

Business opportunities in the Mexican dairy industry



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This study explores the Mexican and Dutch business opportunities in the dairy industry in Mexico. The report discusses first the external environment of the Mexican dairy sector: the economic developments, the country's overall competitiveness, and the economic and agricultural policies. Next, it describes all links in the dairy supply chain - suppliers, farmers, processors, retailers and consumers - as well as the supporting and enhancing environment. Business opportunities are analysed in a strategic management framework.

Este estudio explora las oportunidades de negocio holandesas y mexicanas en la industria de lácteos en México. El informe analiza, en primer lugar, el entorno externo del sector lácteo mexicano: el desarrollo económico, la competitividad general del país y las políticas agrícolas y económicas. A continuación, el informe describe los distintos eslabones de la cadena de suministro lácteo: proveedores, ganaderos, procesadores, minoristas y consumidores, así como el entorno de mejora y apoyo. Las oportunidades de negocio se analizan dentro de un marco de gestión estratégica.

Dit onderzoek verkent de kansen voor Mexico en Nederland in de Mexicaanse zuivelindustrie. Eerst wordt de externe omgeving van de Mexicaanse zuivelsector besproken: de economische ontwikkelingen, het concurrentievermogen van het land en het beleid op het gebied van economie en landbouw. Vervolgens gaan we in op alle actoren in de zuivelketen - leveranciers, veehouders, fabrikanten, winkeliers en consumenten - en het ondersteunende en stimulerende omgeving. De kansen worden geanalyseerd binnen een strategisch managementkader.

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Acronyms

AI	Artificial Insemination
ANGLAC	Asociación Nacional de Ganaderos Lecheros
bn	billion = 1,000,000,000
CANILEC	National Chamber of Milk Processors
CNOG	Confederación Nacional de Organizaciones Ganaderas
CNC	Confederación Nacional de Campesinos
Cofocalec	Mexican Council for the Quality of Milk and Dairy Products
CONAFAB	National Council of Manufactures of Concentrates and Animal Feed
CVA	Centro de Valor Agregado
EEUU	Estados Unidos de America
EKN	Embassy of the Kingdom of the Netherlands in Mexico
EU	European Union
EUR	Euro, Currency of the European Union
FAO	Food Agricultural Organisation of the United Nations
FICA	Agribusiness Capital Investment Fund
FIRA	Trust Funds for Rural Development)
FNDPCL	Frente Nacional para la Defensa de los Productores y Consumidores de Leche
FOCIR	Capitalisation and Investment Fund for the Rural Sector
Ggavatt	Cattle ranchers' technology validation and transfer groups
HACCP	Hazard Analysis and Critical Control Point system
GDP	Gross Domestic Production
INIFAP	Instituto Nacional de Investigaciones Forestales, Agrícolas y Pecuarias
LNV	Dutch Ministry of Agriculture, Nature and Food Quality
KI	Kunstmatige Inseminatie
m	million =1,000,000
MXN	Mexican Pesos
NAFINSA	Nacional Financiera S.N.C. is a Development Bank
NAFTA	North American Free Trade Agreement
NMX	Normas Mexicanas, voluntary norms
NOM	Norma Oficiales Mexicana

NPC	Nominal Protection Coefficient (% domestic producer price above border prices)
OECD	Organisation for Economic Co-operation and Development
PROGAN	Enhancing sustainable use of natural resources programme of Sagarpa
Prolea	Productores de Leche de Acatic
Profeco	Procuraduria Federal del Consumidor (Consumer protection agency)
PSE	Producer Support Estimates (Support in % of farm receipt)
Sagarpa	Secretary of Agriculture, Livestock, Rural Development, Fisheries and Food
SE	Secretary of Economy
Sedesol	Secretary of Social Development
SIAP	Servicio de Información Agroalimentaria y Pesquera
SIEM	Sistema de Información Empresarial Mexicano (Entrepreneurial Information System of Mexico)
Soporte	Sagarpa programme on technical assistance and training
SWOT	Strengths, Weaknesses, Opportunities, and Threats analysis
TCLAN	Tratado de Libre Comercio de América del
TPC	Total Plate Count
UNPP	Unión nacional de Productores Pecuarios
USA	United States of America
USD	United States of America Dollar
WTO	World Trade Organisation
WUR	Wageningen UR (University and Research centre)

Preface

This report analyses the opportunities for firms and organisations on the Mexican dairy market. The opportunities are addressed to firms and organisations in all levels of the supply chain ranging from suppliers to processors in the dairy industry. The opportunities are for Mexican as well as Dutch actors.

During the fact-finding missions in Mexico, we met numerous Mexican entrepreneurs, government officials, and representatives of non-profit and research organisations. Appendix 1 provides the list of the consulted stakeholders. Their cooperation contributed largely to this final report. We would like to thank them for their time, openness, and inspiring input.

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The statements, findings, interpretations and conclusions expressed in this report are those of the authors and do not necessarily reflect the views of, or are endorsements from the Dutch Ministry of Agriculture, Nature and Food Quality or representatives from the Embassy of the Kingdom of the Netherlands in Mexico.

Reading suggestion

Each chapter presents at the beginning the Key findings for a quick overview of the contents. The summary, the SWOT analysis in Chapter 9, and the conclusions and recommendations in Chapter 10, provide the main information for policymakers. The other chapters provide in-depth background information for the interested readers.



Prof. Dr R.B.M. Huirne
Managing Director LEI

Summary

Does the expanding Mexican dairy sector offer opportunities for investments, by either domestic or Dutch firms or organisations? This report shows that the Mexican dairy sector offers opportunities for:

1. Enhancing a higher performance of the large semi-specialised and dual-purpose cow's farmers. This can be achieved by enhancing farmers' management capabilities and milking infrastructure.
2. Levelling the seasonality of the milk supply. There is a gap of 30% between domestic milk production and consumption. Seasonality results in periods of peaks and dips. Levelling will improve the Mexican self-sufficiency on dairy products. Milk based on imported milk powder is cheaper than domestic fresh milk. Investments in milk powder plants in Mexico will be hardly profitable due to the low import prices and a self-sufficiency of milk below 100% during the whole year.
3. A focussed agenda setting strategy. This strategy needs to be shared by all chain actors and organisations, to enhance the Mexican dairy industry as a whole. Table 9.1 provides Key Success Factors, actions and opportunities addressed to each chain actor.
4. Veal production as in the Netherlands is no opportunity: the Mexican consumers do not know such meat and production resources have better opportunities.

Within this framework of Mexican opportunities, a major possibility for Dutch organisations is to enhance the capabilities of Mexican enterprises in the dairy sector. Table S1 provides an overview of business opportunities for specific actors. The study is based on a literature review, analyses of databases, and a fact-finding mission in July 2010.

Table S1 Dutch business opportunities		
Firm or organisation	What	Key Success Factor
Seed breeders	Improved grass and roughage seeds	Knowledge transfer in feed/grass management
Cattle breeders and Artificial Insemination	Semen and embryos	Awareness at semi-specialised farms Infrastructure of AI stations
Feed industry	Technology for concentrates and feed management	Producing concentrates at competitive prices Knowledge transfer in feed management
Milk production control at cow level	Equipment and connected IT	Awareness at semi-specialised firms Capabilities on milk quality and cattle management
Processing industry	Joint ventures	Exploiting consumer preferences
Dutch exporters	Final products	Exploiting low cost prices and differentiated products
Knowledge organisations	Transfer of knowledge	Enhancing the opportunities of Mexican firms and organisations
Dutch Government	Business linkage	Providing information on style and culture of Mexican dairy industry

Economics, policies, and international trade

The Netherlands ranks 10th and Mexico 64th on the Global Competitiveness Index. Corruption, crime, and theft rank high as problematic factors in doing business in Mexico. Membership of NAFTA opened the Mexican economy. Farmers' subsidies and trade protection have been largely abolished.

Mexico has 111m inhabitants and the Netherlands 17m. Milk production in both countries is almost on the same level, 11m tonnes. The annual growth is 1.9% in Mexico and 0.4% in the Netherlands. Mexico is a net importer of dairy products, 45% of the import value is milk powder. USA supplies over 55% of all dairy products, the Netherlands 2%, mainly cheese (USD27m).

The main trade partner for machinery is the USA. Mexico imports a negligible amount of machinery from the Netherlands. The import of vaccines for veterinary medicines from the Netherlands is below 10% of the total imports: the USA supplies over two-thirds.

Suppliers to the dairy chain

Milk production control per cow is almost not practiced in Mexico and hampers proficient farm management and breeding. Only 2 to 3% of the farms, but 95% of large farms, use artificial insemination. Maize is important feed, with total feed costs of 60% of the milk cost price. Farmers own 65% of the processing capacity of concentrate feed.

Credit facilities, largely supported by the government, offer soft loans and/or subsidies. This did not improve the position of farmers. Lack of sufficient capital and interest rates up to 14% are threats for the dairy farmers. The perception of high risks and low return and farmers' attitude (loans are subsidies) do not improve access to credit facilities. This perception does not match the real risks in dairy farming.

Mexico has public and private standards for milk quality. Initiatives focus on improving the poor awareness of the quality. The conditions and support of the processors determine the use of milk machines and cooling tanks.

Structure and performance of dairy farms

Mexico's dairy farms can be classified in three systems: from semi-specialised or smallholders, dual-purpose farms to large state-of-the-art operations. The latter are comparable with those in the USA, have good infrastructure (cold chain), supply to large processors, and are quality conscious. Dual-purpose farms are common in the tropic regions. Many semi-specialised farms lack access to or do not use the cold chain. They supply their milk to artisan cheese makers, the milk quality is not perceived as reliable.

The average yield per animal (5,000kg of milk) is on a fair level compared to most benchmark countries. The milk yield per cow ranges between 700 to over 9,000kg per cow. The milk production shows seasonality: high milk deliveries in spring and summer, low in the autumn and winter. Mexico allows the use of BST to increase milk production. Some milk processors refuse this 'BST-milk'.

Farm gate prices of Mexican milk are slightly below the price in the USA. The milk price in 2008-2009 is approximately MXN4.50 (EUR0.27). Farm management related to feed, cattle care, roughage production and rearing calves is seen as a major weakness. Stakeholders expect a production growth at better-managed farms. Improving management is clearly an opportunity.

Processing retail and consumption

The dairy processing industry gives direct employment to 37,000 and indirect employment to 200,000 people on over 300 dairy processors. These companies use on average 80% of their production capacity and almost all have their own milk quality control system. The three largest milk processors - Lala, Nestlé and Sigma - process over two-thirds of the total milk. Over 2,000, not officially registered artisanal cheese-makers mainly process uncooled raw milk.

Supermarkets and convenience stores are the main outlet for processed fresh milk; the daily/week market for raw milk. Milk and milk products take almost 3% of the consumer budget (10% of the food expenditures). Retail sales of traditional products are stable: flavoured milk and yoghurts show annual growths of 2 to 3%. The per capita dairy consumption of 300 ml/day is too low according to the FAO recommendations of 600 ml/day. The Mexican milk consumption will increase with a growing population (1.3%) and income.

Supporting and enhancing environment

Farmers' associations represent farmers in different ways from enhancing capabilities to political pressure group activities. Canilec represents the dairy processors. Different stakeholders comment that practical training and professional education is lacking for service providers. Also applied research is poor.

Sustainability is of growing concern for both government and private sector. The Government is targeting the primary sector with specific programmes and Nestlé focuses on sustainability of their suppliers, which are mainly farms with dual-purpose cows.

Resumen

¿ Ofrece el creciente sector lechero mexicano oportunidades de inversión para empresas y organizaciones sean domésticas u holandesas? Este informe demuestra que el sector lechero mexicano ofrece oportunidades para:

1. Obtener un mayor rendimiento en las granjas lecheras semi-especializadas y de doble propósito. Esto puede lograrse al mejorar las capacidades de gestión y de administración de los agricultores y al mejorar la infraestructura de ordeña.
2. Mejorar la autosuficiencia nacional en productos lácteos al nivelar la estacionalidad de la producción de leche. Existe una diferencia del 30% entre la producción doméstica de leche y el consumo nacional. Sin embargo, es más barato elaborar productos lácteos basados en leche en polvo importada que utilizar la leche fresca de producción doméstica. Como consecuencia, mientras que los precios de importación de productos lácteos sigan más bajos que los de la leche fresca doméstica, estará en riesgo la rentabilidad de inversiones en plantas deshidratadoras para producir leche en polvo en México.
3. Definir una agenda compartida por todos los actores y organizaciones hacia el mejoramiento de la industria mexicana de lácteos en su totalidad. Tabla 9.1 proporciona factores clave de éxito, acciones y oportunidades de cada actor de la cadena productiva.
4. La producción de carne de ternera como se hace en Holanda no representa una oportunidad: los consumidores mexicanos no tienen preferencia para este tipo de carne y hay mejores oportunidades de utilización de los recursos productivos.

Dentro del marco de oportunidades en México, las organizaciones holandesas pueden contribuir al fortalecimiento de las capacidades de las empresas mexicanas. Tabla R1 proporciona una visión general de las oportunidades de negocio para actores específicos. El estudio realizado se basa en un revisión de literatura, análisis de bases de datos y una gira por el sector lechero mexicano (Julio 2010).

Tabla R1 Oportunidades de negocios para empresas holandesas		
Empresa u organización	Oportunidad	Factor clave de éxito
Productores de semillas	Semillas mejoradas de hierba y fibra	Transferencia de conocimientos en la gestión de la alimentación/pasto
Criadores de ganado e inseminación artificial	Semen y embriones	Mayor conciencia en las granjas semi-especializadas; infraestructura de centros de Inseminación Artificial
Industria de alimentos balanceados	Tecnología para concentrados y administración de alimentos balanceados	La producción de concentrados a precios competitivos. Transferencia de conocimientos en la administración de alimentos balanceados
Control de producción de leche de vaca	Equipos y paquetes de informática correspondientes	Mayor conciencia en las granjas semi-especializadas Capacidades en la administración de la calidad de la leche y de los bovinos
Industria de transformación	Alianzas	Explotar las preferencias de los consumidores
Exportadores holandeses	Productos finales	Explotación precios bajos de costo y productos diferenciados
Instituciones de investigación y formación	Transferencia de conocimientos	Aumentar las oportunidades de las empresas mexicanas y organizaciones
Gobierno holandés	Vinculación de negocios	Proporcionar información sobre el estilo y la cultura de la industria mexicana de lácteos

Economía, políticas nacionales y comercio internacional

Los Países Bajos y México ocupan los lugares 10 y 64 respectivamente en el índice de competitividad global. La corrupción, el crimen y el robo son considerados como factores de riesgo al hacer negocios en México. La economía mexicana se abrió al entrar en vigor el TLCAN. En gran medida se han eliminado las subvenciones y la protección comercial de los agricultores.

México tiene 111 millones de habitantes contra 17 millones en los Países Bajos. La producción de leche (11 millones de toneladas) está prácticamente en el mismo nivel en ambos países. El crecimiento anual es del 1.9% en México y de un 0.4% en los Países Bajos. México es un importador neto de productos lácteos, de los cuales la leche en polvo representa el 45% del valor de importación. De todos los productos lácteos, los EEUU suministra más del 55%, y los Países Bajos 2%, principalmente queso (27 millones de dólares).

Los EEUU es el principal proveedor de equipo agrícola. México importa una cantidad insignificante de equipo de origen holandés. La importación de vacunas para los medicamentos veterinarios provenientes de los Países Bajos está por debajo del 10% de las importaciones totales, mientras que los EEUU suministra más de dos tercios.

Proveedores a la cadena de productos lácteos

La práctica de control de la producción de leche por vaca es casi inexistente en México y obstaculiza la administración eficiente de la granja y de la cría. Aunque el 95% de las grandes granjas utiliza inseminación artificial, se estima que a nivel nacional este porcentaje no supera el 2 a 3%. Maíz es el alimento más importante, los costos de la alimentación son el 60% del precio de costo de la leche. Las granjas integradas tienen el 65% de la capacidad total de la industria de alimentos balanceados.

Las facilidades de crédito, en gran medida apoyadas por el Gobierno, ofrecen préstamos a condiciones favorables y/o subvenciones. No obstante, esto no ha mejorado la posición de los agricultores. La falta de capital suficiente y las tasas de interés de hasta el 14%, forman las amenazas para los agricultores de leche. El acceso a crédito se dificulta por la percepción de riesgos elevados en el sector agrícola; su baja rentabilidad y por los agricultores que consideran préstamos como subvenciones. Esta percepción sin embargo no coincide con los riesgos reales en la ganadería lechera.

México tiene normas públicas y privadas para el control de la calidad de la leche. Hay iniciativas para promover la mayor conciencia de calidad. Los apoyos y las condiciones de compra manejados por los procesadores de leche determinan el uso de equipo de ordeña y tanques de enfriamiento.

Estructura y rendimiento de las granjas lecheras

Las granjas lecheras en México pueden clasificarse en tres sistemas que van desde semi-especializadas y pequeñas, de doble propósito, a grandes operaciones de tecnología de punta. Estas últimas son comparables a las de los EEUU en cuanto a eficiencia: tienen buena infraestructura (cadena de enfriamiento), suministran a los procesadores grandes y manejan control de calidad. Las granjas de doble propósito se ubican en las regiones tropicales. Muchas granjas semi-especializadas carecen de acceso a la cadena de enfriamiento o no la tienen. Suministran su leche, cuya calidad no es percibida como fiable a los procesadores de queso artesanal.

El rendimiento promedio por animal (5000 kg de leche) está a un nivel comparable a la mayoría de los países de referencia; y oscila entre los 700 y

9000 kg/vaca. La producción de leche se caracteriza por estacionalidad, con altas entregas de leche en primavera y verano contra bajas entregas en otoño e invierno. México permite el uso de BST para aumentar la producción de leche. Algunos procesadores de leche rechazan la 'leche con BST'.

Los precios al productor están ligeramente por debajo del precio en los EEUU. El precio de la leche en 2008-2009 estaba cerca de 4,50 MXN (0,27 euros). El nivel de administración granjera relacionado con la alimentación, la atención al ganado, la producción de la fibra y la cría de terneros se considera una debilidad importante, afectando la producción. Así que se destacan claras oportunidades en el mejoramiento de la administración.

Procesamiento; ventas al menudeo y el consumo

La industria de lácteos genera 37.000 empleos directos y 200.000 empleos indirectos en los más de 300 procesadores. Estas empresas utilizan en promedio el 80% de su capacidad de producción y casi todas tienen su propio sistema de control de calidad de la leche. Los tres procesadores de leche más grandes - Lala, Nestlé y Sigma- procesan más de dos tercios del total de productos lácteos. Más de 2.000 procesadores no oficialmente registrados, fabrican queso artesanal, utilizando principalmente leche cruda no enfriada.

La leche fresca procesada se comercializa a los supermercados y tiendas de conveniencia; la leche cruda se destina al tianguis. La leche y los productos lácteos forman casi el 3% del presupuesto del consumidor (el 10% de los gastos en alimentos). Las ventas al menudeo de los productos tradicionales son estables: la leche y los yogures con sabor muestran un crecimiento anual de 2 a 3%. El consumo de productos lácteos por día per cápita de 300 ml es más bajo que el consumo recomendado por la FAO de 600 ml. El consumo mexicano de leche aumentará al crecer la población 1.3% y los ingresos.

El entorno de apoyo al sector lechero

Las asociaciones de agricultores se empeñan en mejorar las capacidades de gestión y ejercen presiones políticas. Canilec representa a los procesadores de productos lácteos. Distintos actores comentan que el sector lechero carece de educación profesional y de formación práctica para proveedores de servicios. También la investigación aplicada es considerada de pobre calidad.

La sustentabilidad es una preocupación emergente para el Gobierno y el sector privado. El Gobierno se enfoca al sector primario con programas específicos relacionados al cambio climático. Empresas como Nestlé promueven la sustentabilidad de sus proveedores, que son principalmente las granjas de vacas de doble propósito.

