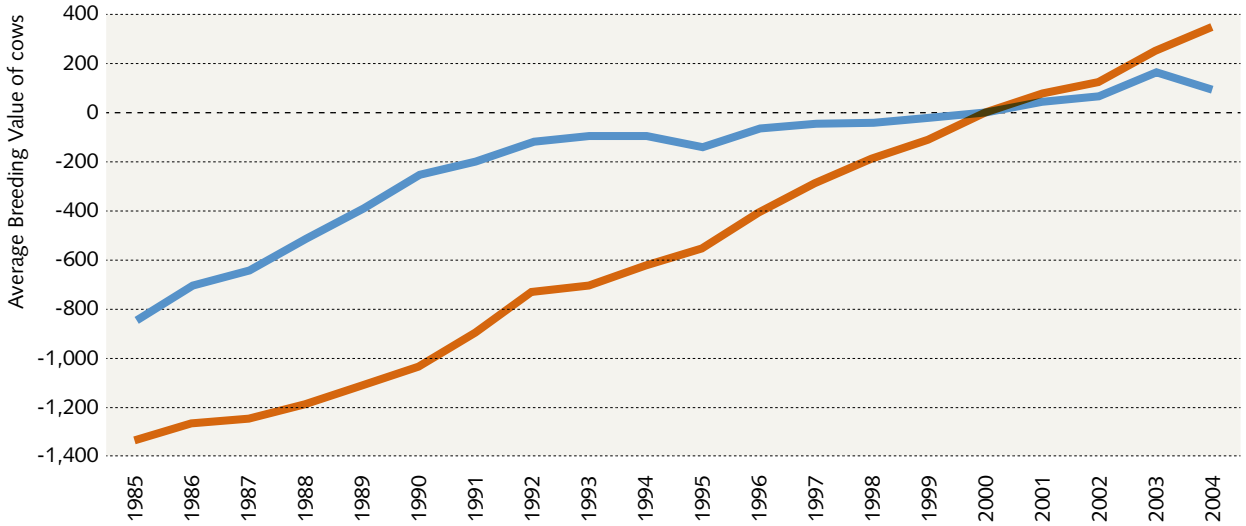


Fig. 3.2

Average Breeding Value of cows for PD04 and Milk, by birth year – Genetic Trends

Milk

PD04

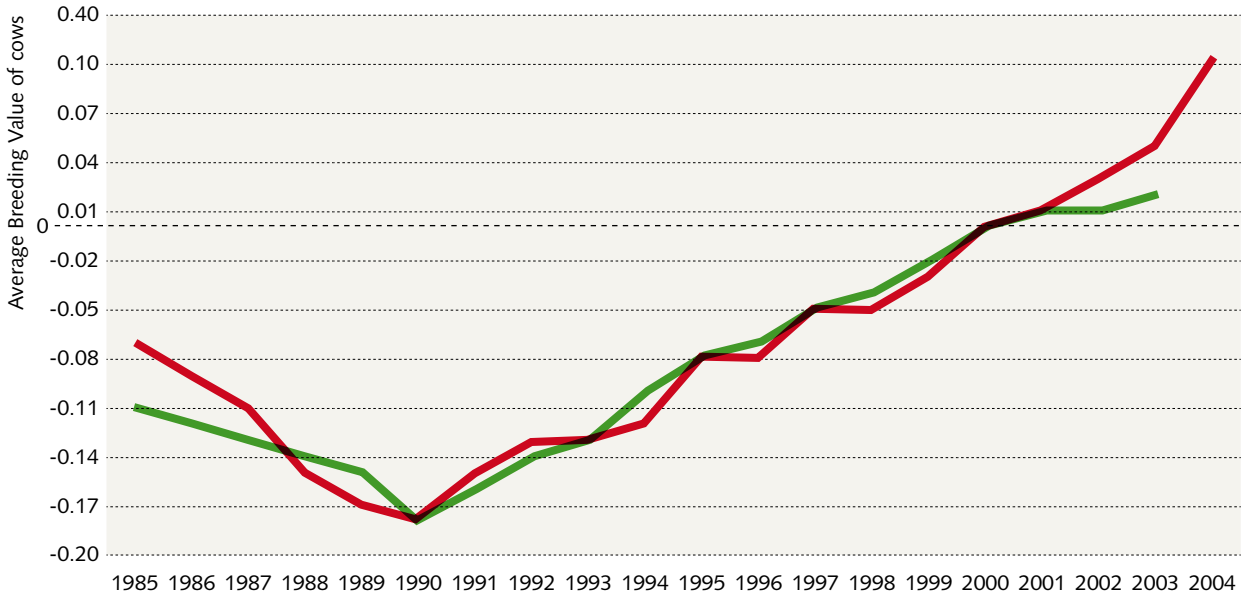


Fig. 3.3

Average Breeding Value of cows for Fat and Protein percentages, by birth year – Genetic Trends

Fat %

Protein %

Table 3.8

Average Breeding Value of bulls, by birth year

Birth year	Number of bulls	Milk kg	Fat kg	Fat %	Protein kg	Protein %	SCS	Daughters' Fertility	Productive Longevity	PD04
1981	32	-411	-21.2	-0.06	-19.1	-0.06	0.05	-0.01	-158	-759
1982	60	-431	-18.1	-0.03	-18.9	-0.05	0.06	-0.10	-176	-757
1983	19	-231	-14.9	-0.06	-16.1	-0.08	0.02	0.21	-106	-578
1984	39	-388	-17.3	-0.03	-19.1	-0.07	0.06	-0.29	-140	-723
1985	39	-382	-14.6	-0.01	-18.1	-0.06	0.08	-0.21	-143	-688
1986	31	-296	-14.1	-0.03	-15.9	-0.06	0.17	-0.44	-126	-655
1987	38	-251	-14.5	-0.05	-12.4	-0.04	0.17	-0.29	-111	-550
1988	48	-172	-10.6	-0.04	-11.6	-0.06	0.05	-0.75	-91	-477
1989	33	-105	-7.9	-0.04	-10.8	-0.07	0.05	-0.07	-77	-416
1990	31	-152	-9.1	-0.03	-11.4	-0.06	0.06	0.43	-93	-439
1991	41	-17	-7.0	-0.06	-5.3	-0.04	0.15	-0.24	-70	-294
1992	42	-183	-5.9	0.01	-6.4	-0.01	0.14	-0.79	-80	-342
1993	53	-217	-8.1	-0.00	-7.8	-0.01	0.13	-0.08	-57	-352
1994	46	-107	-5.7	-0.02	-4.2	-0.01	0.09	-1.15	-66	-266
1995	38	-41	2.8	0.04	-0.4	0.01	0.09	-0.62	-48	-86
1996	53	-144	-1.0	0.04	-2.4	0.02	0.13	-0.95	-56	-189
1997	31	-128	1.2	0.06	0.4	0.04	-0.02	0.36	-24	3
1998	57	32	5.6	0.04	5.3	0.04	0.03	-1.09	-23	103
1999	22	-24	0.7	0.02	2.2	0.03	0.04	0.15	-19	27
2000	28	-53	6.4	0.08	3.8	0.05	-0.07	-0.00	-27	124
2001	44	134	8.5	0.04	6.4	0.02	0.11	-0.00	22	182
2002	21	27	5.5	0.00	4.6	0.04	0.02	0.16	15	145

➤

Table 3.9

Bulls that performed largest number of inseminations (all years)

Bull No.	Bull name	Sire	No. of inseminations
3274	Scorer	Thonyma Secret	199,183
829	Gyus	Oren	198,997
2132	Gaby	Arlinda Jet Stream	181,527
783	Pirchach	Hason	160,375
3651	Avsha	Sea-Mist Bell Extra	149,508
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
3241	Teva	Kingstead Valint Tab	111,922
3089	Pitspon	Gyus	111,182
3123	Tamim	Crescent Mead Chief Stewart	110,645
3811	Sofon	Sccorer	110,537
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
930	Amit	Senator	95,782

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.