Samenvatting

Biedt de groeiende Mexicaanse zuivelsector kansen voor investeringen door Mexicaanse of Nederlandse bedrijven of organisaties? De Mexicaanse zuivelsector biedt kansen voor:

1. Versterking van de bekwaamheden van de grote semi-gespecialiseerde veehouders en veehouders met dubbeldoelkoeien. Dit kan worden bereikt door het management en de zuivelinfrastructuur van de boeren te verbeteren, de verliezen te reduceren en transparantie in de keten te stimuleren.
2. Afvlakking van seizoensfluctuaties van de melkaanvoer. In Mexico wordt 30% minder melk geproduceerd dan dat er wordt geconsumeerd. Door de seizoensfluctuaties ontstaan er pieken en dalen en wordt de verwerkingscapaciteit mogelijk niet maximaal benut tijdens periodes waarin er weinig rauwe melk wordt aangevoerd. Afvlakking van de seizoensfluctuaties zal de zelfvoorziening van Mexico op het gebied van zuivelproducten verbeteren. Melk op basis van geïmporteerd melkpoeder is goedkoper dan verse melk uit Mexico zelf. Het is nauwelijks winstgevend om te investeren in melkpoederfabrieken in Mexico vanwege de lage importprijzen en vanwege het feit dat Mexico het hele jaar door niet 100% zelfvoorzienend in melk is.
3. Vaststellen van een duidelijk gedefinieerde strategie. Deze dient gedragen te worden door alle actoren en organisaties in de keten om de zuivelindustrie in Mexico als geheel te verbeteren. In tabel 9.1 staan de belangrijkste succesfactoren, acties en kansen van elke actor in de keten.
4. Kalfsvleesproductie zoals in Nederland is geen kans: de Mexicaanse consument eet geen kalfsvlees en de productiebronnen kunnen beter worden benut.

Binnen dit kader van kansen voor Mexico kunnen ook Nederlandse organisaties bijdragen aan het verbeteren van de capaciteiten van Mexicaanse bedrijven in de zuivelsector. Tabel 1 geeft een overzicht van de kansen voor specifieke actoren: van leveranciers tot consumenten, beleid, ondersteunende en stimulerende organisaties. Het onderzoek is gebaseerd op een literatuuronderzoek, analyses van databases en een informatie verzameling tijdens een veldbezoek in Mexico.

Tabel S1		Kansen voor Nederland
Bedrijf of organisatie	Wat	Belangrijkste succesfactoren
Zaadveredelaars	Verbeterd graszaad en ruwvoer	Kennisoverdracht op het gebied van voer-/grasmanagement
Veefokkers en KI	Sperma en embryo's	Bewustheid onder semi-gespecialiseerde veehouders, infrastructuur van KI-centra
Diervoederindustrie	Kennis over technologie voor krachtvoer en voermanagement	Productie van geconcentreerd voer tegen concurrerende prijzen Kennisoverdracht op het gebied van voermanagement
Melkproductiecontrole per koe	Machines en bijbehorende IT-infrastructuur	Kennis bij semi-gespecialiseerde veehouders Kennisoverdracht op het gebied van melkkwaliteit en rundveehouderij
Verwerkende industrie	Samenwerkingsverbanden	Inspelen op de voorkeuren van consumenten
Nederlandse exporteurs	Eindproducten	Uitbaten van lage kostprijs en gedifferentieerde producten
Kennisorganisaties	Kennisoverdracht	Vergroten van de kansen van Mexicaanse bedrijven en organisaties
Nederlandse overheid	Business linkage	Vestrekken van informatie over de vorm en cultuur van de Mexicaanse zuivelindustrie

Economie, beleid en internationale handel

Mexico heeft 111 miljoen inwoners en Nederland 17 miljoen. De primaire landbouw vormt 4% van het BBP in Mexico, de industrie 37% en de dienstverleningssector 59%. In Nederland zijn deze respectievelijk 2%, 25% en 73%. Nederland staat 10e en Mexico 64e op de Global Competitiveness Index. De bedrijven in Mexico hebben met name te maken met corruptie, criminaliteit en diefstal. Door lidmaatschap van NAFTA is de Mexicaanse economie open. Subsidies voor boeren en handelsbescherming zijn grotendeels afgeschaft.

De melkproductie (11 miljoen ton) is in beide landen ongeveer even hoog. De jaarlijkse groei is 1,9% in Mexico en 0,4% in Nederland. Mexico is een netto-importeur van zuivelproducten: 45% van de importwaarde is melkpoeder. De VS leveren meer dan 55% van alle zuivelproducten. Mexico importeert 2% van hun zuivelproducten uit Nederland, vooral kaas (USD27 miljoen).

De belangrijkste handelspartner voor machines zijn de VS. Het aantal machines dat Mexico uit Nederland importeert, is verwaarloosbaar. De import van

vaccins voor veterinaire medicijnen uit Nederland vormt minder dan 10% van de totale import: de VS leveren meer dan twee derde.

Het ministerie van Landbouw en dat van Sociale Ontwikkeling richten zich op het verbeteren van de productiviteit, de zuivelinfrastructuur (melkmachines en koeltanks), de fokprogramma's, de innovatie en de capaciteitsopbouw.

Leveranciers in de zuivelketen

Er is bijna geen melkproductiecontrole per koe in Mexico en dat vormt een belemmering voor professionele bedrijfsvoering en fokkerij. Hoewel 95% van de grote veehouderijen gebruik maakt van kunstmatige inseminatie, is dat in Mexico slechts 2 à 3% van de veehouders.

Maïs vormt een belangrijk onderdeel van het voer en de voerkosten vormen 60% van de kostprijs van de melk. 65% van de verwerkingscapaciteit van krachtvoer is in handen van veehouders.

De kredietmogelijkheden die grotendeels door de overheid worden aangeboden, zijn zachte leningen en/of subsidies. Dit heeft echter niet gezorgd voor een betere positie van de veehouders. Een gebrek aan voldoende geldmiddelen en rentevoeten tot 14% vormen een bedreiging voor melkveehouders. Het idee dat kredietfaciliteiten een hoog risico vormen en maar weinig opbrengen en de houding van veehouders (leningen zijn subsidies) maken de kredietfaciliteiten niet toegankelijker. De perceptie van de risico's komt echter niet overeen met de daadwerkelijke risico's van de melkveehouderij.

Mexico heeft publieke en private normen voor de melkqualiteit. Initiatieven zijn erop gericht om melkveehouders meer bewust te maken van de kwaliteit. De fabrieksomstandigheden en de ondersteuning van de fabrikant bepalen of er wel of geen gebruik wordt gemaakt van melkmachines en koeltanks.

Structuur en prestaties van melkveehouders

Melkveebedrijven in Mexico kunnen in drie categorieën worden onverdeeld: semi-gespecialiseerde of kleine bedrijven, veehouders met dubbeldoelkoeien en grote, hypermoderne ondernemingen. De laatste categorie is vergelijkbaar met bedrijven in de VS. Deze hebben een goede infrastructuur (koelketen), leveren aan grote fabrikanten en zijn zich bewust van de kwaliteit. Melkveehouders met dubbeldoelkoeien komen veel voor in de tropische gebieden van het land. Veel semi-gespecialiseerde melkveehouders hebben geen toegang tot of maken geen gebruik van de koelketen. Ze leveren hun melk aan ambachtelijke kaasmakers en hun melkqualiteit wordt niet als betrouwbaar ervaren.

De gemiddelde opbrengst per dier (5.000 kg) is redelijk ten opzichte van de meeste benchmarklanden. De melkopbrengst varieert van 700 tot meer dan

9.000 kg per koe. Sommige melkveehouders hebben zelfs koeien met een opbrengst van 13.000 kg per koe. De melkproductie is seizoensgebonden: in de lente en zomer is de melkopbrengst hoog, in de herfst en winter laag. Mexico staat het gebruik van BST om de melkproductie te verhogen toe. Sommige melkfabrikanten weigeren echter 'BST-melk'.

De af-boerderij-prijzen van Mexicaanse melk liggen net onder de prijs in de VS. De melkprijs in 2008-2009 was ongeveer MXN 4,50 (EUR 0,27). Het ondernemerschap op het gebied van voer, rundveeverzorging, ruwvoerproductie en opfok van kalveren is zeer zwak. Stakeholders verwachten dat de productie zal toenemen als er een beter bedrijfsmanagement wordt toegepast. Het verbeteren van het management is duidelijk een kans.

Verwerking, retail en consumptie

Voor de zuivelindustrie werken direct 37.000 en indirect 200.000 personen in meer dan 300 fabrieken. Deze gebruiken gemiddeld 80% van hun productiecapaciteit en bijna alle hebben hun eigen controlesysteem voor de melkqualiteit. De drie grote zuivelfabrikanten – Lala, Nestlé en Sigma – verwerken meer dan twee derde van de totale melk. Meer dan 2.000 niet officieel geregistreerde ambachtelijke kaasmakers verwerken voornamelijk niet-gekoelde, rauwe melk.

Verwerkte verse melk wordt vooral verkocht in supermarkten en gemakswinkels; de rauwe melk gaat naar dag- en weekmarkten. Consumenten besteden ongeveer 3% van hun budget (10% van hun voedselbudget) aan zuivel. De detailhandel in traditionele producten is stabiel: de verkoop van drinkyoghurt en yoghurt groeit jaarlijks met 2 à 3%. De zuivelconsumptie per hoofd van de bevolking van 300 ml/dag is te laag volgens de aanbeveling van de FAO van 600 ml/dag/hoofd van de bevolking. De Mexicaanse melkconsumptie zal toenemen naarmate de bevolking groeit (1,3%) en het inkomen stijgt.

Ondersteunende en stimulerende omgeving

Organisaties vertegenwoordigen veehouders op verschillende manieren: van verbetering van bekwaamheden tot politieke pressiegroepactiviteiten. Canilec vertegenwoordigt de zuivelfabrikanten. Verschillende stakeholders zijn van mening dat er een gebrek is aan praktijkopleidingen en onderwijs voor dienstverleners. Ook de kwaliteit van het toegepaste onderzoek is niet goed.

Duurzaamheid vraagt een toenemende aandacht van de overheid en de private sector. De overheid houdt zich bezig met specifieke programma's voor de primaire sector en Nestlé richt zich op duurzaamheid van hun leveranciers, voornamelijk veehouders met dubbeldoelkoeien.

1 Introduction: goal and method

Key findings

- This report addresses the question: Does the expanding Mexican dairy sector offer opportunities for investments, by either domestic or Dutch firms or organisations?
- A literature review, analyses of databases, and a fact-finding mission are the input for the SWOT analysis.
- The report discusses the environment of the dairy chain and the dairy chain from suppliers to consumers. The business opportunities are derived from a SWOT analysis.

Does the expanding Mexican dairy sector offer opportunities for investments, by either domestic or Dutch firms or organisations? The office of the Dutch Ministry of Agriculture, Nature and Food Quality in Mexico already published a report on business opportunities in the poultry, pig and feed sector (Klok, 2007). A market report on the dairy industry is lacking, while several developments in the Mexican dairy sector are of interest. Mexico's dairy production and consumption is growing, thanks to a supportive government offering subsidies for domestic production. The NAFTA agreement promotes trade of dairy products by the abolishment of tariffs. The government aims at stimulating the domestic production and at becoming less dependent on imports mainly from the USA. An important issue is the improvement of the social economic situation of the Mexican agricultural sector. An in-depth study of the Mexican dairy chain identifies the possible market opportunities for the Dutch agribusiness.

The main goal is to identify possible market opportunities for the Mexican dairy industry. The Dutch agribusiness' opportunities are framed in the opportunities on the Mexican market. The focus is on products based on cow milk; goat milk has not been studied. Goats produce about 1.5% (165,000 tonnes) of the total milk production (SIAP, 2009). A second goal is to explore the possibilities of veal production: male calves are not suited for reproduction of dairy cows.

A strategic management approach frames the research. The opportunities are derived from a Strengths, Weaknesses, Opportunities, and Threats (SWOT) analysis. The approach is as follows: first, a desk research to review literature and to analyse databases; second, a fact-finding mission and; third, an integration of the facts and opinions to derive opportunities. During the mission in July

2010, stakeholders from government officials, professional organisations and researchers to dairy processors in Mexico have been consulted (see Appendix 1).

Structure of the report

The structure of the report is as follows. Chapter 2 first presents the country profiles of Mexico and the Netherlands and then the Mexican trade and agricultural policy. It mainly describes the external environment of the industry. Developments in production and trade of dairy products are subject of Chapter 3 portraying the performance of the dairy industry of Mexico benchmarked against the main dairy trade partners. Chapter 4 to 7 describes the Mexican dairy supply chain. We follow the production downstream, from suppliers to consumers. The supporting and enhancing environment are addressed in Chapter 8. Chapters 3 to 8 describe the internal environment of the dairy industry. The internal and external analyses are the input for the SWOT analysis, presented in Chapter 9. The conclusions and recommendations are subject of Chapter 10.

2 Country profile and policies

Key findings

- Mexico is 57 times as large as the Netherlands and has 7 times as many inhabitants and the GDP per capita, USD10.000, is 20% of the Dutch level.
- Primary agriculture in Mexico accounts for 4% of the GDP, in the Netherlands 2%.
- The Netherlands ranks 10th and Mexico 64th on the Global Competitiveness Index.
- Membership of NAFTA opened the Mexican economy. Farmers' subsidies and trade protection have been largely abolished.
- The Ministries of Agriculture and of Social Development aim at enhancing productivity, dairy infrastructure (milking machines and cooling tanks), breeding, innovation and at capacity building.
- Stakeholders have doubts about the effectiveness of the support and subsidies to the sector.

2.1 Country profile

Mexico is a federal republic, the president Felipe de Jesus Calderon Hinojosa (since 1 December 2006) is both chief of state and head of government. He is elected by popular vote for a single six-year term. The legislative system is a bicameral National Congress (Congreso de la Union). The Senate (Camara de Senadores) has 128 seats; 96 members elected by popular vote to serve six-year terms, and 32 seats allocated based on each party's popular vote. The Chamber of Deputies (Camara de Diputados) has 500 seats; 300 members are elected by popular vote; the remaining 200 members are allocated based on each party's popular vote; members serve three-year terms. The legal system is a mixture of US constitutional and civil law system.

The Mexican economy dependency on primary agriculture (4% of the GDP) is slightly higher than the Dutch (2%). The service sector dominates the economy in both countries, 59% in Mexico and 73% in the Netherlands. The USA is the main trade partner for Mexico, as Germany is for the Netherlands (table 2.1).

Table 2.1	Key facts of Mexico and the Netherlands	
Indicator	Mexico	Netherlands
Population (2009)	111.2m, 7 times that of the Netherlands Growth rate 1.3% Urban population 82%	16.7m Growth rate 0.4% Urban population 87%
Capital	Mexico City, The Federal District: 11,286,000 inhabitants	Amsterdam 740,000 inhabitants
Climate	From tropical to desert	Temperate, marine
Terrain	High, rugged mountains; low coastal plains; high plateaus; desert Altitudes: -10 to 5,700m	Mostly coastal lowland and reclaimed land Altitudes: -7 to 322m
Land Area 2008	194m ha: 57 times the Netherlands	3.4m ha
Agricultural land 2007	106.8m ha, 55% of land area Arable land 13%, permanent crops 1% of land area	1.9m ha, 57% of land area Arable land 31%, permanent crops 1% of land area
GDP	USD1,085m	USD860m
GDP-growth	1.8% in 2008; between 3.2 and 4.8% in 2003-2007	2.1% in 2008; between 1.5 and 3.5% in 2003-2007
Origin GDP	Agriculture 4%, industry 37%, and services 59%	Agriculture 2%, industry 25% and services 73%
GDP/capita	USD10,211	USD52,321
Currency		
1 August 2010	MXN100=USD7.90=EUR6.05	EUR1=MXN16.48=USD1.30
1 August 2008	MXN 100=USD9.97=EUR6.39	EUR1=MXN15.64=USD1.56
Inflation	3.6% (2009); 6.5% (2008)	1.2% (2009); 2.5% (2008)
Competitiveness	Rank 60 out of 134 countries	Rank 10 out of 134 countries
Main exports	Manufactured goods, oil and oil products, silver, fruits, vegetables, coffee, cotton	Machinery and equipment, chemicals, fuels; food
Export to	US 80.5%, Canada 3.6%, Germany 1.4%	Germany 25.4%, Belgium 13.7%, France 8.9%, UK 8.8%, Italy 5.2%
Main imports from	US 48%, China 13.5%, Japan 4.8%, South Korea 4.6%, Germany 4.1%	Germany 16.6%, China 10.1%, Belgium 8.7%, US 7.5%, UK 5.8%, Russia 5.4%, France 4.4%
Sources: https://www.cia.gov/library/publications/the-world-factbook/geos/mx.html , Schwab, 2009, http://data.worldbank.org/data-catalog/world-development-indicators , and http://www.geonames.org		

Figure 2.1 **Mexico**



Mexico has 32 administrative zones: 31 states and 1 Federal district. The state of Mexico (11.7m inhabitants), Mexico-City Federal District (8.7), and Veracruz (7.1) have the largest population. Appendix 2 provides information of the population and area for each administrative zone. The largest cities are: Mexico City, Monterrey, Guadalajara and Querétaro. Over 82% of the population is urban, which is slightly below the Dutch level.

Mexico ranks 60th out of the 134 countries on the Global Competitiveness Index (table 2.2). That position is comparable with other South American trade partners in dairy products. The USA ranks 2nd and the Netherlands ranks 10th on the Global Competitiveness Index. Compared to these two countries Mexico has a relatively low rank on most indicators except for macro-economic stability. Foreign investors need to recognise these differences, especially the institutional framework. Corruption, crime and theft are the most problematic factors in doing business in Mexico (Schwab, 2009).

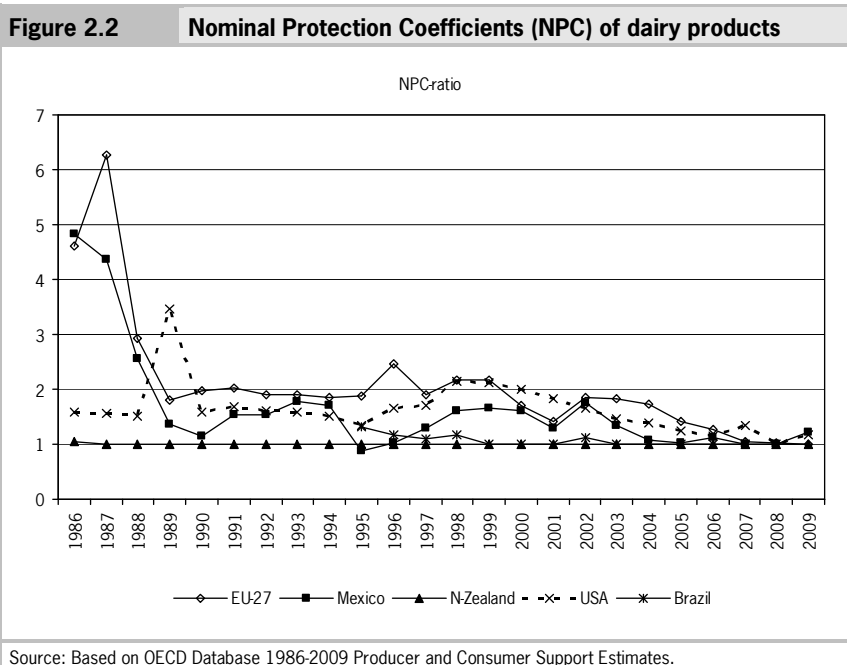
Indicators	Mexico	Argentina	Brazil	Chile	Uruguay	USA	Netherlands
Global Competitiveness Index 2009-2010	60	85	56	30	65	2	10
Basic requirements	59	84	91	32	49	28	12
Institutions	98	126	93	35	40	34	10
Infrastructure	69	88	74	30	66	8	15
Macroeconomic stability	28	48	109	19	78	93	38
Health and primary	65	59	79	69	52	36	14
Efficiency enhancers	55	84	42	33	82	1	10
Higher education and training	74	55	58	45	50	7	10
Goods market efficiency	90	124	99	26	78	12	6
Labour market	115	123	80	41	119	3	27
Financial market sophistication	73	116	51	32	88	20	23
Technological readiness	71	68	46	42	51	13	2
Market size	11	23	10	44	88	1	18
Innovation and sophistication factors	67	76	38	43	77	1	9
Business sophistication	62	73	32	39	85	5	6
Innovation	78	86	43	49	67	1	13
a) Ranking 1 is best, 134 is worst. Source: Schwab (2009).							

2.2 Trade policies

Mexico has 11 free-trade agreements with 41 countries. The North America Free Trade Agreement (NAFTA), which came in force in 1994, is the most important for the economy. Under NAFTA, on 1 January 2003 the process of tariff elimination was finished for the majority of foods with the exception of maize, beans, powder milk, orange juice, and sugar. The tariffs for these products were eliminated on 1 January 2008. The partnership agreement with the EU, called the EU-Mexico Economic Partnership, Political Coordination and Cooperation Agreement, entered into force in 2000. As is shown in Table 2.3, imports from the US are free from import duties.

Table 2.3 Tariffs of main dairy products			
Import tariff	Product	Exemptions	Features
10%	Fresh milk	No tariff for United States, Chile and Uruguay	International trade of fresh milk is low
20%	Cheese	No tariff for United States and Chile. Uruguay has a preferential tariff	Production is mainly fresh and regional cheeses. Main imports are hard cheeses
125%	Powder milk	No tariff for United States and Uruguay	Mexico is first importer of Non-fat Dry Milk

Source: Iruegas et al. (2007).



An overall indicator of protection is the Nominal Protection Coefficient (NPC) provided by the OECD is. An NPC of 1.2 for a country indicates that domestic producer prices are on average 20% above border prices for the same commodities. The development of the NPC (Figure 2.2) shows high ratios in the eighties and recently rather low levels. New Zealand shows almost no protection during all the years. The Mexican NPC is on the same level as the other benchmark countries.

2.3 Agricultural policies

The federal administration launched its Plan Nacional de Desarrollo 2007-2012 to make Mexico more competitive and include social policies, directed at the development of the rural areas. The economic policies entail five points of interests:

1. Constitutional state and security;
2. Creating employment by a competitive economy;
3. Equal opportunities;
4. Environmental sustainability;
5. Effective democracy and responsible foreign policies.

The policies by the Ministry of Economy (SE) aims at fulfilling consumers' demand, at maintaining the supply of goods, at an overall economic growth, at complying with Free Trade Agreements, and at keeping inflation down. The Ministries of Agriculture (Sagarpa) and Social Development (Sedesol) focus on rural development and poverty reduction.

Respondents comment on conflicting policies by the Mexican Government. Interviewed stakeholders stated that the government is mixing social policy with production policy. The latter has failed: the industry sector has not grown, so there are poor employment opportunities for the agricultural population in the Mexican industry. Half a million Mexicans enter the USA per year, mostly illegally, because of insufficient employment.

Policies concerning the cattle sector, form part of the Special Competitiveness Programme for Sustainable Rural Development 2009-2020 (FMEI, 2009). The aforementioned five points of interest are reflected in the National Sector Development Plan 2007-2012 by SAGARPA. The objectives are:

1. Development of human capital in rural and coastal areas.
2. Supply of internal market with safe quality products of Mexican origin.
3. Improvement of farmers' income by elevating their presence in global markets, integrating them into value aggregating processes and the production of bio-energy.

The livestock sector programme set by SAGARPA for 2010 amounts to MXN11,000m: MXN5,302m (48%) is earmarked for beef and dual-purpose cattle, and MXN1,481m (13%) for dairy cattle. Appendix 3 provides the allocation of funds per production system and type of programme. Programmes for beef and milk production aim at:

1. *Stabilising producer prices*

The Stabilisation Fund for the marketing of milk to buffer temporal over-supply of milk to a maximum of MXN1 per litre of fresh milk, with a maximum of 15,000 litres per day per beneficiary through the milk processor (SAGARPA, 2008).

2. *Improving productive assets*

Programmes are subdivided per sector (agriculture; cattle, aquaculture) and there is one overall programme for rural development. The programme for cattle supports improvement and sustainability of forage areas; genetic improvement; strengthening milk collection and processing animal products and infrastructure investments. The total support to animal production systems for 2010 aims at MXN1,600m for 16,000 projects benefiting 92,000 farmers. Of this budget, MXN613m (38%) is allocated to beef and MXN487m (30%) to milk and dual-purpose cattle farmers (SAGARPA, 2010).

3. *Enhancing sustainable use of natural resources (PROGAN)*

This programme focuses on improvement of animal productivity, through the support of sustainable technical practices of production, technical assistance, capacity building, and financial funds. Beneficiaries are divided into two categories: category A, in which milk and beef cattle production systems with 5 to 35 animals may receive up to MXN350 per animal; category B, in which dual-purpose production systems with 36-300 beef cattle receive up to MXN300 per animal. For milk production systems, category B does not apply. To beef and dual-purpose cattle, 87% has been allocated, 4% to dairy, and the rest (9%) to other animal production systems. Almost two-thirds (62%) of PROGAN resources will go to category A; one-third (38%) to category B. PROGAN reaches beneficiaries through the states. Table 2.4 gives an estimate of number of animals that will be supported in 2010. Progan has a quality programme for smallholder farms (about 5-35 cows/farm) to improve quality of milk: 'Progan leche' from Sagarpa. In this programme, 26,000 farms in 21 states are registered. They receive MXN375 under the condition that they work on milk quality improvement. Cofocalec sees improvement in the quality of milk, but the actual quality is still low (high Total Plate Count (TPC)). This is no surprise as these farms often lack electricity for e.g. cooling the milk.

The government started collection centres of milk (Centro de servicios ganaderos). Small dairy farms (with approximately 15-20 cows) can deliver their raw milk to collection centres where it is cooled. The centres also have consultants who help the farmers with management of the cows and achiev-

ing better quality of milk. If the centres run well, the government wants to transfer the centres to the cattle associations (Anaya, 2010).

Table 2.4 Number of supported animals in 2010 in 1,000 heads			
Production system	Category A	Category B	Total
Beef and dual-purpose cattle	4,674	3,655	8,329
Dairy cows	396	0	396
Total	5,070	3,655	8,725
Source: SAGARPA (2010).			

Examples of programmes targeting the agricultural sector in general are Alianza para el Campo (Alliance for the countryside) or Soporte. Producers need to be organised for receiving subsidies. Through the programme Alianza para el campo the federal government assigns resources, functions and programmes to the state governments. It has three subprogrammes:

1. Support to rural investment projects;
2. Development of capacities in rural areas;
3. Strengthening of rural enterprises and organisations.

The Soporte programme provides technical assistance and training on different issues, including beef and dairy. The Soporte programme includes agreements between the federal funds and funds for technical assistance of each state. Third parties may tender for finance by elaborating specific programmes for the support of the sector. An example is the programme as operated by the Unión Ganadera de Jalisco (Box 2.1).

An example of an initiative financed by Sedesol is the Centro de Valor Agregado (Centre of Added Value) in Jalisco to develop agro-industry with products from the state. The Centre is an incubator of new enterprises, for the development and try-out of new food products complying with international standards of food safety. Ideas are evaluated for their innovativeness, market potential, and profitability. The most promising ideas will be developed as pilot projects in the Centre. In a first phase, the Centre will concentrate on fruits, vegetables, meat and milk products (CVA, 2010).

Stakeholders made some critical remarks on the government policies:

- Farmers receive MXN150 per hectare, some buy seeds, some buy beers, the government does not control.
- Sagarpa has mainly social programmes, directed at keeping producers in a margin of comfort

Box 2.1**Case: Unión Ganadera Regional de Jalisco**

The Unión Ganadera de Jalisco is a second-tier organisation of the CNOG, integrated by 138 first tier regional organisations in Jalisco, of which 22 are organisations of milk farmers and the rest of beef farmers. There are between 12,000 and 14,000 milk producers. Chapter 8 provides more information on professional organisations. Jalisco is Mexico's biggest dairy state, yearly milk production is around 1.8m tonnes, produced by 14,000-16,000 dairy farmers (ranging from 5 to 500 cows). To be a member of the union, farmers need to have at least 5 cows and pay once MXN150. The Union finances itself with the emission of permits for the transportation of cattle to slaughterhouse (MXN12 per permit).

With Federal and State finance (mainly SAGARPA: SOPORTE, Productive Assets), the Union executes a programme for the development of the primary dairy sector, which consists of three parts:

1. Improve the status of the farms. The Union estimates of all farmers, 60% does not have a milking machine and 25% does not have a cooling tank. The Union assists farmers in getting subsidy from the government to buy equipment and competitive offers from equipment companies. The goal is to help 400 farmers every year with a subsidy (2010 is the third year).

The Union also offers technical assistance to achieve better milk quality and improve production. In Jalisco, 37 technicians support farmers. The government also has a subsidy for this assistance.

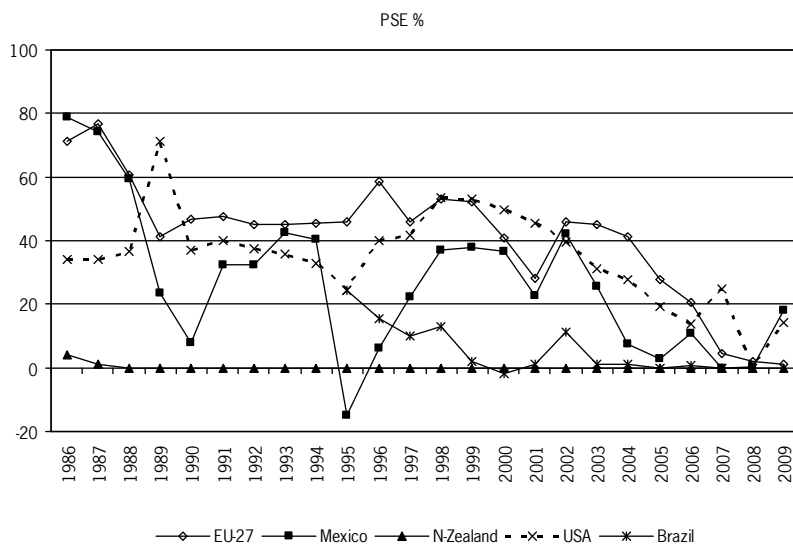
The Union concerns about the small and medium producers, because the bigger ones have more cash flow and can invest in better management.

2. Collect and sell milk for the farmers. The Union is working on a proposal for this. They want to build three centres for milk collection with subsidy from the SAGARPA-Jalisco. The centres would have a capacity of 15,000-20,000 kg per day and used by farmers that do not have their own cooling tank. The dairy producers pay for the services of collecting and cooling the milk. The centres (as non-profit enterprise) also take care of selling the milk to processors and return the profit to the producers depending on amount and quality of their milk. About 200 farmers deliver milk to the three centres. Their advantage is the assurance of having a buyer, weekly payments and a better price.
3. Build an own industry plant to pasteurise milk and to make milk powder. They already conducted a market study, designed a plant, they have the budget and an alliance with two local processors in Jalisco. The purpose is to collect all the milk if the supply cannot be absorbed by the market at fair prices.

- The subsidies by the government are a way to buy 'votes' for the next election.
- Subsidies lead to farmers not knowing their own cost price and getting used to 'getting' 50% of the money to buy a bull, for instance. In no way does this lead to more productivity or efficiency of farms. If the subsidy stops, then they have a problem, because they do not know how to survive without, they have not learnt anything to improve management. The government should keep the subsidy and take care of good and fair milk prices.
- Farmers in Jalisco also say that the government should stop with the subsidies and make good regulations for fair milk prices. The amount of subsidy per farmer in Jalisco is only MXN0.03 per kg of milk and this is not enough to keep them all in business. Subsidies are seen as 'bread to live' and not as 'a loan to improve production'.

The programmes above suggest many efforts to enhance the capabilities of farmers and of the infrastructure of the dairy supply chain. The OECD publishes the level of producers' subsidies for several countries. A Producer Support Estimates (PSE) of 20% means that the estimated value of transfers to individual producers from consumers and taxpayers is equivalent to 20% of gross farm receipts (OECD, 2010). In most years, almost all the subsidies are related to output. Only in 1996 to 2002 less than 2% of the subsidies are allocated to 'on farm services': an input use based support. Appendix 4 shows detailed information on the PSE for the Mexican milk producers. Figure 2.3 shows the PSE for Mexico and benchmark countries. New Zealand has a negligible PSE over 20 years. The other selected countries reduced the subsidies in the nineties and even more since 2005: the PSE dropped from above 50% to below 20%. The subsidies in recent years have been largely abolished in most countries.

Figure 2.3 PSE: subsidies on milk as percentage of farm receipt



Source: Based on OECD Database 1986-2009 Producer and Consumer Support Estimates.

3 Dairy production and trade: an international benchmark

Key findings

- The Mexican raw milk production (10.8m tonnes) is slightly below the Dutch production (11.3m tonnes).
- The average yield per animal (5,000kg) is on a fair level compared to most benchmark countries.
- The total national milk production growth (1.9%) is just below world average (2.2%) and above the Dutch level (0.4%).
- Mexico is a net importer of dairy products (45% milk powder). USA supplies over 55%. Self-sufficiency of raw milk is around 70%.
- Mexico imports 2% of their dairy products from the Netherlands, mainly cheese (USD27m).

3.1 Benchmark countries and self sufficiency

This chapter provides an overview of the Mexican dairy industry compared to benchmark countries. Section 3.2 deals with the production and consumption, Section 3.3 with the trade developments.

The benchmark countries are trade partners of Mexico or important producers in Central- and South-America. Table 3.1 provides the key figures of the selected countries. Mexico ranks number 16 as world producer of cow milk, with a share of 2% of the world production. The cow milk production in Mexico is a little below the Dutch production, despite a population that is seven times the Dutch. Mexico is world's tenth important importer of dairy products and has a negligible export of dairy products. A first opportunity for the Mexican dairy industry might be to substitute the imports by domestic production.

Mexico produced almost 11bn litres of milk but consumption amounts around 15.6bn litres, resulting in imports of approximately 5bn litres of milk and dairy products indicated by low self-sufficiency indices for butter and milk. The Mexican milk production covers about 70% of the total volume of raw milk required to satisfy the domestic demand. This gap tends to widen, due to higher growth rates of dairy consumption market compared with the growth rate of milk production. The consumption developments are discussed in Chapter 7.

Table 3.1 Cow milk production and trade in dairy products in 2008 and Self-sufficiency in 2007					
Country	Production 1,000 tonnes	Import USDm	Export USDm	Self-sufficiency a) %	
				Butter	Milk
World	578,450	56,329	64,601	100	100
USA	86,179	1,680	2,994	100	99
Brazil	27,752	212	509	104	101
New Zealand	15,217	75	6,563	1,074	553
Netherlands	11,286	3,189	6,908	239	146
Mexico	10,766	1,470	91	25	79
Argentina	10,500	20	812	153	118
Australia	9,223	538	2,208	156	170
Belgium	2,805	3,520	3,451	114	94
Chile	2,550	84	221	106	113
Uruguay	1,576	8	430	475	182

a) Domestic supply to consumer in percentage of domestic production.
Source: Own calculations based on FAOstat and UN Comtrade.

3.2 Dairy production and yields

Mexican growth of cow-milk production is below world average. Brazil, Argentina, and Chile have much higher growth levels, because of a growth in the number of dairy cows and a growth of the yield per animal (Table 3.2). The Netherlands and Belgium have low growth rates, due to the quota system of the EU Common Agricultural Policy. The average yield per animal in Mexico (5,000kg) is high compared to Brazil (1,300kg) and Argentina (4,800), two large producers in the region. USA (9,300) and the Netherlands (7,700) have significant higher production levels. The yield growth per animal (2.1%) is above the level of Brazil (1.9%) but below Argentina (3.1%) and relatively high compared to most other benchmark countries. Appendix 5 provides data for the period 1998 to 2008. Chapter 5 shows that yields in Mexico vary between 700 and 9,000kg per cow.

Table 3.2 Dairy production in 2008 and annual growth 2003-2008						
Country	Production		Dairy Cows		Yield/animal	
	1,000 tonnes	growth %	1,000 heads	growth %	kg	growth %
World	578,450	2.2	246,862	1.2	427	-1.0
USA	86,179	2.2	9,224	0.3	9,343	1.9
Brazil	27,752	3.9	21,198	1.9	1,309	1.9
New Zealand	15,217	1.2	4,348	2.1	3,500	-0.9
Netherlands	11,286	0.4	1,466	-1.1	7,698	1.5
Mexico	10,766	1.9	2,153	-0.2	5,000	2.1
Argentina	10,500	5.1	2,200	1.9	4,773	3.1
Australia	9,223	-2.2	1,728	-3.4	5,337	1.2
Belgium	2,805	-3.8	500	-2.2	5,610	-1.6
Chile	2,550	3.7	1,725	3.5	1,478	0.1
Uruguay	1,576	0.9	950	1.6	1,659	-0.7

Source: own calculation based on FAOstat.

Appendix 6 provides the production and price for each administrative zone. The zones Jalisco (1,861m litres), Coahuila (1,365m litres), and Durango (1,037m litres) in the middle of Mexico are the regions with the largest production. These areas have a good infrastructure of roads, communication, and electricity. The price of milk between the regions shows some variation: the average is MXN4.32 per litre whereas the price is above MXN7 per litre in the Federal district and in Baja California Sur and in Colima (near Mexico City) just below MXN7 per litre.

3.3 Import of dairy products by Mexico

The Mexican import growth of dairy products (14.1%) in the period 2001-2003 to 2006-2008 is higher than the world average (12.7%). Concentrated milk and cream (powder) accounts for 43% and cheese for 26% of the total value of imports by Mexico. The USA supplies 57% of the total dairy imports by Mexico. The USA is for many dairy products the largest supplier, and has an above average growth rate. However, Uruguay got a large share in the imports (60%) of the category buttermilk, yoghurt: since 2004, Uruguay doubled its export value in this category each year. New Zealand supplies 60% of the butter and 26% of the concentrated milk and cream. New Zealand's growth rate in the Mexican import is below average. The Netherlands has a share of a mere 2% in the imports

by Mexico, mainly cheese. Countries in the region have the highest import growth rates. Appendix 7 and 8 provide detailed information on shares and growths percentages.

Table 3.3		Import of selected products by Mexico in USDm (average 2006-2008) and growth 2001-2003 to 2006-2008 in %				
	Milk & cream, concentrated	Whey	Butter	Cheese	Total	
HS-code	402	404	405	406		Growth
World	591.2	219.7	149.3	311.7	1364.8	14
USA	355.3	196.9	18.4	160.0	774.9	25
Brazil	0.6				0.6	25
New Zealand	153.8	10.5	89.0	25.0	283.5	10
Netherlands	0.1	0.1	0.8	26.8	27.8	8
Argentina	19.6	1.6	5.2	4.3	31.8	-3
Australia	8.7	3.0	8.8	0.3	21.0	-6
Belgium	1.7		15.1		16.8	3
Chile	31.3	0.1	0.9	51.6	85.4	35
Uruguay	5.3	0.3	4.5	32.0	82.4	19
Source: UN Comtrade.						

4 Suppliers to the dairy chain

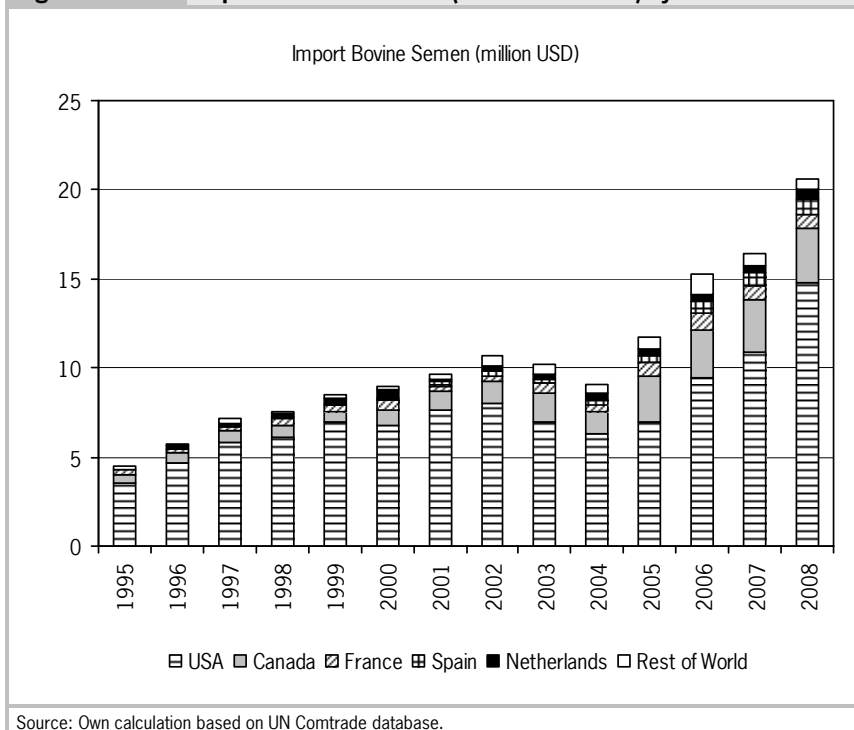
Key findings

- Only 2 to 3% of the farms use Artificial Insemination, according to stakeholders 95% on the large farms.
- Milk production control per cow is almost not practiced in Mexico and hampers proficient farm management and breeding. Large farms seem to use milk production control.
- Farmers own 65% of the processing capacity of concentrate feed.
- Credit facilities, largely supported by the government, offer soft loans and/or subsidies. This did not improve the position of farmers. Lack of sufficient capital and interest rates up to 14% are threats for the dairy farmers.
- The perception of high risks and low return, not in line with the reality, and farmers' attitude (loans are subsidies) do not improve access to credit facilities.
- Mexico allows the use of BST to increase milk production. Some processors do not accept BST-milk.
- The import of vaccines for veterinary medicines from the Netherlands is below 10% of the total imports: the USA supplies over two-thirds.
- Mexico has public and private standards for milk quality. Several initiatives focus on improvement of the quality.
- Using milk machines and cooling tanks is related to the conditions and support of the processors.
- The main trade partner for machinery is the USA. Mexico imports a negligible amount of machinery from the Netherlands.