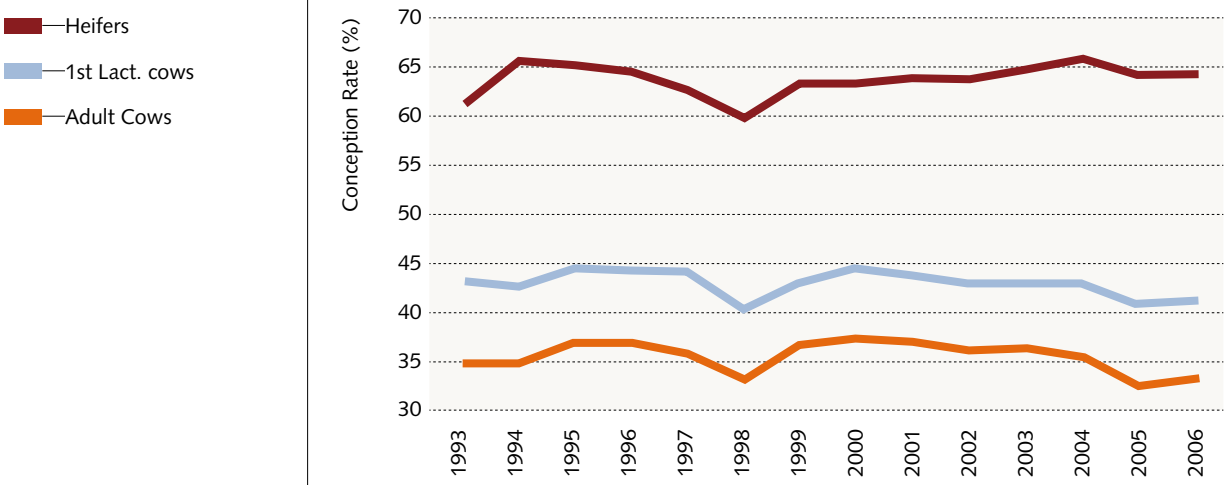
➤ ⮟

Table 3.10 & Fig. 3.4

Average Conception Rate at 1st service, for Heifers, 1st Lact. cows and Adult cows (all herds), by years

Conception Rate at 1st service (%)

Year	Heifers	1st Lact. cows	Adult cows
1994	65.6	42.6	34.7
1995	65.1	44.7	36.8
1996	64.6	44.2	36.9
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



➤

Table 3.11

Fertility summary for heifers, all herds (period: 11/05 – 10/06)

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

	N	% of total	C.R. (%)
< 13 months		26.9	65.0
14-15 months		61.2	64.6
16-17 months		10.0	62.3
18-23 months		1.9	58.7
Total		100	64.3

Number of heifers and Conception Rate, by insemination number

	N	% of total	C.R. (%)
First inseminations	33,861		64.3
Second inseminations	12,026		55.2
Third inseminations	5,077		48.6
Fourth + more inseminations	4,072		35.0
Total of inseminations	55,036		58.7

Heat detection

Distribution of cycles length (days):			
5 - 17	766	4.8	
18 - 15	10,155	64.1	
16 - 35	1,050	6.6	
36 - 60	3,874	24.4	
Total of natural cycles	15,845	89.1	
Induced cycles	1,935	10.9	
Average days between inseminations	27		
Rejections by inseminator		16.9	
Preg.checks with negative results		11	

Distribution of heifers by age at pregnancy onset

<13 months	6,145	19.2	
14-15 months	17,814	55.7	
16-17 months	5,970	18.7	
18-19 months	1,578	4.9	
20-21 months	493	1.5	
Average age at effective insem. (mo)	15.3		

➤

Table 3.12

Fertility summary for first-calvers, all herds (period: 11/05 -10/06)

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

	N	% of total	C.R. (%)
< 70 days		9.3	38.5
71 - 100 days		56.2	42.7
101 - 130 days		29.2	40.7
131 - 150 days		5.4	36.8
Total		100	41.2

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

	N	% of total	C.R. (%)
First inseminations	28,199		41.2
Second inseminations	16,554		36
Third inseminations	10,283		33.6
Fourth + more inseminations	15,951		28.3
Total of inseminations	70,987		36.0

Heat detection

Distribution of cycles length (days):			
5 - 17	1,519	4.8	
18 - 15	19,867	62.7	
16 - 35	3,409	10.8	
36 - 60	6,909	21.8	
Total of natural cycles	31,704	89.5	
Induced cycles	3,702	10.5	
Average days between inseminations	27		
Rejections by inseminator		13.9	
Preg.checks with negative results		22.6	

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

< 75 days	1,606	6.9	
76 - 110 days	8,939	38.2	
111 - 150 days	6,233	26.6	
151 - 180 days	2,784	11.9	
181 - 270 days	3,861	16.5	
Average Open days	130		

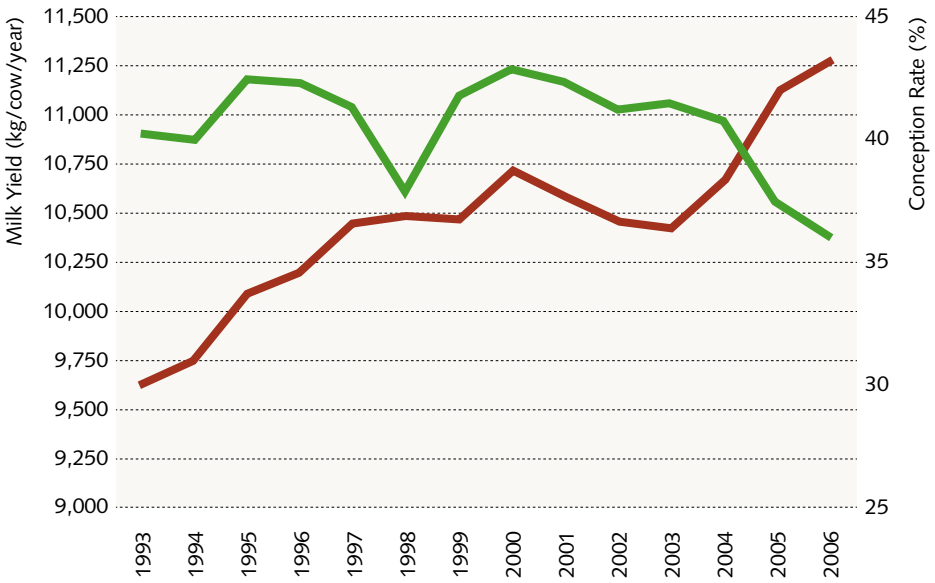


Fig. 3.5

Average Milk Yield and Conception Rate at 1st service, for adult cows, between 1993 – 2006

Conception Rate at 1st service

Milk Yield

The main fertility management goal for the farmer, is to have cows and heifers conceiving at the time the farmers intends them to, so that calvings will occur according to a projected production schedule.

Many studies in recent years have warned against the association between increasing levels of milk production and low fertility performance.

Fig. 3.5 shows that between 1991 and 2006 the Israeli cow has raised its average milk production by 1,913 kgs, without noticeable deterioration of fertility performance, as evaluated by Pregnancy Rate at 1st service. This value has remained quite constant (38.2%) during those years. The lowest value (35.9%, in 1998) was the result of a very hot summer season, which significantly affected Pregnancy Rate. In 2005 there was a decline in fertility but in 2006 the tendency was upwards once again.

➤

Table 3.13

Fertility summary for adult cows, all herds (period: 11/05 - 10/06)

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

	N	% of total	C.R. (%)
< 50 days		0.6	21.8
51 - 80 days		39.7	32.3
81 - 110 days		46.1	34.6
111 - 150 days		13.6	32.8
Total		100	33.3

Number of Cows and Conception Rate, by insemination number

	N	% of total	C.R. (%)
First inseminations	52,424		33.3
Second inseminations	33,838		33.5
Third inseminations	21,631		31.1
Fourth + more inseminations	33,727		25.9
Total of inseminations	141,620		31.2

Heat detection

Distribution of cycles length (days):			
5 - 17	4,688	7.1	
18 - 15	39,034	58.8	
16 - 35	8,431	12.7	
36 - 60	14,240	21.4	
Total of natural cycles	66,393	88.9	
Induced cycles	8,281	11.1	
Average days between inseminations	27		
Rejections by inseminator		10.6	
Preg.checks with negative results		28.0	

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

< 75 days	4,595	11.2	
76 - 110 days	14,280	34.7	
111 - 150 days	10,550	25.7	
151-180 days	4,873	11.9	
181-270 days	6,806	16.6	
Average Open days	128		

Hahaklait Veterinary Services

Our Beginning

Hahakalit 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 into a hot land, burdened with disease. Hahaklait 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 it's small beginning as a few farms around the Sea of Galilee, Hahaklait grew hand in hand with the Israeli Food Animal Industry to encompass the entire country.