4.1 Breeding

In 2008, Mexico imported USD20m of bovine semen, mainly from the USA (67%) and Canada (17%). The import from the Netherlands (3%) increased from around USD150,000 end nineties to over USD400,000 in the last 5 years, with an all high in 2008 of USD589,000. Figure 4.1 shows that the imports from France (5%) and Spain (4%) are still higher than from the Netherlands.

Figure 4.1 Import of Bovine Semen (HS code 051110) by Mexico in USDm



Imports of semen, as in the case of other animal genetic products like embryos, are subject to a high level of risk analysis before these products can actually be imported. After having verified the zero-risk of these products, the Mexican veterinary authorities issue a list of import requirements that involve country of origin, procedures, testing, and other health specifications. This hampers maintaining a market position, as rules change according to the country's animal health status, additional requirements from the authorities and country-to-country negotiations and agreements. As an example: veterinary reasons prevent import of semen from Brazil, although the cross breeds would fit perfectly in the tropical areas of Mexico (Reproducción Animal, 2010). The market is not really growing; the number of cows is stable, which results in a fierce competition between companies. The largest competition in semen is from national bulls, not tested in official breeding programmes and therefore without official breeding values. Owners of the bulls promote their bulls with data on the production of the daughters. This seems to work, because they have a great

share of the market in semen. Farmers tend to have more belief in these bulls than bulls from outside the country. Although these bulls lack official breeding values, they can have good quality daughters. Reproducción Animal (2010) estimates that from all semen for AI, 50% is national and another 50% is imported. The use of Artificial Insemination is not a common practice yet on all farms. If it is used, then it is only for dairy cows, not for beef cattle. The Union from Jalisco estimates that Artificial Insemination is only practiced on 2-3% of the farms (mainly large farms). Small farms often do not see the advantages of artificial insemination with semen of high genetic quality. The specialised dairy farmers (with good infrastructure, equipment, and management) used to select only for milk production, because milk processors are used to pay for volume of milk. Recently they started to require a minimum level of protein. Productive life, calving ease, and fertility are getting more important. What is needed to increase the use of Artificial Insemination/good genetics is awareness among farmers of the benefits, confidence in genetics and good infrastructure to provide full service at any time (Reproducción Animal, 2010).

Box 4.1

Reproducción Animal

One of the importers of bovine semen is Reproduccion Animal (a full Mexican Company founded in 1972). The strategy of Reproducción Animal is to promote healthy and profitable cows for commercial farms. It has distributors all over the country that deliver semen at dairy farms. RA imports semen of different breeds, especially Holstein, but also e.g. Swedish red, Fleckvieh or Montbeliarde for crossbreeding. Semen is imported from the USA, the Netherlands, Germany, Sweden, and France. Reproducción Animal is a distributing agent for Cooperative Resources International (USA); CRV (Netherlands), Viking Genetics (Sweden, Denmark, Finland), München Grub (Germany); AmBreed (New Zealand) and Coopex (France), among others. Reproducción Animal gives advice for animal reproduction strategies for milk or beef cattle, using semen according to the different regions. Cows are examined for their physical traits (not health), before being recommended to a specific bull. Reproducción Animal also sells (increasingly) sexed semen. The market for embryos is very small. They sell most semen in La Laguna in the Coahuila region.

In the Netherlands milk production control at the level of an individual animal is widely accepted and seen as a useful tool to monitor all kind of management aspects like feeding or breeding. In addition, these data can be used to estimate breeding values of bulls. According to Reproducción Animal, the government says that 300,000 dairy cows are in milk production control, but they estimate this is only 40,000. The reason for this low participation in milk pro-

duction control is that farmers are not interested in sharing data. The specialised farmers are satisfied with data on milk production from their own milking parlour computer and the results of bulk tank composition. Furthermore, taking part in milk control is expensive (Reproducción Animal, 2010).

4.2 Feed industry

The National Council of Manufactures of Concentrates and Animal Feed registered 152 commercial (specialised) industry units, selling to third parties representing 35% of the national manufacturing capacity of 32.5m tonnes. The second type is cattle farmers with proper infrastructure to produce animal feed. The National Council registered 258 units of this type, representing 65% of the national processing capacity. The industry generates 42,000 direct jobs. The industry has an overcapacity: only 75% of the available processing capacity is used. Smaller plants of organised farmers that do not possess advanced technology are first out of business. In 2004, the total value of inputs was MXN25,000m, mainly cereals and seeds.

Of all forage grains in feed, 60% is imported; of which the main part (62%) is maize, followed by sorghum (31%). México is a large producer of white maize, but yellow maize has to be imported. The same goes for oilseed cakes, over 90% is imported. In 2006, 2.4m tonnes of feed was used for cattle breeding, and 4.2m tonnes for dairy production. Per 2008, import tariffs in NAFTA for maize became zero.

Main feed inputs used by two subgroups of production systems (see Chapter 5) are shown in Table 4.1.

Table 4.1 Percentage of the type of feed used by farm types		
Feed type	Farm type	
	smallholders	specialised
Maize	31	24
Agro industrial by-products and others	36	30
Commercial concentrates	33	46
Total	100	100
Source: Espinoza Ortega et al. (2005).		

Box 4.2**Prolea (Productores de Leche de Acatic)**

Prolea is a cooperative of farmers in the state Jalisco founded in 1991. Members of the cooperative are 552 farmers. Prolea has 4 departments:

1. Selling and processing of milk. Prolea produces 54,000l per day (2004), and sells to different buyers, according to the quality of the milk;
 2. Feed. They buy ingredients and mix their own concentrates for dairy cows in a small plant. The purpose is to make the cheapest but best feed for dairy cows. Their prices are 30% below market level. Non-members pay a slightly higher price than members do. Besides own feed production, they buy ingredients for feed. A nutritionist helps mixing the concentrates. They also import African grass seeds to increase grass production and therefore milk production;
 3. Agriculture. Prolea also offers agricultural contractor services to harvest corn and grain. In 1991, the first joint cooling tanks were installed with soft loans from Lechera de Guadalajara;
 4. Rearing calves.
- Furthermore, the cooperative supplies credit, extension services and health care to its members.

Feed accounts for the largest cost in production systems (see Table 4.2, Chapter 5 provides information of all costs). Differences in costs result from a large use of maize by the smallholders group while the specialised group uses more concentrates that are commercial.

Table 4.2**Impact of maize 60% price increase on production costs of Mexican livestock**

Product	Forage grains a)/ feed costs	Feed costs/ total production costs	Forage grains/ production costs	Increase of forage grains	Impact on production costs
Milk	40%	65%	26%	60%	15.6%
Poultry	65%	62%	40%	60%	24.2%
Eggs	60%	55%	33%	60%	19.8%
Cattle	65%	60%	39%	60%	23.4%
Pork	72%	56%	40%	60%	24.2%

a) Mainly maize and sorghum.

Source: PROLECHE (2007).

Not only milk production but also livestock production will be affected by higher maize prices (an important forage grain). Table 4.2 gives the percentages of

cost variations in different Mexican livestock industries due to a rise of 60% of forage grains. It shows that the impact is smaller for dairy than for chicken meat and pork. The Union of Jalisco estimated that feed has a share of 60%-65% of the cost price, which is in line with the 65% in Table 4.2.

4.3 Credit facilities

Some organisations to finance the development of the agricultural sector are:

1. **Financiera Rural** Financiera Rural Mexico's rural government agency started in 2003 aiming at improving the quality of life by increasing productivity and profitability in rural areas. Financiera Rural provides loans and services in the field of training, advisory and technical assistance. In 2007 Financiera Rural lent MXN17,038m and in 2008 MXN26,398m. Financiera Rural grants credit to individual rural producers and entrepreneurs and rural financial intermediaries through 97 branches located throughout the country (<http://www.financierarural.gob.mx/>).
2. **FIRA (Trust Funds for Rural Development)**
FIRA is a development bank that offers credit for fixed assets, as working capital and for supporting services. The supporting activities involve capacity building, advice, demonstration, and enhancing organisational capacity (in the form of vouchers to producers). In 2008, FIRA granted MXN16,054m credits to the livestock sector, an increase of 23% compared to 2007. Cattle took MXN11,279m (70%) of the total.
3. **FOCIR (Capitalisation and Investment Fund for the Rural Sector)**
FOCIR is a governmental institution created in 1994 to promote investment in the rural and agribusiness sector. In 2008, it changed from a public trust fund to a specialised financial agent. The federal government, state governments, and the private sector are shareholders. Financial instruments offered by FOCIR vary from stop-loss programmes to long term financing programmes for small and medium enterprises, as the Ministry of Economy's Development Programme does.
FOCIR developed the Agribusiness Capital Investment Fund (FICA), a trust fund with mixed capital participations through cash deposits made by both state and federal governments, as well as private investors. FICA focuses on financing between USD4m and USD10m. Ministries of Agriculture and of Economy programmes offer loans below USD4m for the agricultural sector.
4. **Nacional Financiera, S.N.C.**
NAFINSA is a Development Bank, channelling its funds mainly through com-

mercial banks and non-banking financial intermediaries. The principal sources of NAFINSA are loans from among others the International Bank for Reconstruction and Development, the Inter-American Development Bank, foreign banks, and securities. NAFINSA targets small and medium-sized enterprises (SMEs) to provide better access to financing and other assistance schemes. In 2008, NAFINSA's private sector loan portfolio was MXN101,853m.

5. Credit Unions

Credit unions facilitate loans, credits, and guarantees for their members. Companies, like Lala and Alpura (see Chapter 6) have their Credit Unions, and channel resources mainly from FIRA through commercial Banks to their members. For instance, the industry Group Lala operates the Unión de Crédito Industrial y Agropecuario de la Laguna. In the third quarter of 2009, their portfolio involved MXN2,582m in outstanding loans and MXN782m in liquidity (FitchRatings, 2009).

6. Another source of finance is the programme 'Alianza para el campo' (mentioned in Section 2.2) which helps to balance the decline of credit assigned to the sector. These subsidies have had an impact specially on provisioning milking and cooling tanks.

During the fact mission stakeholders expressed the following opinions. Lack of sufficient capital for the primary agricultural sector and interest rates up to 14% are some threats for the dairy farmers. The perception of high risks and low return is not in line with reality. This does not improve the credit facilities. The large companies in the food industry (e.g. Lala, Alpura or Sigma) have a better access to capital. The foundations by government of banks like FOCIR or FICA have apparently not improved the position of the farmers. The farmers can also partly be blamed for their weak position. They consider credits from the government as a subsidy and they do not consider profitability if they solicit for a loan.

4.4 Animal health

Mexico, as the USA, allows legally the use of BST (Bovine Somatotropin or bovine growth hormone). However, it is 100% forbidden in several other milk-producing countries like Canada, Australia, New Zealand, Japan, and Europe. In the United States, concern about potential side effects has slowly grown, with a number of products and retailers now becoming BST-free. In Mexico on

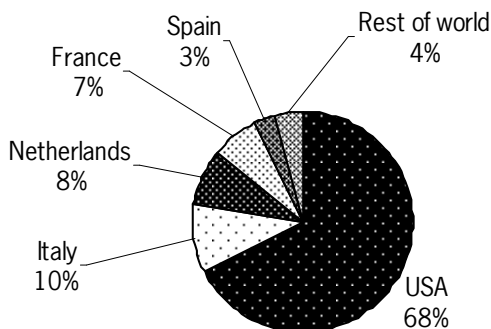
average 35-40% of the farmers, especially small farms that produce around 400-500kg per day, use BST to increase milk production (Nestlé, 2010). By use of BST the milk production can increase with 10%. Some processors do not accept BST milk. The profitability of BST became not clear.

Mexico imports in 2006 to 2008 around USD50m of Vaccines for veterinary medicine (HS code 300230), mainly from the USA (68%). The 10-years average of the import from the Netherlands is USD3.5m. These imports fluctuate with a peak of around USD5m in 2006 and 2007. Figure 4.2 shows the foreign suppliers of vaccines for all livestock.

In the North, there are still problems with Tuberculosis and Brucellose. In the tropical areas and in South and Central Mexico this is not a problem (Nestlé, 2010). Mexico is free of foot and mouth disease.

Figure 4.2

Imports of Vaccines for veterinary medicines by Mexico



Import of vaccines (USD52m 2006-2008)

Source: UN comtrade.

4.5 Milk quality control

Milk quality control is performed at lot level (e.g. milk tank) and differs from milk production control as mentioned in the section on breeding. The official standards for product safety are established under the NOMs (Norma Oficiales Mexicana), elaborated by the Federal Ministries. These norms are equivalent to the European Union Directives but differ in requirements and levels. Each prod-

uct must be tested according to the national, mandatory NOM standards by an accredited Mexican laboratory.

Examples of NOMs for milk products are (Gain, 2009):

- NOM 120 applies to processing milk;
- NOM 155 applies to finished milk product;
- NOM 251 will apply to HACCP requirements, which until now, contrary to the European Union, are not mandatory;
- NOM-243 will soon be published and refers to the labelling of milk products;
- Cofocalec (Consejo para el Fomento de la Calidad de la Leche y Sus Derivados, A.C.) has certified final milk products of Alpura (12), Pasteurizada Aguascalientes (3), La Concordia (7) and Lechera de Guadalajara (2), 12 other products are in process of certification. These are voluntary certifications. For the list of products, see www.lactodata.info/lactodata/lactodata_calidad.php?menu=calidad

Besides the NOM, there are NMX (Normas Mexicanas) which are voluntary. As the NOM are mandatory by law, the NMX may be more stringent than the NOM, but not less. The NMX are elaborated by the COFOCALEC, the Mexican Standard NMX-F-700 as elaborated by COFOCALEC in 2004, which establishes the physical, chemical and hygienic specifications, as well as methods for analysis of raw cow milk. COFOCALEC's laboratory in Lagoa de Moreno conducts raw milk analysis for 5 processors.

A third category of standards concerns the 'Pliego de Condiciones' (Standards specifications). These tend to be stricter than NOM or MNX. An example are the standards as have been set for milk certified under the certification scheme Mexico Calidad Suprema, which apply to food safety, intrinsic product quality and information to the consumer (labelling). Mexico Calidad Suprema is a joint initiative of the Ministry of Agriculture; Ministry of Social Development and Bancomext to promote Mexican export products. WalMart has accepted Mexico Calidad Suprema certification for its purchases since 2007. Sagarpa subsidises 50% of Mexico Calidad Suprema certification through its programme Soporte.

Box 4.3**Quality control at farm level: Lechera de Guadalajara**

Every farmer who delivers milk to Lechera de Guadalajara has a cooling tank of at least 1,000kg per farm. In total 700 farmers, deliver a total volume of 1.1 to 1.4m kg of milk. Quality standards exist for fat, freezing point, sediments, taste, Total Plate Count (TPC) (<100,000 CPU) and antibiotic residues. There is no standard for Bulk Milk Somatic Cell Count (BMSCC) yet, but they want to set this at <400,000 cells per ml (now 70% is below 700,000 cells per ml). A milk sample is taken from every delivery and once a week the raw milk is (randomly) tested for these standards. Antibiotic residue is tested every delivery (35,000kg milk from 16 farmers). Lechera de Guadalajara does not have a quality control programme for the production of milk at the dairy farm, but they do have regulations in the payment scheme. The requirements are: some specifications for the milking place, participation in the governmental programme for Tuberculosis and Brucellosis, good road conditions, electricity, availability of a veterinarian, water, milk room, pest control, control of medicines, control of purchased feed, equipment in line (no hand milking). The driver of the milk truck does some quick checks for temperature, alcohol test, and cleanliness of the tank. Lechera de Guadalajara takes care of maintenance of the tank and the farmers need to take care of the cleaning of the tank. If Lechera de Guadalajara sees a quality problem on a farm, they offer technical assistance and help the farmer to solve the problem by taking milk samples and hygiene measures.

Source: Lechera Guadalajara (2010).

According to Cofocalec (2010) quality standards that processors use are internal company standards. Quality is often attached to price, so they want to keep their own policies and make their own decisions. The policies are quite different between processors and they change between seasons. In winter/spring, when there is a lack of milk, the price of raw milk goes up and standards almost disappear, because they want all the milk they can get. In summer, they use the higher international standards because they want to be able to reject more milk because there is peak in the supply. Canilec (2010) says that processors work all with the same quality standards and their opinion differs from Cofocalec.

Quality control is difficult to enforce. Profeco (Procuraduria Federal del Consumidor, the consumer protection agency), checks food according to over 200 norms, but has only one laboratory and limited human resources (Cofocalec, 2010). According to Cofocalec antibiotic residues are a big problem. Farmers were not used *not-delivering* milk from treated cows during the withdrawal period, causing residues in milk. Of the 300-500 samples, Cofocalec analyses every week, about 15% contains antibiotic residues (Cofocalec, 2010).

Canilec (2010) estimated that 40% of total milk is of a good quality; 35% of a medium and 25% is of a low quality, according to the Mexican standards.

No NOM for raw milk exists, but a voluntary standard, the NMX 700/730. Up till now, only 50 ranches are certified according to NMX 700/730. They all deliver their milk to a processor in Aguascalientes who promised a bonus of MXN0.08 per kg if the farm is certified. For the farmers the bonus was the trigger, but after being certified, the production process got more efficient and they got more insight in prevention of losses and in quality. Therefore, although it costs money and time, the bonus and efficiency increase made it worth (Cofocalec, 2010).

4.6 Machinery and equipment

No formal information on the presence of milking and cooling equipment on dairy farms could be retrieved. The impression is that many small farms do not have such technology. If they cannot deliver their milk to a processor or collection centre, they will often sell the not cooled milk to small local cheese makers often at a lower price. Some small farms make artisan cheeses themselves and sell it at local markets. Some farms share a cooling tank, and sometimes they can deliver the milk to collection centres in the neighbourhood.

During the mission, we got some estimates about equipment on dairy farms:

- Of the 4,500 farms that sell the milk to Nestlé, the second largest processor, 90% have a milking machine and cooling tank. The others share cooling tanks with e.g. family members. Nestlé only buys cooled milk.
- Prolea, a small processor/cooperative in Jalisco, says 95% of their (approximately 200) dairy farmers have a milking machine. The milk of the farms that do not have a cooling tank is used for cheese production.
- In the state of Jalisco, the Union estimates that 60% of the 14,000 to 16,000 dairy farms (ranging from 5 to 500 cows) does not have a milking machine and 25% does not have a cooling tank. Farmers can get subsidy from the government to buy equipment. The Union helps them getting the subsidy, and work on good jointly offers from equipment companies (Union, 2010).
- The bigger farms with well-equipped milking parlours also have electronic milk production registration.

In order to meet quality standards in the future it will be necessary to cool the raw milk after milking, either on the farm or in collection centres. Second,

as milk production and farm size increase a milking machine will be the next necessary investment.