Our Mission

Today, 85 years later, Hahakalit is still a strong and thriving unique organization both in size and philosophy, in the veterinary world. Hahakalit is 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. Thus, Hahakalit has a long term and stable contract with the farm, and is committed to the well being of the animals, as well as to the sound economy of the farm.

Our Services

Hahaklait believes in intensive 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. Cows are checked after calving for both clinical and sub clinical diseases, for reproductive status and before drying up. All the data from each individual cow is collected at the farm and processed by Hahaklait. Hahaklait is also supporting and performing clinical field trials.

Our Clientele

Hahaklait serves 900 dairy farms with over 90,000 milking cows, which comprise more than 80% of the dairy cattle population in Israel. These are made up of 190 large Kibbutz herds and 700 smaller Moshav (family) dairy farms. There are approximately 50 beef herds with 20,000 dams and some 250 feedlots with 30,000 steers, as well as 200 sheep and goat farms. The horse population, once the vehicle of our early Vets and a valuable farm force, is now a small portion of our work (1,000).

Our Personnel

Thirty-eight of Hahaklait vets serve as district practitioners throughout Israel.
Ten junior vets operate as relief for the district vets and for special tasks. Hahaklait employs a full time dairy nutritionist for ration planning and troubleshooting. Some of our vets operate part time as consultants for: Dermatology, Parasitology, lameness, young stock, radiology, beef and feedlot and ovine.
Our epidemiology department produces a monthly and annual herd report for each farm, monitoring and analyzing its production and reproduction performance. Our herd Health experts meet with the manager and staff of every farm to present and discuss their discoveries and advise them regarding future improvements.

Drugs

Since almost all veterinary drugs in Israel are imported, Hahaklait handles registration, importation and distribution of a wide range of remedies, vaccinations and equipment. In order to perform this task, Hahaklait operates a large and modern central drug store. Being the dominant drug buyer in the country and one of the largest veterinary groups in the world, we can offer our clients very competitive wholesale prices. In addition, drugs are sold without any surcharge. We advocate the minimization of drug use and the prevention of drug residues from entering into the food chain. Hahaklait strongly believes that its intensive farm visits and herd-monitoring activities reduce our clients' drug use and thereby drug costs.

Our Affiliations

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

Hahaklait
38900 Caesaria Industrial Park, P.O.B. 3039
Chkl333@netvision.net.il
Tel: 972-4-6279600

SION

Israeli Company For Artificial Insemintion & Breeding Ltd

HEAD OFFICE
SOUTH OFFICE
SHIKMIM 79800, ISRAEL
TEL. 972-8-8592812/3
FAX. 972-8-8593381
E-MAIL:
south@sion-israel.com

SION

BREEDING

ADVANTAGE

NORTH OFFICE
SARID 30099, ISRAEL
TEL. 972-4-6540142
FAX. 972-4-6545486
E-MAIL:
north@sion-israel.com

www.sion-israel.com

afimilk™ - 30 Years of Innovation

1960

1980
Electronic MM

1985
Automatic Heat Detection

1989
Advanced Milking Point Management

2003
Herd Management

2007
Real-Time Milk Analysis

afimilk™: a brand name that embodies vision and a promise for the future. Our successful efforts in research and development have yielded an array of new and exciting products and concepts that have brought dairy farms into the modern world of management. **afimilk™** contributes to the quality of life of its workers and enables better profitability for the business.