All technology that is imported from Europe into the USA is also available in Mexico. For example, milking equipment is often sold by Westfalia and Delaval (Union, 2010). Table 4.3 distinguishes five categories of imports of machinery:

1. Milking machines (UN comtrade code 843410);
2. Dairy machinery, excluding cream separators (UN comtrade code 843420);
3. Parts of milking machines & dairy machinery (UN comtrade code 843490);
4. Harvesting and grading (UN Comtrade code 8433). Harvesting or threshing machinery, including straw or fodder balers; grass or hay mowers; machines for cleaning, sorting or grading eggs, fruit or other agricultural produce;
5. Soil cultivation (UN Comtrade code 8432). Agricultural, horticultural or forestry machinery for soil preparation or cultivation; lawn or sports-ground rollers.

The selected countries are the Netherlands and countries, which have at least for one category a share in the imports of 5%. The main supplier is the USA for most products. The Netherlands has a share of 1% in the categories harvesting/grading and soil cultivation. Almost all other selected countries outperform the Netherlands in all categories. Germany is an important supplier of dairy machinery.

Table 4.3		Imports of agricultural equipment average 2006-2008 in 1,000 USD			
Country	Milking machines	Dairy machinery	Parts of milking and dairy machinery	Harvesting/grading	Soil cultivation
World	5,183	15,335	3,619	197,900	47,655
USA	1,386	2,482	1,685	146,734	26,930
Germany	623	6,562	435	10,977	291
Brazil	65			11,665	2,918
Italy	9	852	332	4,635	4,544
France		1,187	35	1,459	5,940
Netherlands		125	25	2,360	403
Sweden	73	1,762	193	5	31
New Zealand	1,126	4	197	164	2
Source: UN Comtrade.					

Stakeholders said that the average age of Mexican agricultural equipment increased dramatically over the last 30 years. Industry experts estimate that it has increased from 17 years in the 1970s to 25 years in the year 2005. As a direct result, the parts and servicing market has grown. Mexican farmers tend to be conservative and reluctant to change. Post-sales service is a key factor to purchase decisions because of the extended life of machinery. This has contributed to the success of American brands that benefit from large well-established distribution networks (US Commercial Service, 2005).

5 Structure and performance of dairy farms

Key findings

- Mexico's dairy farms range from small 'backyard' to large state-of-the-art operations.
- The milk yield per cow ranges between 700 to over 9,000kg per cow.
- Milk deliveries show a seasonal supply pattern, stronger than in the Netherlands.
- Farm gate prices of Mexican milk fluctuate below the price in the USA.
- Farm management is seen as a major weakness. Practical training is important, but poorly available.
- Feed management and roughage production and preservation can be enhanced.
- Maize is an important feed, feed costs are 60% of the milk cost price.
- Poor management in rearing young livestock.
- Stakeholders expect a production growth at better-managed farms.
- Veal production as in the Netherlands is no opportunity in Mexico: consumers do not know such meat and production resources have better opportunities.

5.1 Structure

Mexico's dairy farms range from smallholder or 'backyard' to large state-of-the-art-parlour-free-stall farms. Most authors recognise three dairy farming systems (Dobson and Jesse, 2009). Mexico lacks good data on the number of farms, the number of cows and milk production. There are an estimated 1m Holstein cows in Mexico (Reproducción Animal, 2010). Besides, there will be many non-specialised cattle, especially on small family farms. During the fact-finding mission, it appeared that most people use the distinction in region to describe farm types. Below are some characteristics of the farms in the regions, mentioned by the stakeholders.

1. Specialised, intensive, or confined production systems

The leading dairy area in México in terms of farm size and technology is situated in the area of La Laguna, on the border of the Mexican states of

Coahuila and Durango, with very big high-tech farms (500 - >1,000 cows), which grow alfalfa and corn for feed. In La Laguna the average milk production per cow can reach 9,000kg per lactation, some individual cows over 10,000kg. The production is very efficient, they often milk three times a day. Most of the farmers of Alpura and Lala are located in La Laguna. These systems are very similar to the specialised, intensive dairy systems in the USA. They use high technology, have high yields, import a big part of the inputs, have mechanical milking systems, use forage feed, have cooling systems, and skilled labour. Nearly all milk is sold through the formal marketing chain. Most producers are members of full-service cooperatives that not only process their milk, but also supply inputs and services.

2. *Dual-purpose systems*

They sell beef and milk, use local resources, and are regional providers. These are found mainly in the coastal range of the Mexican Gulf ((Tamaulipas, Veracruz) and Chiapas. Most farmers have crossbreeds that are more suited to the tropics (Brownswiss, Montbeliarde). The average milk production per cow is 700-1,000kg per year. Milk from these farms typically will be marketed during periods of high beef prices, as these farmers tailor their output in response to both beef and milk prices. Most milk is sold on the informal market. In the Northern coastline there are also some big farms with crossbreeds, but management lacks, they do not use their sources efficiently (Reproducción Animal, 2010). According to Nestlé (2010) the increase in milk production is very slow, because of the limiting land and cow production; the grasses do not offer enough feed for more cows or increased production. However, the tropical areas produce milk efficiently with low cost of production according to Nestlé. Rabobank (2010) thinks that dual-purpose farms should invest in optimising grazing systems and breeding. They are lagging behind because they are not part of a formal structure like a cooperative, they are not integrated in a value chain, and they have a lack of infrastructure like cooling. Nevertheless, there still will be a future for the dual-purpose farms in rural areas.

3. *Semi-specialised or smallholders also called family and sometimes 'back-yard' because the cows are held in corals or in the backyards of the houses (in case of very small farms)*

This production system does not have the genetic quality of the specialised systems but it is considered of good quality. The feed is grass, forage and crops grown by the producer; it is characterised by high costs and low profit margins (Nava et al., 2005; Palacios Muñoz, 2002). Investment in equipment is minimal and the farm family provides most labour (Dobson and

Jesse, 2009). In Jalisco the milk production per cow on average is 4,000-4,500kg per year. Farms have good genetics in this region, but good management is lacking. They spend most money on semen and farmers like to go to dairy shows (Reproducción Animal, 2010). In this area, the centre of Mexico, there is a pressure on agriculture and labour. Farms that are not integrated and that do not meet the quality standards, will have difficulties in the future (Rabobank, 2010). Those farms must become more efficient and of better quality.

Table 5.1 gives the main figures of each production system and Figure 5.1 presents the three different supply chains.

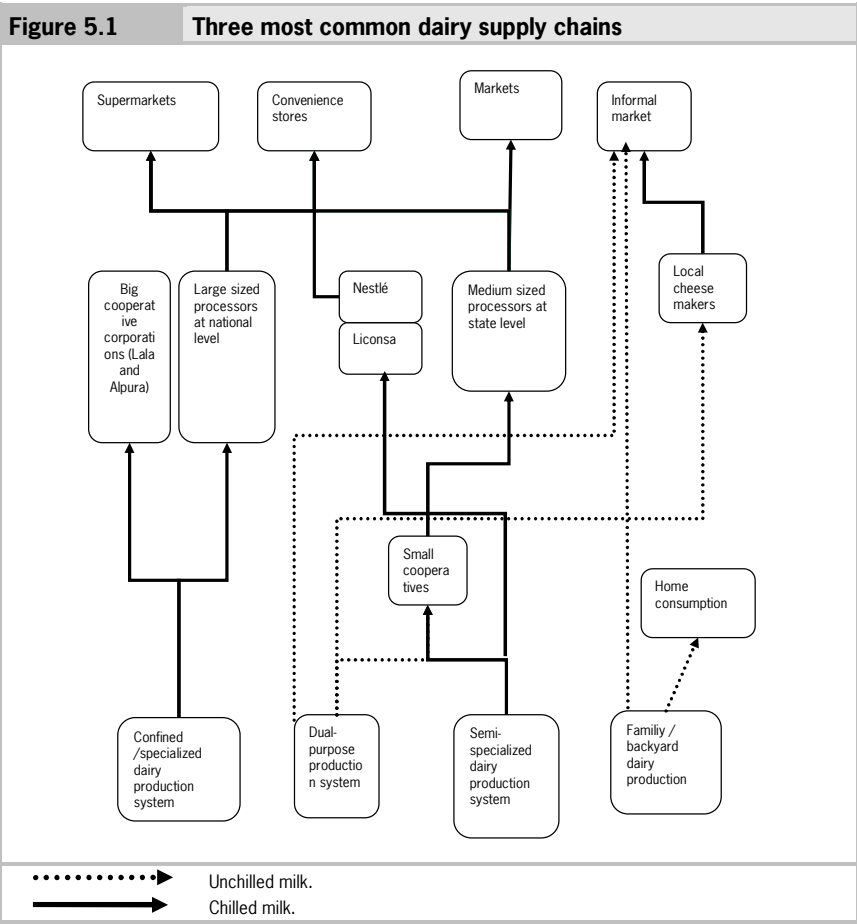


Table 5.1		Main characteristics of dairy production systems for three dominating dairy farming systems	
Characteristics	Intensive specialised	Dual-purpose (milk and beef)	Semi-specialised (smallholders)
Percentage over national milk supply	25-50%	20-30%	30-45%
Average herd size, number of cows	Around 100-500 and more	Around 40-80	Around 5-100
Percentage over total cows	17%	60% (75% Dobson and Jesse)	23%
Yield (lt/cow/year)	From 4,000 to 9,000	Below 1,200	From 1,800 to 4,500
Productive life cows	2-3 lactations	7-8 lactations	5 lactations
Main regions	Northern states	South and tropics	Central states
Main feed	Alfalfa, corn silage and concentrates (20-22 pounds of grain per day)	Grazing or forages from cultivated pastures or native grasses	Grazing part of the year, mixture of grains (11-13 pounds per day), corn stover and other by-products and forages
Genetics	95% Holsteins	F1 crossbreds, Holstein or Brown Swiss with Zebu, Criollo	Holsteins and Brown Swiss. Lesser genetic potential than specialised farms
Marketing	Production sold through the formal marketing chain, Lala and Alpura	Output is tailored in response to both milk and beef prices	Output sold to Liconsa and other processors, farm or local cheese production
Milking and cooling equipment	Milking machines, cooling tanks on farm	Hand milking, regional milk collection centres	Minimal equipment, often hand milking, few cooling tanks on farms
Sources: Ávila Téllez (2002); Del Valle Rivera et al. (1997); Dobson and Jesse (2009); Hernández Laos et al. (2000); Nava et al. (2005); Nicholson (1995); Palacios Muñoz (2002); San Juan et al. (2009) and Canilec (2010).			

Box 5.1**A large farm: Posta El Cuatro**

Posta El Cuatro has 6 units at different places. The unit we visited has 1,100 dairy cows, produces 32,000kg milk/day and they use BST. Cow production on average is 31kg per day per cow, milked three times per day. Production per lactation is around 13,000kg. In Jalisco there are around 5 of these big farms. Compared to the northern regions Torreone in Coahuila and Chihuahua this farm is medium sized.

Thirty people work at this farm/location; milking (3 x 7 hours) demands almost all labour. Cows are kept in corals in production groups (from 6-35 days in milk, 35-120, >120 days in milk) and are fed alfalfa, corn and oat. They grow 20% and buy 80% of the feed. The feed is adjusted to the group and milk production. All female calves are kept for replacement and the male calves are all slaughtered at three days old.

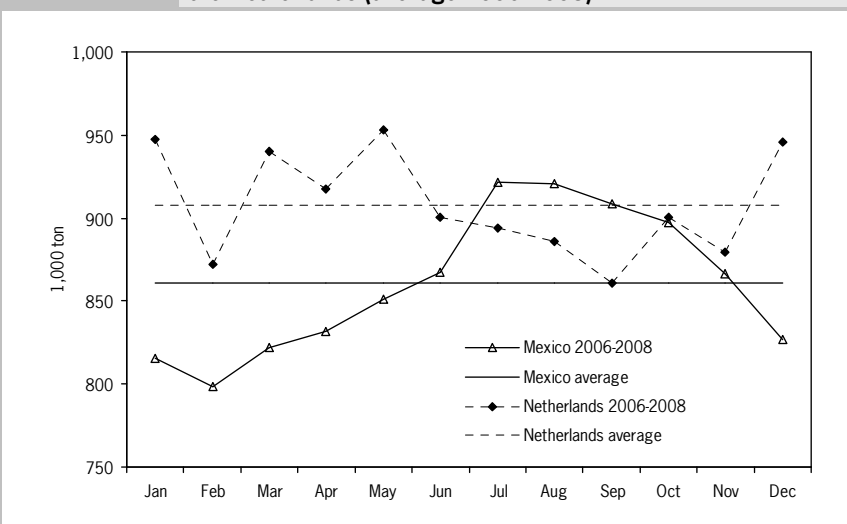
They have a formal contract with Danone, including production quota. Besides the Holstein cows, they also have some Jersey cows (5%) and crossbreds (10%) because Danone wants a higher fat percentage in the milk. The Holstein semen is from Canada and Australia. Their largest challenge is to keep the cows in good health. In the raining season, the cows suffer from udder and claw problems and in December, problems of getting a cold. Yearly 25% of the cows are replaced.

Mexico produced about 11m tonnes of milk in 2008 from 2.2m cows, which means 5,000kg per cow according to the statistics of the FAO (see Section 3.2). Other sources indicate around 6.9m cows: this number includes dual-purpose cows that account for about two-thirds of reported milking cows. These cows produce between 10 and 30% of milk production (Dobson and Jesse, 2009). The milk production per cow has a wide range: from 700kg per cow for dual-purpose cows to 9,000kg per cow on the specialised dairy farms. Box 5.1 shows that 13,000kg per lactation can be achieved.

About 25% to 33% of the produced milk goes into the informal circuit (IFCN, 2008; Dobson and Jesse, 2009). In this informal market, the milk product quality may be considerably lower than in products sold in the formal market.

Milk production shows seasonality: 6 months of a production below average and 6 months above. The period of above-average production in Mexico ends when winter begins and less forage is available. In the Netherlands, the production in the winter is above average. The fluctuation in the Mexican milk deliveries (coefficient of variation 5.0%) is larger than of the Dutch (coefficient of variation 3.5%).

Figure 5.2 Seasonality in milk deliveries (1,000 tonnes) in Mexico and the Netherlands (average 2006-2008)

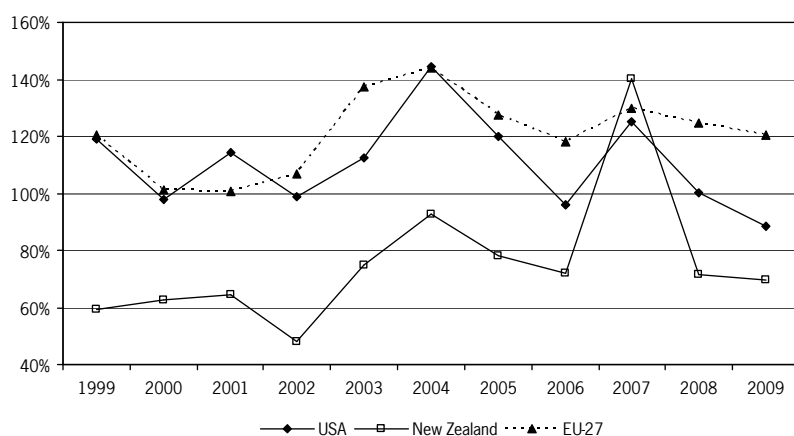


Source: CBSstatline and USDA, 2008 and 2009.

5.2 Economic indicators

Stakeholders mentioned the low prices the farmers receive for their milk, especially compared to the USA. Figure 5.3 compares the farm gate prices of USA, New Zealand, and the EU with the Mexican prices. From 1999 to 2009, the farm gate price of the USA was about 10% and of EU around 20% above the Mexican price. The average price in Mexico in the period 2005 to 2009 was EURO.24 per kg. New Zealand's farm gate price is during the 10-year period 75% of the Mexican price. Producers complain about the cheap import especially for milk powder, which indicates a lower performance in Mexico in milk powder production. The farm gate price differences are except for New Zealand not an incentive for import by Mexico from these countries, this in contrast to the opinion of the stakeholders. The below average import growth (Chapter 2) by Mexico from New Zealand seems related to rise of the farm gate price.

Figure 5.3 Farm gate prices (EUR per kg) in % of farm gate price Mexico



Source: Calculation based on OECD farm gate price and Eurostat exchange rates.

Prices received by farmers within Mexico vary between regions. In the tropical zones, prices were lower in 2007 than those received by large farmers from central and northern regions. Quality and lacking sufficient demand from modern processors might be the reason for the low price as mentioned above.

During the fact-finding mission, stakeholders indicated farm gate prices (cost price + profit) vary between MXN4.00 and 4.40. The indications per litre are:

- North: cost price is MXN3.80, profit is MXN0.60;
- Jalisco: cost price is MXN3.50-3.60 (no external labour). The cost price is relatively high, compared to the very large farms in the North. They have a profit of around MXN0.50 on a regular basis;
- Tropics: cost price is around MXN3.00-3.20, profit is around MXN1.20. The profit depends on milk/beef share, but milk is important for 'every day money'.

Little information on the cost structure has been found. Section 4.2 indicated that feed costs have a share 65% in the cost price. A study of Álvarez Fuentes et al. (2004) provides an overview as all costs of the average dairy farms. The share for feed differs, by the variation (indicated by the standard deviations is high).

Table 5.2 Costs and profit indicators for milk production as % of total costs		
	Value	Standard deviation
Feed	50.4	28.3
Labour	21.5	21.0
Depreciation of cattle	10.5	10.6
Financial costs	8.5	6.4
Other	11.7	6.4
Total costs	100.0	
Source: Álvarez Fuentes et al. (2004).		

Table 5.3 presents financial indicators for each of the subgroups. The smallholders group is the least favoured. The dual-purpose group is similar in herd size and land ownership to the specialised group but with less educated labour, poorer access to subsidies, technical and management consultancy. The specialised group has the best performance: the gross margin (difference between sales and direct production costs) is the highest per cow, ha and litre.

Table 5.3 Economic analysis of family systems			
	Production system		
	specialised	dual-purpose	smallholders
Total Gross Margin per farm (USD)	3,857	1,688	614
Gross Margin per cow (USD per cow)	391	143	122
Gross Margin (USD per ha)	555	176	201
Gross Margin per litre (USD per litre)	0.07	0.029	0.027
Production cost (total) (USD per litre)	0.25	0.27	0.26
Source: Espinoza Ortega et al. (2005).			

5.3 Challenges and perspectives

Several factors propel a growth in production of milk, such as technological improvements, governmental support, and better herd management practices. Sagarpa plans to increase milk production in Mexico includes actions for infrastructure and genetic improvements, training and technical assistance, farmers support to improve milking practices and parlours, and to purchase grains, by advising them in negotiating contract terms (Dobson and Jesse, 2009).

A major player in the milk industry worldwide has also taken actions to support milk production in Mexico, namely Nestlé that has operated in Mexico for more than 60 years. Nestlé developed 'districts' in the tropical region of Mexico to collect milk for its processing plants. These districts enhance the quality and quantity of the milk, provide technical assistance, and offer micro loans to farmers that supply their plants (Dobson and Jesse, 2009).

Notwithstanding governmental and Nestlé's actions, national production growth is affected by financial crisis, non-competitive dairy producers and current droughts (San Juan et al., 2009). Identified sources of low production are (Ávila Téllez, 2002; San Juan et al., 2009):

- Land tenure problems, which hampers land as collateral.
- Insecurity: thefts, assaults and kidnapping.
- Inadequate development of management practices: low percentage of farmers use an automatic milking system; it is common that foreign systems are *adopted* but *not adapted* to local characteristics, such as climate, maintenance availability and quality, labour, et cetera.
- A low percentage of the cattle is artificially inseminated with higher quality semen than that of the cattle itself. Therefore, genetic improvement is meagre. Short productive life of the cattle on average is a waste of the genetic potential.
- Frequent diseases and alterations reduce production levels or cattle's life-time (tuberculosis, brucellosis, anaplasmosis, babesiosis, fertility problems, mastitis, ecto- and endoparasites, hoof problems). Mexico is Foot and Mouth Disease free.
- Poor management in rearing young livestock.
- Livestock is slaughtered at low ages due to lack of productivity and infertility. Breeding investments do not pay off.
- Marketing of inputs has too many intermediaries that increase costs.
- Lack of proper commercialisation channels.
- Imports of sub-products from United States and Canada saturate the market of fresh milk.
- Problems with sanitation, transportation and processing capacity on fresh fluid milk.
- Inadequate cold storage and refrigeration infrastructure.
- Lack of facilities to produce milk powder. Supply in the season of abundance cannot be processed and stored for the season with low deliveries. This results in an increase of imports.
- Lack of professionals in veterinary medicine, animal husbandry and agronomy.