Our vision is to become the vital factor in every dairy farmer's day-to-day operations. We provide the dairyman with products and services, and a winning management approach, thus improving every facet of dairy herd performance.

afimilk™
The Heart of the Dairy Farm

SAE Afikim Kibbutz Afikim, 15148 Israel
Tel: 972-4-6754812, Fax: 972-4-6751862
market@afimilk.co.il www.afimilk.com

S.A.E Afikim Celebrates 30 Years

A dream and a vision that changed dairy farming worldwide

Three decades have passed since the development of the first electronic milk meter that served as the foundation and basis for establishing S.A.E Afikim. From the very beginning, this innovative invention aroused considerable interest in the dairy industry throughout the world. Kibbutz Afikim, the owner of S.A.E Afikim, was offered a substantial sum of money for the sale of the patent. The Kibbutz declined the offer preferring to exploit this invention to lever its economic development. The electronic milk meter was indeed the forerunner of a series of technological developments with far reaching ramifications for the dairy industry. Today, these inventions are an integral part of the dairy industry worldwide, easing the farmer's work, improving the cows' welfare, making the dairy a much more efficient operation.

Over the years, S.A.E Afikim has became the world's leader in developing and manufacturing computerized systems for the dairy farm including milk meters, personal identification tags, pedometers and management software for analyzing data and decision making. There are also systems for sorting and weighing cows, and regimens for individual cow feeding.

S.A.E Afikim's vision is that the Company becomes the determining factor in all dairy farms, and sheep and goat farms worldwide. More than 1300 systems and 75,000 milk meters have been sold and installed in over 50 countries. The Company also establishes dairy farms and milking parlors in integrated turn-key projects. S.A.E Afikim's training department provides its customers with professional training to ensure the success of the investment and maintenance of standards.

Modern dairy farming is very different from traditional farming. Today, dairy farming implies dairy management that demands real-time decision making. Each liter is counted, its components are checked and registered, every kilogram is weighed and each cow is monitored. The manager that errs looses out. The contemporary farmer is a professional who must understand production economics, biology, animal behavior, veterinary sciences, management, logistics, finance and more.

In days gone by, the decisions were made by expert farmers, whose know-how was the fruit of years of experience. S.A.E Afikim has accumulated this knowledge and has developed software and hardware that supports the farmer in his every day endeavors enabling him to make quick decisions. AfiMilk™, AfiAct™, AfiSort, AfiFeed™ together make up an integrated system that provides the farmer with precise data on milk yields, mastitis alerts, improves insemination success, and better management of cows' fertility. All these factors enable an increase of milk yield and a decrease of costs. The afimilk™ product family is based on management by exception. A standard is set for each cow. The system alerts in real-time of anomalies in milk production, electrical conductivity of the milk (showing mastitis), and cow's activity based on the number of steps (indicating heat) made in a defined period of time.

The flexible reporting system provides a wide range of up-to-date, essential data based on management by exception. These reports show real-time changes for each cow, each group and the entire herd, and allow the farmer to focus attention exclusively on problematic cows. Early identification of problems saves valuable time and money. In this manner, dairy management is made much more efficient.

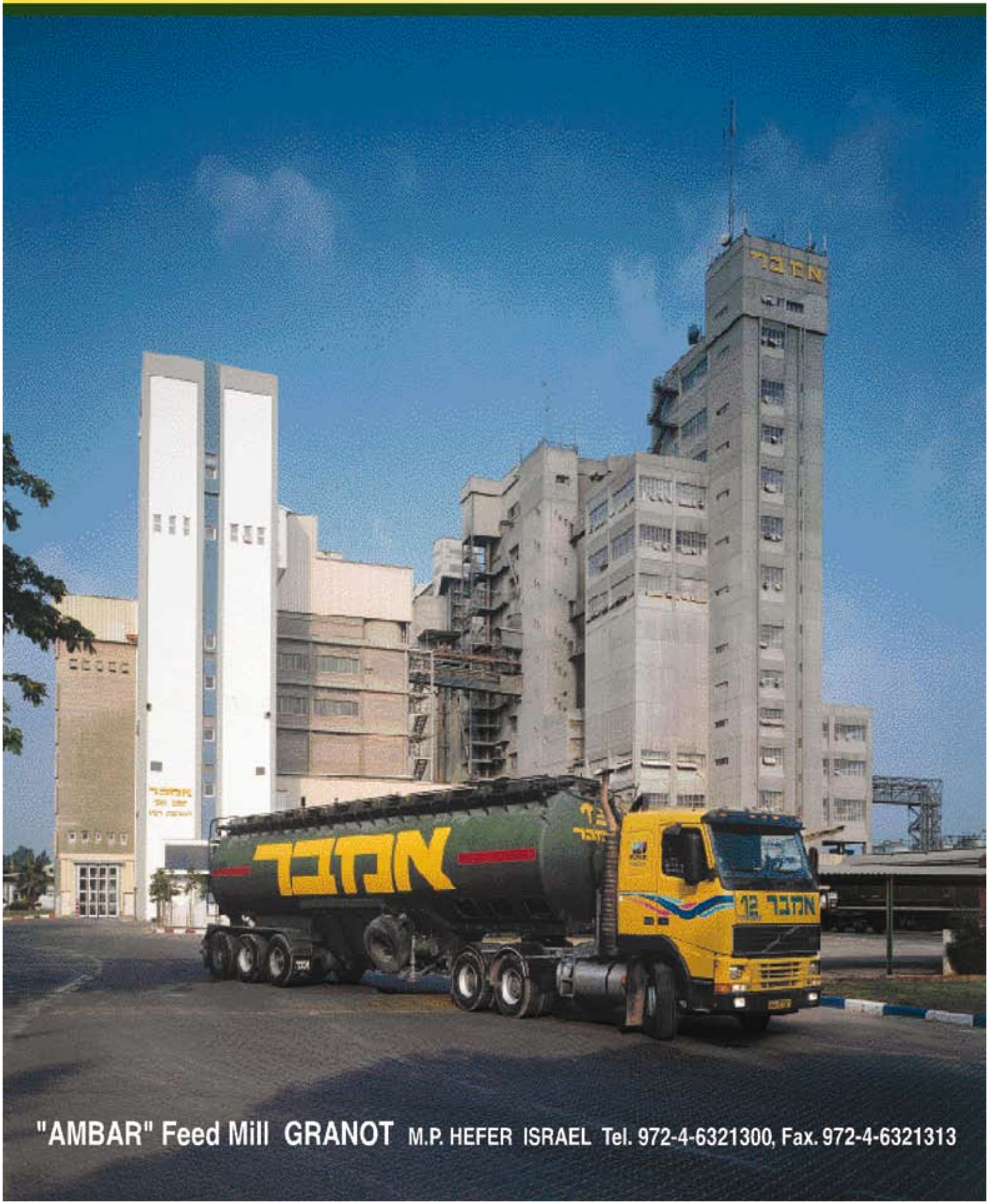
S.A.E Afikim invests substantial resources in maintaining its technological and innovative leadership. A strong, creative and motivated R&D team is dedicated to this mission, focusing on creating comprehensive integrated systems. These systems, allied with the experience of leading Israeli producers and academic researchers, enable S.A.E. Afikim to keep in the forefront of dairy management technology.

Recently, S.A.E Afikim took a strategic decision to broaden its activities and enter the sheep and goats market adapting its dairy farm products to this sector.
ICAR, the International Committee for Animal Recording, approved AfiFree™, the free-flow milk meter for measuring sheep and goats' milk. This is the first milk meter to receive ICAR's approval for sheep and goat milking and was granted after comprehensive laboratory and field testing in France. The approval is expected to bring with it an increase in milk meter sales for sheep and goats in Western Europe where meeting international standards is a requirement.

S.A.E Afikim is currently working on a new generation of products. One of the innovations under development is the AfiLab analyzer a revolutionary product that measures, in real-time, the components of milk taken from each cow during a milking session. The product is able to separate the milk according to its quality, and analyze its components according to the milk's lipid percentage, lactose, and protein content, and detects the presence of blood and somatic cells - all in real-time.

Another innovation is the behavior pedometer, (Pedo+), a new animal tag, which in addition to its regular function also measures the frequency and number of lying-periods of a cow. The tag gives birth alerts, provides a reliable indication of the cow's health condition and welfare – indicators that are growing in importance both in Israel and overseas.