- Some entities' practices might have an influence on low production:
 - Monopolistic practices of business groups in the commercialisation of the milk.
 - Abolition and reduction of specialised milk producing herds.
 - Inaccessible credits to the agribusiness industry.
 - Unfair selling prices.

Aforementioned factors do not enhance an increase of the milk production not at small, but also not at medium sized farms. However, large farms are continuing to make modest productivity gains through improved genetics and herd management practices (USDA, 2009).

How do stakeholders see the future of the dairy farms?

Farmers need to increase their production to be able to stay in business. This production growth should be achieved by higher yields per cow and not only by keeping more cows according to the Union (2010). It is important to increase milk production efficiently per cow, as there is a water and roughage shortage. To increase milk yield per cow, the cow demands more energy. Growing and/or importing corn or grains can achieve this. Also better techniques for feeding are needed. Nowadays farmers feed the cows during milking, but they should implement feeding outside the parlour so cows have more time to eat. Besides, they should keep the cows in production groups so feeding can be adjusted to the stage of lactation.

In addition to the necessary increase in feeding efficiency, farmers need to make more use of AI and good genetics to improve genetic quality of the herd. They can make a quick jump forward with the right use of good semen. Farmers are aware of the necessary improvements, but they do not always have the resources to make investments or changes (Union, 2010).

We asked stakeholders their opinion on the perspective for the different farm types:

- *Intensive specialised farms*
The minimum size in LaLaguna will be above 300-500 cows in order to survive. In Jalisco this is 100 cows nowadays, but will be above 200 cows in the future. With only 80 cows, they cannot survive (Reproducción Animal, 2010). A farm should produce at least more than 1,000kg per day to be able to survive if there is no job outside the farm. Besides, farms should be able to produce 50-60% of their own feed (Nestlé, 2010).

- *Dual-purpose farms*

Farms with 30-50 cows and no off-farm jobs will not survive (Posta El Cuatro, 2010). Medium sized farms (around 100 cows) need to make their own labour more efficient by mechanisation, then they can survive in the future (La Daga, 2010), not with external labour. Canilec also mentioned the need for more efficiency on medium sized farms. The Union of Jalisco thinks that part of the medium sized producers may stop, because of the high cost price. According to the Union 20% of the medium producers stopped in the last six years, indicating a need for more efficiency.

- *Semi-specialised, smallholders farms*

There are many small producers without the required infrastructure and equipment to produce like the bigger ones. This also affects the milk quality and as a result the price that is paid for it (Cofocalec, 2010). Some processors work with preferred suppliers and demand cooled, high quality milk, and of a certain amount. It is difficult for small producers to meet these demands. If small farms cannot deliver to a dairy plant or processor like Nestlé, Lechera de Guadalajara or Liconsa they often deliver the milk to small local cheese makers or make artisan cheese themselves for the informal market. The price they get from the local cheese makers however is lower than the milk price paid by formal processors (Union, 2010). To be able to live as a family on a small farm they often have non-farm income so they still can survive and keep producing some milk, also for home consumption. Not integrated farms that cannot meet the quality standards will have difficulties in the future in selling their milk (Canilec, 2010). However, although there might be some difficulties in selling milk, the Union thinks that small producers will remain, because they have low cost of production (no equipment, pasture feeding). Canilec thinks that the small farms (100 litres per day) can impossibly live from that profit. They should increase production to at least 300kg per day which is the break-even point for a family to live from or make sure they get a partly job outside or other income according to Canilec.

5.4 Veal production

Male calves born at a dairy farm are often slaughtered at 3 to 10 days old. The meat resembles the meat of goat and lamb that is very popular in Mexico (Nestlé, 2010, Prolea, 2010). Some farmers keep the male calves on a plot of land as a kind of savings account (Nestlé, 2010).

In literature and during the fact-finding mission it appeared difficult to obtain numbers about veal production. During the fact-finding mission, it was said that there are a couple of men who raise male Holstein calves to about 500kg. Most stakeholders shared the same opinion 'meat is just beef!' and 'why raise and slaughter Holstein calves for meat?' Many people asked that question, besides they doubt if there would be a market for the meat in Mexico, as people are used to the 'real beef meat'.

The general opinion is that veal production, as is done in The Netherlands, costs a lot of money, and the question is whether the margins are higher than compared to professional beef production. There are already many pure and crossbred beef cattle. Furthermore, according to Nestlé (2010), there is not enough feed and water to raise the male calves. Male calves are inefficient in the production of meat, so the feed and water can better be used for pigs or poultry.

6 Processing industry

Key findings

- The dairy processing industry gives direct employment to 37,000 and indirect employment to 200,000 people.
- Over 300 dairy processors are official registered, they use on average 80% of their production capacity.
- Over 2,000, not officially registered, artisanal cheese makers process mainly uncooled raw milk.
- The three largest milk processors - Lala, Nestlé and Sigma- process over two-thirds of the total milk.
- Almost all processors have their own milk quality control system.
- Milk powder production does not appear to be attractive: imports are cheap and there is no period in which Mexico is self-sufficient in milk.

According to 2009 statistics of CANILEC (National Chamber of Milk Processors), the Mexican milk processing industry is formed by 310 formal enterprises that give direct employment to 37,000 people and indirect employment to 200,000 people. Table 6.1 provides information on personnel and number of firms for three main types of dairy manufacturers: milk processors and packaging; cream, butter and cheese manufacturers and condensed, evaporated and powder milk processors. Largest activity in terms of personnel, and production value is the processing and packaging of milk. However, only 6 firms (1.5% of the dairy firms) carry out this activity. It is also the activity with the highest capacity usage. 10% of dairy processors are dedicated to manufacture cream, cheese, and butter. The minor activity of the three in terms of employment and production values is the manufacturing of condensed, evaporated, and powder milk. Stakeholders mention that import of milk powder is cheap. From Chapter 3 and 4 we can conclude that Mexico is never self-sufficient in milk. Milk powder production seems not to be attractive. The remaining 85% of firms are dedicated to manufacturing other milk products. Appendix 9 shows the number of people directly involved in milk production in Mexico from 1998 until 2008. It shows a slight but continuous increase of personnel, while the number of hours worked increases more rapidly. Similarly, production and sales values increase more rapid than the payments to personnel. Table 6.1 presents the number of official firms registered at SIEM. All established firms subject to taxation have to register in the SIEM. This latter is the reason that artisanal cheese makers are

not included. During the fact-finding mission, stakeholders mentioned over 2,000 artisanal cheese makers: in the region of Chiapas alone around 600.

Table 6.1 Firms, personnel and production value of dairy processors in 2008					
Processors	Firms	Personnel	Total payment	Production value	Capacity used
	number	persons	MXNm	MXNm	%
Milk and packaging	6	22,431	2,954	45,045	91
Cream, butter and cheese	43	11,784	1,320	25,308	73
Condensed, evaporated and powder milk	10	2,546	584	20,144	78
All dairies 2008	310	36,822	4,858	90,496	81
All dairies 2000		32,417	2,716	48,529	71

Source: SIAP (2009); SIEM (2010).

Table 6.2 allows us to compare the cost structure of the different dairy industries. The industry with the highest variable costs is the liquid milk mainly purchase of raw milk while the highest fixed costs (by the author indicated as other fixed costs) are for the other 2 Mexican industry classes. These high other fixed costs are unclear to us. The cost structure of the Mexican industry class liquid milk resembles the performance structure of the dairy industry in European countries. The shares in Europe showed little variations for 1997 to 2007.

Table 6.2 Cost structure of dairy industries (%)						
Indicator	Liquid milk	Cream, butter and cheese	Condensed and powder milk	Dairy processors (average 2003-2007)		
	Mexico	Mexico	Mexico	Germany	France	UK
Purchases of inputs	88	63	64	88%	87%	83%
Labour	7	7	8	7%	9%	10%
Fixed costs + profits	5	30	28	4%	4%	7%

Source: Hernández Laos et al. (2000) and Eurostat.

The three larges milk processors in the country are Lala, Nestlé and Sigma. These three firms together process 68% of total milk. Other major dairy firms in Mexico are Alpura and Chilcota. Lala and Alpura are dairy cooperatives, while Sigma, Nestlé and Chilchota are private firms. Table 6.3 shows the processing

share of each of these firms in Mexico. Besides these main processing firms, other smaller firms supply more regionally than nationally. Among these, there are two well-known international firms: Danone and Kraft foods (Dobson and Jesse, 2009). Table 6.3 does not include the extra 3.6bn litres that are processed by small operators into artisan products or consumed on farms.

Table 6.3 Major processing companies and Liconsa in Mexico		
Firm	Quantity processed annually (billion litres)	Processing share (%)
Lala	1.75-1.95	30
Nestlé	0.8-1.3	20
Sigma	0.35-0.65	18
Alpura	0.78-0.80	12
Chilchota	0.30-0.65	10
Liconsa	0.42	6
Other	0.23	4
Total	10.1	100

Source: Dobson and Jesse (2009).

Structural quality monitoring of bulk tank milk depends on the policy of the processor. Almost all processors have their own laboratories in which they can do their own analysis of milk samples, e.g. analysis of incoming milk for antibiotic residues. The milk price they pay often depends on the quality of the raw milk. The disadvantage is that this analysis is not independent and sometimes farmers argue with the processors about the results. In these cases, Cofocalec offers her services to farmers to do a second opinion (Cofocalec, 2010). Additives to milk and the use of milk ingredients instead of raw milk are a hot topic in Mexico, mainly practiced by medium processors. These processors, who serve local markets and the periphery of big cities, do not comply with the requirements of the large supermarket chains. The smaller processors use only local raw milk without heat treatment, sold in unbranded bags.

Box 6.1**Liconsa**

LICONSA is a parastatal company that produces and distributes milk to low-income citizens. Milk is sold to consumers at MXN4 to 5 per litre, while its production cost is around MXN8 (4.50 purchase price plus MXN3.50 of production costs). Federal budget finances that gap. LICONSA is trying to support national production by decreasing non-fat dry milk powders imports. Liconsa processed 1,000m litres milk in 2009: 630m litres from its domestic suppliers and the rest is imported milk powder. Liconsa does not provide services anymore that formed part of the programme in the '80s. Liconsa purchases cooled and not chilled ('warm') milk. In 2010, the budget is fixed for 1,200 litres of which 50% have to be from domestic farmers. The price paid by LICONSA to producers gives a premium for quality milk, partly paid by SAGARPA (San Juan et al., 2009). A governmental monitoring group sets the purchase price based on actual market prices. The purchase price is revised every three months. The premiums can add up to MXN0.60 and are for:

- Stimulus Fat content 30-32 grams/32-34 grams/>35 grams	0.05/0.10/0.15
- Protein content >30 grams	0.05
- Low total plate count	0.05
- Low somatic cell count	0.05-0.15
- Negative sampling of antibiotics	0.05
- Permanence in Liconsa Register >1 year	0.15

7 Wholesalers, retail and consumption of dairy products

Key Findings

- Supermarkets and convenience stores are the main outlet for processed fresh milk, the daily/week market for raw milk.
- Traditional products have the largest volumes in sales, but low or even negative growth rates. Flavoured milk and yoghurts have growth rates between 2 to 3% annually.
- Milk and milk products take almost 3% of the consumer budget (10% of the food expenditures).
- The dairy consumption of 300ml per day per capita is too low compared to the FAO recommendations of 600ml per day per capita.
- The Mexican milk consumption will increase with a growing population and income.

Little information could be retrieved on the structure and performance and on the distribution of dairy products. Table 7.1 provides the number of wholesale and retail officially registered by SIEM. The low numbers in wholesaling indicates that large numbers of non-registered entities are active on the Mexican market.

Table 7.1 Number wholesalers and retailers officially registered in SIEM	
Description	Firms
Wholesale of natural milk	340
Wholesale delicatessen products and creamery	56
Retail of milk	1,443
Retail trade of food in supermarkets and convenience stores	8,438
Retail trade of food in non-specialised stores	1,584
Source: SIEM (2010).	

Since 2003, the market with the USA is fully open, but according to the president of Canilec (2010); final products from the USA have not yet entered the Mexican retail. The processors experienced a high loyalty to their brands and managed to realise an annual market growth of 4% the last 6 years. Mexican processors are now exporting and investing in other countries: Lala in the

USA, Esmeralda in Uruguay (2 factories) and Argentina (1 factory) and exporting condensed milk to North and South America (45,000 tonnes per year).

A case study in the State of Mexico showed that the producer gets 53% of the consumer dollar and the rest of the chain receives 47% (Nava et al., 2005). Self-service is the leading practice for Mexican consumers to acquire fresh milk. Figure 7.1 shows the main channels of fresh milk and raw milk.

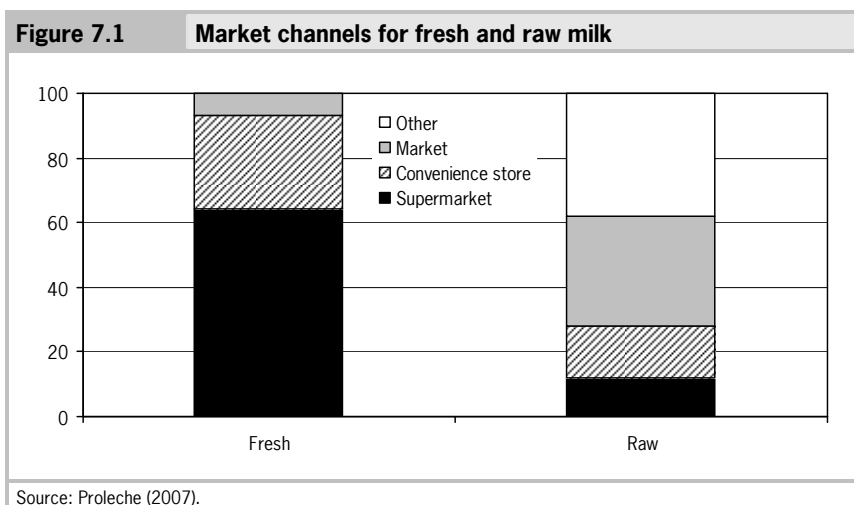
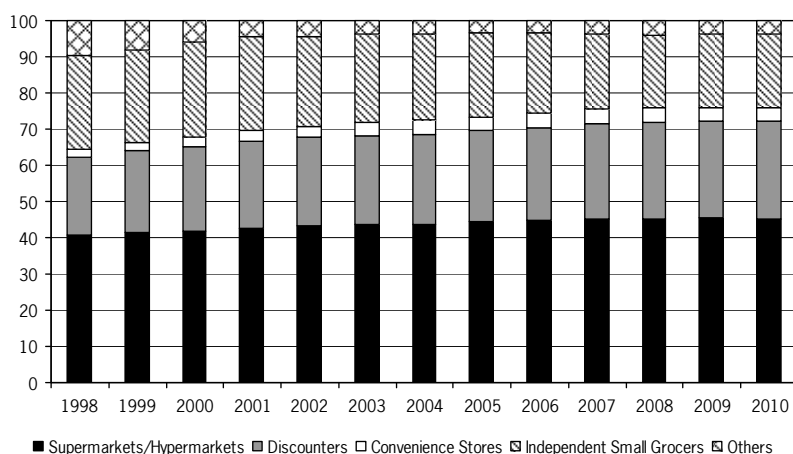


Figure 7.2 shows that the main retail formats for dairy products are super-/hypermarkets and discounters. Both formats, market share in 1998 62% and in 2010 72%, got a larger share at the expense of the independent small grocers and non-grocery retailers. Their markets shares declined from 26% viz 10% in 1998 to 20% viz 2% in 2010. The market share of convenience stores, doubles in that period from 2% in 1998 to 4% in 2003 and remained on that level in the following years.

As in many other countries, the sales of 'traditional' drinking milk and cheese products are stable or even declining. In volumes, these products are the largest. Milk categories are for almost 60% consumed by children. Products with more convenience, like flavoured milk drinks and yoghurts shows an annual growth of 2 to 3%, as is shown in Table 7.2. The highest growth rate showed drinks based on soymilk, the volume is less than 2% of all dairy drinks.

Figure 7.2 Market channels for dairy products in % of total sales



Source: Based on Euromonitor international.

Table 7.2 Sales of dairy products in Mexico

Product	Metrics	2004	2005	2006	2007	2008	2009	Yearly growth
Fresh/pasteurised milk	million litres	3,397	3,375	3,282	3,303	3,094	3,033	-2.2%
Long-life/UHT milk	million litres	1,562	1,548	1,501	1,675	1,666	1,579	0.2%
Flavoured milk drinks	million litres	125	137	148	160	155	144	2.9%
Soy drinks	million litres	14	28	39	73	71	71	38.2%
Powder milk	1,000 tonnes	69	69	75	81	80	77	2.1%
Drinking yoghurt	million litres	251	272	297	316	301	288	2.8%
Spoonable yoghurt	1,000 tonnes	205	224	239	251	248	239	3.1%
Processed cheese	1,000 tonnes	23	26	27	28	27	25	1.2%
Soft cheese	1,000 tonnes	271	301	307	315	299	266	-0.3%
Hard cheese	1,000 tonnes	107	116	122	125	120	108	0.2%

Source: Euromonitor International: Country Sector Briefing on Drinking Milk Products, Yoghurt and Cheese Mexico, December 2009.

The composition of total households' expenditure in Mexico is shown in Table 7.3. It shows that 29% is spent on food, beverages, and tobacco. Expenditures on milk and milk products count for 2.8% and are among the smallest

category. Liquid milk represents 64% of dairy consumption, from which 52% is spent in pasteurised liquid milk. Liquid milk is preferred because it is perceived as cheaper, healthier and stronger, while consumption of processed dairy products has been affected by the financial crisis (San Juan et al., 2009).

Table 7.3		Households basket composition as percentage of total expenditures		
	Total (%)	Food (%)	% of milk (products)	
Food, beverage, tobacco	29	29		
<i>Tobacco, alcoholic and other beverages</i>		3.0		
<i>Outside house consumption</i>		6.9		
<i>Fruits and vegetables</i>		3.1		
<i>Milk and milk products</i>		2.8	100	
<i>Pasteurised liquid milk and UTH</i>			52	
<i>Powder, condensed or evaporated milk</i>			7	
<i>Other milk: such as raw, donkey, goat milk</i>			5	
<i>Cheese</i>			24	
<i>Yogurt</i>			7	
<i>Cream</i>			3	
<i>Other dairy products</i>			2	
<i>Meat and egg</i>		6.2		
<i>Fats and vegetable protein</i>		7.4		
Clothing and dwelling	15			
Cleaning and domestic expenditures	6			
Health and personal care	9			
Transport	19			
Education and leisure	16			
Other	6			
Source: CANILEC (2008).				

Table 7.4 present the consumption of dairy products for the selected countries. It shows that the Mexican consumption is modest, but more or less on the same level as other countries with a comparable income. Consumption of dairy products rises with a rising GDP per head. The expected rise in GDP per head and population growth (Section 2) will result in a growth in the total consumption of dairy products. The population growth alone accounts for 1.3% annual

growth. The consumption of dairy products per capita in the period 2000-2005 was stable according to FAO consumption data.

Table 7.4		Dairy supply quantity (kg/capita/yr) and GDP/capita (current USD) in 2005			
Country	Butter	Cheese	Cream	Milk	GDP
USA	2.1	15.4	0.02	256.5	41,873
Brazil	0.4	0.2		120.8	4,741
New Zealand	6.5	3.1	0.19	165.2	26,223
Netherlands	2.1	20.0	0.36	339.9	38,785
Argentina	1.4	8.0	0.08	186.1	4,728
Mexico	0.7	2.2	0.06	117.1	8,216
Australia	3.9	11.4		232.8	33,088
Belgium	6.3	16.5	10.05	244.5	35,838
Chile	0.9	3.5	0.09	104.3	7,257
Uruguay	1.4	3.4		149.8	5,252
Source: FAOstat.					

Mexican population has been growing at a constant pace. It has also been transforming since 1950 from rural to urban: 33.5% urban population in 1950 and 74.63% in 2000. Milk production has been growing at every time lower pace. Hence, demand surpasses production. Moreover, demand is focused on price and not on health contents and quality (Ávila Téllez, 2002). However, policies aim at reducing the calorie intake to prevent obesity among youth. Dairy organisations have joined to protest that milk will be put on a list of food products prohibited to be sold inside schools. The dairy organisations state that there is not enough information to justify that only non-fat milk is on the list of allowed products, while whole milk, yoghurts, et cetera are on the not-allowed list. Per capita dairy consumption is too low, 300 ml per day per capita, while FAO recommends 600 ml.

8 Supporting and enhancing environment

Key Findings

- Farmers association represents farmers in different ways from enhancing capabilities to political pressure.
- Dairy processors are represented by their own organisation Canilec.
- Different stakeholders comment that practical training and professional education is lacking. In addition, applied research is poor.
- Sustainability is of growing concern for both government and private sector. The Government is targeting the primary sector with specific programmes.
- Nestlé focuses on sustainability of their suppliers mainly farms with dual-purpose cows.

8.1 Farmers and dairy processors associations

Associations are important as intermediaries between sector and the government, to develop a sector strategy and to support interests of the sector. In Mexico, farmers associations have strong roots in the historical agrarian struggle for land rights. In the '80s and '90s with withdrawing government support, farmer organisations started to focus on 'the control of productive processes', that is, integration into market chains (Bartra et al., 2008). Nevertheless, farmers' movements maintain a highly political character. The most important national cattle associations in Mexico are:

1. *ANGLAC (Asociación Nacional de Ganaderos Lecheros)*

ANGLAC represents the large producers, those companies (about 200) with over a thousand cows on one site with ample resources and technology.

They are mainly located in La Laguna and represent about 80% of national milk production. Most ANGLAC members are also member of Canilec.

2. *CNOG (Confederación Nacional de Organizaciones Ganaderas)*

The CNOG is a lobbying organisation and - contrary to the UNPP - not attached to a specific political party. The CNOG integrates not only milk producers but also sheep farms, cattle raisers and beef genetic companies.

The CNOG is formed by regional Unions of farmers at state level in ten states of Mexico, which differ in importance (Jalisco is important). Some states have more than one Union, as they are also specialised according to commodity (Cofocalec, 2010, Union, 2010). The Union is particularly con-

cerned about the small and medium producers, who are commercially most affected by the internationalisation of dairy supply chains. According to the secretary of the Unión Ganadera de Jalisco, all factors are against them: they have to purchase feed at high cost but receive low price for their milk. The Unión Ganadera de Jalisco operates supporting programmes for milk producers financed by the state of Jalisco and federal resources from the Secretary of Agriculture (Sagarpa). It focuses on production conditions to improve milk quality and performance, on the collection of warm surplus milk to regulate market price and on the construction of a milk powder plant (see Box 2.1). CNOG integrates also beef cattle farmers.

3. *UNPP (Unión nacional de Productores Pecuarios)*

The UNPP is the livestock arm of the CNC (Confederación Nacional de Campesinos), which in turn is linked to the Partido Revolucionario Institucional (PRI), ruling party in Mexico for over 70 years until the presidential elections of 2000. It has a strong political component, visible by its many manifestations outside the Ministry of Agriculture to claim farmers' rights. The CNC has the historical culture, perceptible to a more or lesser degree in all farmers' associations, of trading-off votes against benefits for the voters, as contrary to a more entrepreneurial focus.

4. *FNDPCL (Frente Nacional para la Defensa de los Productores y Consumidores de Leche)*

The FNDPCL originates also from the CNOG. It is very outspoken in the media on dairy issues. In 2009, it posed a complaint before the WTO of dumping milk by integrants of NAFTA, claiming that North American producers receive an equivalent of MXN5 per litre which is sold to Mexico at a price of MXN2.30 for whole milk and MXN2.80 for skimmed milk (El Financiero, 2009). This statement does not comply with the protection rates as showed in Section 2.2 An investigation to prove practices of 'dumping' subsidised milk is expensive (requires hiring international lawyer consultants) and complicated (Cofocalec, 2010).

The CNOG, UNPP, and FNDPCL together represent about 150,000 non-integrated small dairy farms, the majority with less than 50 cows. They represent about 20% of national milk production.

Dairy processors are organised in Canilec (Cámara Nacional de Industriales de la Leche). Canilec represents 146 dairy processors, of which around 100 represent 77% of the total consumption of final dairy products in Mexico. Among others, Lala, Alpura, Nestlé, Chichota, Danone, Alpura and Sigma are members. Canilec secures the position of its members in the national end mar-

ket. To become member of Canilec, a processor must comply with the Codex Alimentarius and the USA Food and Drug Administration (FDA) regulations. CANILEC promotes sustainability diminishing methane gas emission, wastewater treatment plants, conversion of energy use from gasoline to gas; treatment of animal waste.

8.2 Knowledge infrastructure: research and extension

INIFAP (Instituto Nacional de Investigaciones Forestales, Agrícolas y Pecuarias) is a governmental network of research institutes that has as mandate '... to generate scientific and technological innovations in agriculture and forestry, as a response to demands and needs in the agro-industrial chains and in the several types of producers in order to contribute to sustainable development ...'. INIFAP counts 1,052 researchers in 38 regional research centres and experimental stations. Of the researchers, 64% work on agricultural issues, 25% on livestock issues, and 11% on forest issues (INIFAP, 2009). INIFAP has a special network for beef cattle including governmental institutions, service providers, and private sector enterprises covering the whole chain. INIFAP works closely together with Sagarpa on the implementation of e.g. PROGAN. INIFAP works with different modules for the transference of knowledge and technologies to farmers and service providers, such as the GGAVAT groups, field schools, and through diplomats and workshops for the private sector on the issues of artificial insemination, vaccines, software, et cetera.

Sagarpa and INIFAP finance and promote 'Ggavatt-groups' (Cattle ranchers' technology validation and transfer groups). GGAVATT groups consist of 10 to 20 cattle farmers with the same production site characteristics, who have to be organised in order to receive extension service aiming at improving production systems. Since the '80s, triangles between researchers, service providers/change agents and farmers are promoted.

Leading universities (Tecnológico de Monterrey, Universidad de Chapingo, UAM, UNAM) have their departments for livestock research.

Agricultural extension services form a large part of the many support programmes implemented by Sagarpa. Sagarpa staff does these extension services, but also third parties may inscribe.

Stakeholders from the dairy sector comment that applied research is lacking. They also think that farmers have a lack of knowledge, with the exception of the large farms. Farmers do not really evaluate the strategy of breeding, feeding, and grazing. They do not implement specific improvement or investments:

they only focus at milk production and number of calves that are born. They can make an improvement in management if a good source of knowledge and training exists. What is needed according to Reproducción Animal are practical training centres, where farmers learn how to manage a dairy herd, feed production and feeding. The very big farms in LaLaguna solve this by hiring external advisors like veterinarians and nutritionists from the USA. However, for the medium sized farmers, who want to improve their performance and to specialise practical knowledge and training/education is needed (Reproducción Animal, 2010).

Box 8.1

Nestlé

Nestlé buys milk from 4,500 producers, 2.3m litres per day. Nestlé's relationship with the producers is strictly to buy the milk. Nestlé is not a cooperative. They have informal contracts with the farmers, which mean 'informal (oral) understanding'. Farmers can decide to deliver their milk to another buyer, but they must inform their decision in advance to Nestlé.

Much variation between the producers selling the milk to Nestlé exists:

- a few very big farms: 20 farmers with >20,000kg per day;
- 30 farmers with approximately 5,000kg per day;
- the other farms deliver on average 500kg per day (between 10 and 5,000kg per day).

Trucks are collecting all milk. Nestlé only buys cooled milk. There are no collection centres owned by Nestlé. About 90% of the farmers have a milking machine and cooling tank. Some small farms share a cooling tank (e.g. family members). Nestlé provides technical assistance and also financial resources if necessary. Small farms (<1,000kg per day) can get loans from Nestlé to use for investments, but only if Nestlé sees future perspective and if the farm can produce their own feed. If farms are near the city or without land, Nestlé does not provide loans.

Nestlé has a policy to develop. They have several reasons for this:

- Nestlé prefers 1,000 farms of 1,000kg per day instead of 100 farms of 10,000kg per day. They think it is better for food safety and environment. Nestlé is concerned about the environment, as no legislation exists.
- If you have many small farms, more persons benefit profit and more employees in total, so you keep people at work. Many small farms that produce the same amount of milk than a big one.
- The interdependence is bigger when farms are large. Buying milk from many small farms gives more flexibility for Nestlé and allows the application of their principle of business: Creating Share Value.

Box 8.1**Nestlé (continued)***Quality and Pricing*

Nestlé takes milk samples from every delivery from every farmer. Milk samples are analyzed at random three times in two weeks (farmers do not know when). Nestlé pays a basic price with premiums (e.g. if a farm is free from Tuberculosis and Brucellosis, have a good TPC and Solids content) and penalties (for antibiotic residues). Price also depends on cost price of production, region, market, and competition, so not all farmers in the country receive the same price from Nestlé. Total Plate Count (number of bacteria in the milk) is also analyzed, but Somatic Cell Count not everywhere.

Nestlé does not promote the use of BST, but does not forbid it either, it is the farmer's decision in consideration that in the Mexican Law it is allowed.

In the future Nestlé wants to buy more milk from tropical areas, because they have a big potential and good use of natural resources of production. Nestlé says they need efficient farmers in order to survive.

8.3 Sustainability

Farmers and processors do not yet recognise environment and sustainability as important. Stakeholders tell that in the near future, more attention should be paid to the water shortage in the North, CH₄ emission, bio-fuel production (e.g. from manure) and deforestation in the South (Canilec, 2010). According to several newspaper sources, in Mexico, every year around 260,000 hectares of forest disappears and the principal hydrological water basins are contaminated with salt and arsenic. In comparison with the period of 1990-1994, 1.9m of hectares of the productive potential of land deteriorated and 67.7% presents some kind of degradation (chemical, hydrological, physical). Aquifers are over-exploited or contaminated with salts. In the region of La Laguna, the hydrological balance is negative: the quantity of water extracted, exceeds the natural recharge of the aquifers. In the region of La Laguna agriculture uses 80% of water resources, cities and-household 15%, and the industry 5%. The government support financially 'green' programmes, but technology and knowledge is lacking in Mexico.

9 SWOT analysis

Key Findings

- Opportunities of the dairy industry in Mexico frame the opportunities for Dutch enterprises and organisations.
- Farmers' capabilities of management on cattle, feed and roughage production and milking infrastructure in Mexico need to be strengthened.
- Seasonality in raw milk supply results in low prices during spring.
- Key Success Factors, actions and opportunities are addressed to each chain actor in Table 9.1.
- A focussed agenda setting strategy, shared by all chain actors and environment, will enhance the Mexican dairy industry.

9.1 Introduction

This chapter analyses the Strengths, Weaknesses, Opportunities, and Threats (SWOT) of the Mexican dairy sector. The Opportunities and developments (Section 9.2) on the Mexican market frame the opportunities for the Dutch suppliers. The Key Success Factors and the business opportunities are presented in Section 9.3 and addresses specific chain actors. The Dutch business opportunities will be addressed in Section 9.4.

A SWOT analysis recognises two viewpoints:

1. *External analysis*

The threats and opportunities are the main items for analysing the external environment and are out of control for the industry. These threats and opportunities are derived from the macro-environment and the industry environment. The elements are political, legal, economic, technological, and social forces that affect the industry. An example is given to clarify the impact of the industry focus. Let us assume that the Mexican goal is to achieve a higher level of employment in the dairy sector and thus increasing the milk production and decreasing the imports. This is clearly an opportunity for the Mexican dairy farmers and breeders. It is, however, a threat for Dutch exporters of dairy products to Mexico. It might be opportunity for the Dutch to support the Mexican aim by providing consultancy knowledge or high-valued semen.

2. *Internal analysis*

The industry's strengths and weaknesses, the internal environment, have to be categorised. These issues are under control of the industry. On these issues the performance of the industry is compared with others or self-imposed standards based on the own experiences in the past. Competitive advantage refers to resources that cannot fully be duplicated by other countries. The main resources in this respect are human, organisational, and physical resources. A competitive advantage in Mexican dairy might be raw milk with a cost price below import prices. Abundant availability of labour of land or high yields, as such, is not a competitive advantage. They are an advantage if it results in a lower price or a better quality for the same price compared to the competitors.

We discuss in the following sections the dairy industry. Veal production is not considered as an opportunity in Mexico: consumers do not know veal and demand is uncertain. Production is economic not desirable due to shortage of water and feed, according to stakeholders. Market introduction of veal will be costly and will demand many efforts. This will be already a hard job for a domestic enterprise, who knows the Mexican culture and market.

9.2 **SWOT: Strengths, Weaknesses, Opportunities and Threats**

Strengths

- *Knowledge and farm management on large and modern farms*
Large-scale and modern farms are located in Mexico, with up-to-date technology and management. They have milk control, confidence in genetics and equipment to handle proficiently the cattle and milk. They hire international experts and their performance is on a comparable level as farms in the USA.
- *Dairy processing knowledge*
Foreign dairy processors as well as Mexican processors with foreign subsidiaries are active on the Mexican market. These firms provide economies of scope: technology and product knowledge from different countries can be exploited on the Mexican market.
- *Farmers and processors associations*
Farmers associations and the processors association support enhancing the performance of the members and implementing technologies that are more advanced. However, it became not clear whether they developed a business strategy shared by suppliers, farmers, processors, supporting and enhanc-

ing industries as well public authority. Some associations are policy oriented (pressure group).

- *Knowledge transfer*

Nestlé, one of the largest multi-national dairy processors, supports small and medium-sized farms in improving their management. This social responsibility enhances the competencies and capabilities of a large number of farmers. Lecheria Guadalajara has a similar strategy on a smaller scale. The Union (CNOG) provides farmers technical assistance to improve milk quality and production.

- *Sector growth and decreasing support levels*

The milk production grew annually by 1.9%, while at the same time subsidies and protection rates decreased. The dairy sector showed to be competitive. This competitiveness is not strong: the Mexican import grew faster than the monetary world imports.

Weaknesses

- *Weak infrastructure and poor management on farms*

Many farmers have no cooling tank or access to a cooling tank, which is a prerequisite for an acceptable level of milk quality. Other technologies seem also inadequate. Milk quality control, disease control, feed management, and breeding are at a poor level. The result is a poor economic performance.

- *Seasonality in milk supply*

In spring and summer, a season with sufficient roughage, a peak in raw milk supply exists. This seems to originate from the farms with dual-purpose cattle. Dairy consumption remains on an equal level during the year. This results in price variations.

- *Not self-sufficient*

Mexico is a net importer of dairy products and in no period, the production is sufficient to match the domestic consumption. Processors will be reluctant to invest in milk powder plants, as these plants will be a major part of the year idle and imported milk powder is cheap.

- *Poor knowledge of farmers on own performance*

Lacking information systems on milk production per cow and on economic indicators prevent farmers improving their management on all subjects: breeding, feed management, profitability.

- *Credit facilities*

The primary sector is hampered by credit facilities and credit is rather costly. The image of the agricultural sector is poor. Moreover, farmers consider credits from the government as subsidies, which do not increase their

credibility. Business plans, based on sound economics, are needed to convince credit providers, that the loan including a fair interest can and will be paid back.

- *Breeding*

Veterinary reasons might prevent import of semen of some countries, but in general, sufficient semen can be imported. Improvement of the genetic quality of dairy cattle is hampered by the low use of Artificial insemination (AI). AI requires a minimum farm size and a good infrastructure of AI services.

- *Animal health*

Frequent diseases reduce production levels or cattle's lifetime (tuberculosis, brucellosis, anaplasmosis, babesiosis, fertility problems, mastitis, ecto- and endoparasites, hoof problems). Mexico is Foot and Mouth disease free.

- *Milk production control systems*

Milk production control systems at the cow level are needed. Such a system is in the Netherlands widely accepted and seen as a useful tool to monitor all kind of management aspects like feeding and breeding.

- *Low effectiveness of government programmes*

In general the government programmes have sound objectives. However, the implementation needs strong improvement in effectiveness and efficiency. Farmers' attitude should change. Subsidies should be used for the goals for which they are granted. Loans should be paid back with interest and should not be seen as subsidies.

- *Knowledge Infrastructure*

Practical training and professional education is lacking, for farmers as well as for service providers. Applied research is seen as poor.

- *Feed production and preserving*

Feed production and preserving for periods outside the growing season have a poor level of proficiency. Roughage production can be improved by better grassland seeds and grassland management.

- *Feeding*

Better techniques for feeding are needed: outside the parlour and adjusted to the stage of lactation.

- *Weak competitiveness*

Despite lower farm gate prices in Mexico than in the USA, Mexico has to import dairy products. Milk powder is a cheap substitute for domestic produced raw milk. It suggests a poor performance of producer or/and at processor.

- *Food law not strict*
The processing industry only cares about the lowest price for their ingredients wherever it comes from. Sometimes they use vegetable ingredients to make milk or cheese. Quality awareness among chain participants and consumers is low.
- *Food safety artisanal products unclear*
Artisanal producers are unclear in food safety aspects and pay a low price to producers. As the market develops to a higher end market, these products are not competitive.
- *Quality control*
Supply chain wide quality control of milk and dairy products is poorly practised. Third party inspection and certification of dairy products is scarce but emerging.
- *Sustainability.*
Sustainability is not yet an issue for farmers and processors, despite the money from the government for 'green' programmes. Environment has to be an issue, but Mexico lacks knowledge and technology to prevent environmental damage to the environment.

Opportunities

- *Population and income growth.*
Population is growing, which will result as such in a larger market. The growth of the GDP per head will lead to a higher consumption of dairy products per head. Even with these shift the actual consumption has to be doubled to reach the FAO recommendations.
- *NAFTA membership*
Opening of the economy allows producers and processors to import technology from other countries, without (prohibitive) import duties. This enables to modernise the industry by buying better technology that included embedded knowledge.
- *High value products*
With rising income, the demand for differentiated consumer products (flavoured milk and yoghurts) will increase. The growth rate of these products is higher than the 'traditional' dairy products. The urbanisation will also contribute to a higher demand of these products. The international operating dairy suppliers can exploit economies of scope: they have recipes of deserts, convenience, or health products. These recipes have to be adapted to the Mexican consumer preferences.

Threats

- *Cheap import*

An overall concern of farmers is the cheap import especially of milk powder. With the abolishment of subsidies and protection imposed by WTO or NAFTA, trade will have an increasing impact on the economic activities in Mexico. If Mexico succeeds in putting their economic performance on a competitive level with other countries, the country will benefit of the openness.

- *Government support*

In general the government programmes have sound objective of increasing productivity and infrastructure of small farmers. However, the implementation needs strong improvement in effectiveness and efficiency; aiming at making farmers' attitude market driven. Farmers are eligible for support if they are organised and from marginal areas, more than on the analysis of sound business plans. Politics is sometimes used to win votes instead of long-term support of the agricultural sector.

9.3 Key Success Factors and business opportunities

In general, one can state that the weaknesses have to be mitigated and threats have to be dealt with. A developed critical domestic market enhances performance of the domestic industry according to Porter (1990). Table 9.1 provides the Key Success Factors, possible actions and the business opportunities. The actions are addressed to specific chain actors.