AMBAR



"AMBAR" Feed Mill GRANOT M.P. HEFER ISRAEL Tel. 972-4-6321300, Fax. 972-4-6321313

Enjoy TNUVA's Israeli Cheeses

תנובה

TNUVA Sense The Original Taste of Quality

Lachish Industries (R.M.H.)

was established in 1956.
the company specialises in manufacturing mixer feeders for t.m.r.the application of the t.m.r. system.
The know-how, R & D, and the company's activities are specifically focused on one technology - mixing for T.M.R.
the brand name "R.M.H" is recognised throughout the world for heavy-duty and high quality mixers.

The range of the products is one of the largest in the world, including a long list of options for each machine.

The range of machines includes various sizes of mixing capacity from 4 m3 - 45 m3 from the standard trailer, electrical stationary mixers, leading up to the latest state-of-art-technology, the self- propelled self- loading machine, known for heavy-duty and high level of reliability.
the self-propelled self-loading machines mixes, chops and cuts feed components while at the same time discharges and transports the feed. all functions by one machine.

Efficiency, together with the increasing cost of the feeding, makes the self-propelled self- loading machine a wise economic investment.
the company has a good reputation for giving reliable after-sales service world-wide.

R.M.H. ha subsiduaries in germany and france, its own factory in poland, and a strong distributor network throughout europe as well as australia, u.s.a & mexico
the ongoing target and vision of r.m.h. is to continue to produce and improve its high-quality line of machines ,to research and develop new products and to explore new territories.

web site:
www.lachish.com
www.rmh-mixers.com

Email address:
chaim@lachish.com
davina@lachish.com


R.M.H.


R.M.H.
WAW 26


R.M.H.
SV 12

SCR

Company Profile

Founded in 1976, **SCR** is a worldwide leading provider of innovative automation systems for dairy farms. SCR develops, manufactures and markets high quality and innovative dairy management tools and milking automation devices, offering the dairyman efficient herd management and cost effective solutions.

SCR's portfolio of products and customized solutions include, Heat Detection and Rumination Monitoring, Milking Controllers and Management Software, SCR solutions are offered to dairy farms of all sizes, robotic milking systems and sheep and goats farms. Significant investments are aimed towards R&D to maintain SCR as the leader in advanced milking technologies. **SCR**'s solutions are provided to industry leaders such as DeLaval and Lely and other global companies.

SCR is a privately held company with corporate offices, an R&D center and plant that are located in Israel and has distributors spread vastly around the globe. SCR is backed by strong sales & support teams that are continuously interacting with our international customers for efficient support services and ongoing maintenance.

Committed to the highest industry quality standards, SCR offers distributors, integrators and manufacturers a wide range of unique technologies, creating a distinctive edge in the dairy industry.

Start milking smart ™

Smart Solutions for Dairy farms of All Sizes

SCR is offering a range of products to enhance efficiency and improve herd management and milking procedures:

- Data Flow™ - complete herd & milking management system
- Heatime™ - a standalone heat detection system with auto sorting gate
- Solutions for Auto ID with RFID Ear tags/boluses
- MC200™ - range of milking point controllers and pulsation systems with accurate yield display
- Turnkey Projects – from feasibility study to a complete farm worldwide
- New - rumination monitoring

Electronic and Computerized Systems for Dairy Farms

WWW.SCR.CO.IL SALES@SCR.CO.IL TEL: 972-9-8652050 FAX: 972-9-8650703

ISRAEL DAIRY BOARD (Production & Marketing)
46, Derech Hamaccabim. P.O.B. 15578
Rishon-Le'Tzion 75054
ISRAEL
Tel: 972-3-9564750
Fax: 972-3-9564766
e-mail: office@is-d-b.co.il
www.milk.org.il

ISRAEL CATTLE BREEDERS ASSOCIATION
38900 Caesaria Industrial Park
P.O.B. 3015
ISRAEL
Tel: 972-4-6279700
Fax: 972-4-6273501
e-mail: hmb-central@icba.org.il
www.icba.org.il