Table 9.1 Opportunities for enhancing the Mexican dairy industry

Actor	Key Success Factor	Action	Opportunity
Supplier of semen and embryos	Genetic potential	Increase awareness of benefits. Enhance knowledge transfer, extension, and accessibility of Artificial Insemination. Include more issues in breeding strategy	Higher milk returns, higher competitiveness
Credit facilitators	Providing credit on sound economic business plan	Evaluate the dairy sector on their business characteristics and performance	Lower risk on lending, improvement of dairy farms and firms
Feed producers	Providing year around well priced concentrates	Optimising technology and inputs (including by-products from the food industry)	Higher level of business activities, higher performance
Suppliers of equipment for farms and processors	Tailored made supply	Support farmer in implementing beneficially e.g. cooling tanks, milking machinery	Increasing own business activities
Dairy farmers	Overall competencies and more specific proficiency in roughage production, feeding strategy and rearing young stock	Improving their knowledge and competencies by training	Better performance. Producing at competitive prices possibility of levelling seasonal production
Artisanal producers	Consumer trust and quality	Develop a strategy for improving and embedding quality and food safety of artisanal products	Consumers trust in differentiated products, better prices

Table 9.1 Opportunities for enhancing the Mexican dairy industry (continued)

Actor	Key Success Factor	Action	Opportunity
Large Processors	Develop consumer market	Serving the market with quality products at low prices and enlarge market with differentiated products	Long term preferred business partner for farmers as well as supermarkets
Professional organisations	Capabilities and knowledge of actors (service providers included) in supply chain	Enhance capabilities by organising training and extension	Higher proficiency levels for all actors in the chain resulting in better performance
Professional organisations of farmers and processors	Strategy for dairy industry	If not available: establish one. Task: developing an agenda setting strategy. Lobbying to get funds to realise strategy	Focus on improving Key-Success Factors
Public authorities	Industry enhancing institutions	General public issues like: Adequate infrastructure, education aimed at dairy or doing business issues (e.g. solve problems of land ownership)	Lower transactions costs and higher performance of the industry. Income and employment generation
All	Shared strategy	Develop an agenda setting strategy to focus the ambition on feasible and realistic issues	Competitive, responsive, innovative, and viable dairy sector

10 Recommendations and Dutch Business opportunities

Key Findings

- Most important challenges are enhancing the competencies of all actors, establishing an efficient value chain, reducing losses and chain transparency.
- Enhancing a higher performance of the larger semi-specialised and dual-purpose farms is recommended
- Levelling the seasonality of the milk supply will improve the Mexican self-sufficiency on dairy products.
- Dutch enterprises can support the Mexican opportunities. Enhancing the capabilities of Mexican enterprises in the dairy is a major possibility for Dutch organisations.
- Dairy experience tours to the Netherlands enhance 'being in the top of the Mexican stakeholders' minds'.

10.1 Recommendations

The most important challenges are enhancing the competencies of all actors, establishing an efficient value chain, reducing losses and chain transparency. Fostering entrepreneurship enhances realising opportunities. In Table 9.1 we provide several examples. To focus the recommendation we will be more specific:

1. Higher performance of farms

Several levels of proficiency of farmers are identified. The large modern, technology well-equipped farmers have enough sources and capabilities for an excellent performance. We recommend a focus on the larger semi-specialised and dual-purpose farms. A lower cost price per litre can be achieved by a higher yield per cow. This requires a better management on feed production, feeding, breeding and cattle care. Second, a higher quality of raw milk needs furthermore a better infrastructure (milking machines, cooling tanks, quality system). The challenges are enhancing farmers' capabilities, providing credit facilities based on sound economic and technical business plans, providing institutions on milk production control at cow level and on cattle breeding (e.g. Artificial Insemination). Credit and interests need

to be paid back from the higher farm income and that commitment needs to be clarified in a sound economic business plan.

2. *Levelling seasonality of milk production*

Despite that, groups of farms can produce raw milk at a price competitive with USA, the main foreign supplier; imports grow faster than the domestic production. In the spring and summer period a peak in milk deliveries exists and a dip in the other seasons. A higher self-sufficiency can be achieved by a less pronounced seasonal supply. Feed strategies (including harvesting and storing of roughage) and management competencies should be addressed to produce more raw milk in the autumn and winter period.

Achieving above recommendations demands a thoroughly elaborated strategy. All actors in the dairy industry from suppliers to wholesalers have to share this strategy. The focus has to be on the activities under control of the chain actors. The performance of other countries will be a major benchmark for evaluating the performance of each actor in the supply chain. Actors need to be aware that the conduct of actors in other countries is definitely out of their control.

10.2 Dutch Business opportunities

Abundant opportunities for the Mexican dairy industry are identified. Dutch firms can exploit these opportunities by supporting the Mexican dairy industry achieving a higher performance. We distinguish opportunities for private firms and organisations that can enhance the institutional and knowledge environment.

We follow the supply chain downstream for the opportunities for private firms:

1. *Seed producers*

Enhancing grassland and roughage production and management contribute to lower production costs and availability of roughage year around. The latter is a condition for mitigating the seasonal milk production. Netherlands is a renowned breeder of all types of seeds. Supplying improved seeds for grassland as well as other roughage like silage maize is an opportunity. Knowledge transfer how to exploit these seeds will strengthen business relations.

2. *Cattle breeders and Artificial Insemination*

Semen and embryos from high productive dairy breeds can help the large group of semi-specialised farmers. Dutch firms who want to export need to enhance the infrastructure of Artificial Insemination. Awareness among farm-

ers of the benefits, confidence in genetics and good infrastructure to provide full service at any time are Key Success Factors to make artificial insemination and good genetics successful.

3. *Feed management and production of concentrates*

Concentrates are poorly available for most dairy farms: the large specialised farms do produce it on their farm. Production and marketing of concentrates need to be supported by a better feed management. Some Dutch companies started already a subsidiary in Mexico. Key Success Factor is providing technological know how and how to organise knowledge transfer on feed management.

4. *Milk production control*

Milk production control at the level of the individual animal is an useful tool to monitor all kind of management aspects like feeding and breeding. In addition, these data can be used to estimate breeding values of bulls. The actual participation in milk production control in Mexico is low because farmers are not interested in sharing data. Enhancing the supporting industry is again an important issue.

5. *Joint ventures and subsidiaries*

Processing industry can establish joint ventures or subsidiaries in Mexico and exploit economies of scope. Opportunities can be found in differentiated high value consumer products and technical application based on raw milk.

6. *Export of products*

The Netherlands can export their products, mainly consumer products. The low export performance, as expressed by the low import shares, shows that support by the Dutch government might be beneficial, especially in the culture differences between both countries. Private firms are well capable to draft feasible business plans.

Opportunities 1 to 4 are mutual dependent to a large extent and demand support of knowledge transfer. The second strand of opportunities is in the field of enhancing the institutional environment of the Mexican dairy industry. The Dutch agricultural knowledge system is world wide renowned. Public-private organisations have ample experience in training from professional to academic level. More specific: Dutch organisations provide training for farmers world wide, with a mix of training at location and at facilities in the Netherlands. Organising responsive viable value chains, including logistics received last decades much attention at the Dutch universities and colleges.

Finally, companies and organisations who want to export to Mexico should tailor their product's marketing to suit the different farm styles and Mexican culture of doing business. Inviting Mexican stakeholders to experience the Dutch way of dairy farming and processing will enhance the market opportunities of the Dutch on the Mexican market. Such tours can be organised in close collaboration with Mexican professional organisations (e.g. Canilec). Appendix 10 provides a list of companies in Mexico related to the dairy industry.

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Appendix 1

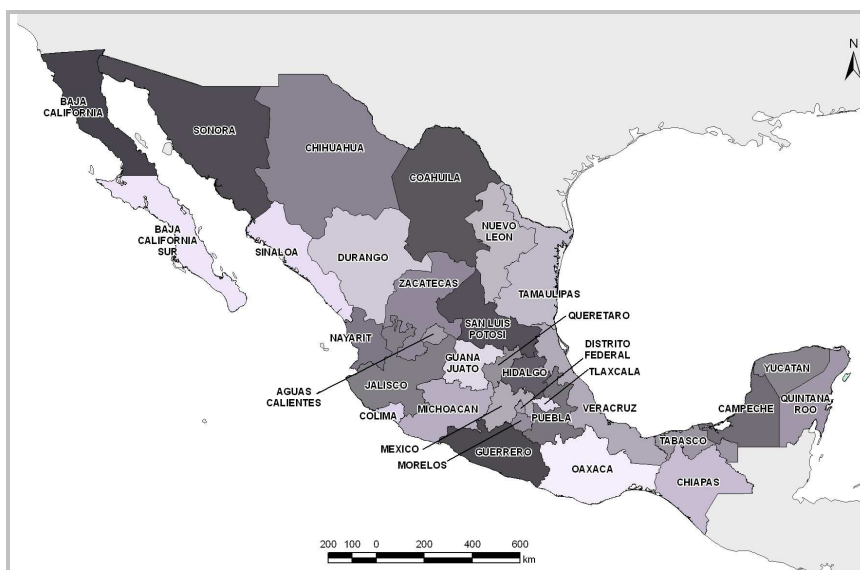
List of interviewed persons during fact finding mission

<i>Thursday July 8, 2010</i>		
Dra. Ma. del Carmen del Valle Rivera Investigadora Titular	UNAM, Instituto de Investigaciones Económicas	Mexico D.F.
Dr. Remigio Espinoza G. Director	Reproducción Animal	Mexico D.F.
M.V.Z. Humberto Sánchez Ortiz		
<i>Friday July 9, 2010</i>		
Kenneth Shwedel Director Ejecutivo. Análisis y Asesoría en Agronegocios	Rabobank	Mexico D.F.
Ing. Bernard E. Herrera González Gerente de Gobierno Corporativo	FOCIR (Fondo de Capitalización e Inversión del Sector Rural)	Mexico D.F.
José Luis G. Arellano Alvite Director de Análisis y Operación de Programas		
F. Javier Delgado Mendoza Director general		
MVZ Consuelo Dueñas Sansón Subdirección de Exportaciones/ DGSA/SENASICA/SAGARPA	SENASICA - SAGARPA	Mexico D.F.
Hector Enríque Loera Gerente Unidad Agropecuario	Nestlé México, S.A. de C.V.	Mexico D.F.
<i>Saturday 10, 2010</i>		
Ing. Ramiro Ramirez Gonzalez Pte. Del Consejo de Administración	PROLEA	Acatic, Jalisco
Mr. Eduardo Ramírez-Peña Dueño	Posta El Cuatro	Tepatitlán, Jalisco
<i>Sunday 11, 2010</i>		
Martín Gerardo-Gallardo Dueño	La Daga	Lagos de Moreno, Jalisco
I.I.S. César Damián Gallardo Jiménez	Rancho El Tigre, Ganado de Registro	Lagos de Moreno, Jalisco

Juan Pablo Anaya-Zermeño CEO	Lácteos Deshidratados Mexicanos (LdeM)	Lagos de Moreno, Jalisco
Rosa María Casillas-Buenrostro, Lab Director	Cofocalec	Lagos de Moreno, Jalisco
Lic. Rodrigo Anaya Zermeño Director	Centro de Valor Agregado (CVA)	Lagos de Moreno, Jalisco
<i>Monday 12, 2010</i>		
Q.F.B. Álvaro Cerón Martínez Jefe de control de calidad	Lechera de Guadalajara S.A. de C.V.	Guadalajara
Ing. Hector Morales Reyes Jefe de Aseguramiento de Calidad		
Mario Valencia Zarazúa Director Técnico	Unión Ganadera Regional de Jalisco (CNOG)	Tlaquepaque, Jalisco
MVZ Otilio Valdes Correa Secretario		
Blanca Rosa Reyes	Cofocalec	Guadalajara
<i>Tuesday 13, 2010</i>		
Dr. Sergio Soltero Gardea Director General	Cofocalec	Guadalajara
MVZ Antonio Contreras Jiménez Subdirector de desarrollo		
<i>Wednesday 14, 2010</i>		
Dr. Félix Martínez Cabrera Presidente	CANILEC (Cámara Nacional de Industriales de la Leche	Mexico D.F.
MVZ. José Manuel Villela Dadda Coordinador General, Subdirección de Maquila y Compra de Leche Nacional	Liconsa	Mexico D.F.

Appendix 2

Administrative regions, capital, population and area



	Name of Subdivision	Capital	Population	Area in km²
1	Aguascalientes	Aguascalientes	1,032,680	5,500.8
2	Baja California	Mexicali	1,806,829	73,051.1
3	Baja California Sur	La Paz	475,586	72,710.5
4	Campeche	Campeche	743,869	50,329.3
5	Chihuahua	Chihuahua	3,316,178	248,115.3
6	Chiapas	Tuxtla Gutiérrez	4,250,246	73,717.9
7	Coahuila	Saltillo	2,415,862	150,745.5
8	Colima	Colima	597,970	5,714.3
9	Distrito Federal	Mexico	8,657,050	1,353.6
10	Durango	Durango	1,460,178	120,706.3
11	Guerrero	Chilpancingo	3,237,579	64,707.5
12	Guanajuato	Guanajuato	4,908,056	30,516.8
13	Hidalgo	Pachuca	2,356,133	21,327.1
14	Jalisco	Guadalajara	6,653,364	79,856.5
15	Mexico	Toluca de Lerdo	10,662,420	21,667.9
16	Michoacan	Morelia	4,090,997	59,648.5
17	Morelos	Cuernavaca	1,680,239	5,039.1
18	Nayarit	Tepic	941,442	27,391.9
19	Nuevo Leon	Monterrey	4,123,418	65,230.0
20	Oaxaca	Oaxaca	3,625,487	92,845.7
21	Puebla	Puebla	5,522,918	34,356.9
22	Queretaro	Queretaro	1,568,610	12,047.4
23	Quintana Roo	Chetumal	1,090,281	51,321.1
24	Sinaloa	Culiacán	2,641,696	57,876.7
25	San Luis Potosi	San Luis Potosí	2,391,929	64,186.5
26	Sonora	Hermosillo	2,351,427	180,806.2
27	Tabasco	Villahermosa	2,041,286	24,345.7
28	Tamaulipas	Ciudad Victoria	2,976,339	79,409.6
29	Tlaxcala	Tlaxcala	1,044,369	3,976.0
30	Veracruz	Veracruz	7,058,898	71,393.9
31	Yucatan	Mérida	1,761,761	37,975.5
32	Zacatecas	Zacatecas	1,363,577	75,068.1
Source: http://www.geonames.org/MX/administrative-division-mexico.html				

Appendix 3

Sagarpa programmes in 2010

Production system	MXNm
Beef and dual-purpose cattle	5,302
Milk cattle	1,481
Sheep	474
Pork	922
Bees	276
Goats	217
Other	60
Poultry	770
Non production system specific	1,561
	11,024

Support to	MXNm
Natural resources and productivity	4,433
Productive investments	2,559
Health and food safety	1,770
Support to organization	44
Support to organisation costs	1,300
Promotion	106
Risk administration	812
	11,024
Source: Sagarpa (2010).	

Appendix 4

Output and input based Producer Support Estimates (PSE)

Year	Production (at farm gate)		Total support	Support based on outputs		Payments based on input use			PSE
	Quantity	Value		Market price	Payments on output	Variable inputs	Fixed capital	On-farm services	
	1,000 tonnes	MXNm	MXNm	MXNm	MXNm	MXNm	MXNm	MXNm	%
1986	6,571	690	544	544	0	0	0	0	79
1987	6,393	1,451	1,075	1,075	0	0	0	0	74
1988	6,350	2,587	1,536	1,536	0	0	0	0	59
1989	5,750	3,458	817	817	0	0	0	0	24
1990	6,332	3,980	320	320	0	0	0	0	8
1991	6,925	5,555	1,797	1,797	0	0	0	0	32
1992	7,182	6,200	1,998	1,998	0	0	0	0	32
1993	7,634	6,875	2,912	2,912	0	0	0	0	42
1994	7,547	6,881	2,782	2,782	0	0	0	0	40
1995	7,628	8,804	-1,317	-1,317	0	0	0	0	-15
1996	7,822	14,111	852	739	0	0	0	112	6
1997	8,091	16,324	3,690	3,576	0	0	0	114	22
1998	8,573	19,237	7,166	7,056	0	0	0	109	37
1999	9,171	23,305	8,924	8,785	0	0	0	139	38
2000	9,600	25,327	9,334	9,209	0	0	0	125	37
2001	9,766	26,475	6,080	5,947	0	0	0	133	23
2002	9,958	26,246	11,135	10,963	0	0	0	172	42
2003	10,088	26,780	6,834	6,834	0	0	0	0	26
2004	10,170	28,153	2,066	2,066	0	0	0	0	7
2005	10,174	30,779	895	895	0	0	0	0	3
2006	10,401	33,595	3,651	3,651	0	0	0	0	11
2007	10,667	39,242	-6	-6	0	0	0	0	0
2008	10,918	48,712	200	0	200	0	0	0	0
2009	11,092	47,766	8,569	8,369	200	0	0	0	18
Source: Based on OECD Database 1986-2009 Producer and Consumer Support Estimates.									

Appendix 5

National milk production, number of cows and yield per cow

Milk production in million tonnes												
	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	annual growth 03-08
World	475	483	490	497	511	518	527	543	559	571	578	2.2%
USA	71	74	76	75	77	77	78	80	82	84	86	2.2%
Brazil	19	20	20	21	22	23	24	25	26	27	28	3.9%
New Zealand	11	11	12	13	14	14	15	15	15	16	15	1.2%
Netherlands	11	11	11	11	11	11	11	11	11	11	11	0.4%
Mexico	8	9	9	9	10	10	10	10	10	10	11	1.9%
Argentina	10	11	10	10	9	8	8	10	10	11	11	5.1%
Australia	9	10	11	11	11	10	10	10	10	10	9	-2.2%
Belgium	0	0	4	4	3	3	3	3	3	3	3	-3.8%
Chile	2	2	2	2	2	2	2	2	2	2	3	3.7%
Uruguay	1	1	1	2	1	2	1	2	2	2	2	0.9%
Source: FAOstat.												

Million dairy cows												
	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	annual growth 03-08
World	219.2	220.6	221.5	224.6	227.3	232.7	235.5	240.1	242.5	244.9	246.9	1.2%
USA	9.2	9.2	9.2	9.1	9.1	9.1	9.0	9.0	9.1	9.1	9.2	0.3%
Brazil	17.3	17.4	17.9	18.2	19.0	19.3	20.0	20.6	20.9	21.1	21.2	1.9%
New Zealand	3.5	3.4	3.3	3.6	3.7	3.9	4.1	4.1	4.1	4.2	4.3	2.1%
Netherlands	1.6	1.6	1.5	1.5	1.6	1.5	1.6	1.4	1.4	1.4	1.5	-1.1%
Mexico	1.8	1.9	2.1	2.1	2.2	2.2	2.2	2.1	2.1	2.1	2.2	-0.2%
Argentina	2.5	2.5	2.5	2.5	2.2	2.0	2.0	2.1	2.2	2.2	2.2	1.9%
Australia	2.1	2.2	2.2	2.2	2.1	2.0	2.0	1.9	1.9	1.8	1.7	-3.4%
Belgium	0.0	0.0	0.6	0.6	0.6	0.6	0.5	0.5	0.5	0.5	0.5	-2.2%
Chile	1.5	1.5	1.5	1.5	1.4	1.5	1.6	1.6	1.7	1.7	1.7	3.5%
Uruguay	0.9	0.8	0.8	0.9	0.9	0.9	0.9	1.0	0.9	1.0	1.0	1.6%
Source: FAOstat.												

Yield kg milk/cow												
	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	annual growth 03-08
World	462	456	452	452	445	449	447	442	434	429	427	-1.0%
USA	7,798	8,061	8,254	8,228	8,439	8,508	8,605	8,877	9,050	9,219	9,343	1.9%
Brazil	1,115	1,130	1,140	1,162	1,174	1,192	1,209	1,231	1,250	1,276	1,309	1.9%
New Zealand	3,282	3,241	3,666	3,689	3,701	3,653	3,663	3,553	3,667	3,748	3,500	-0.9%
Netherlands	6,825	7,037	7,417	7,096	6,884	7,164	7,029	7,569	7,739	7,829	7,698	1.5%
Mexico	4,585	4,763	4,488	4,426	4,425	4,510	4,415	4,798	4,844	4,905	5,000	2.1%
Argentina	3,937	4,260	4,131	3,987	4,090	4,099	4,050	4,719	4,770	4,773	4,773	3.1%
Australia	4,582	4,723	4,996	4,847	5,309	5,038	4,944	5,215	5,366	5,336	5,337	1.2%
Belgium	0	0	5,990	5,909	5,760	6,078	5,639	5,781	5,592	5,758	5,610	-1.6%
Chile	1,359	1,399	1,372	1,495	1,499	1,469	1,452	1,451	1,450	1,420	1,478	0.1%
Uruguay	1,707	1,761	1,755	1,713	1,684	1,714	1,660	1,704	1,723	1,659	1,659	-0.7%
Source: FAOstat.												

Appendix 6

Regional distribution of milk production and price per litre

Region	Production (1,000 litre)	Price (MXN per litre)	Production value (1,000 MXN)
Aguascalientes	369,872	4.22	1,559,007
Baja California	193,422	4.72	912,506
Baja California Sur	46,636	7.34	342,481
Campeche	34,984	5.38	188,168
Coahuila	1,364,585	4.45	6,076,276
Colima	36,525	6.71	245,121
Chiapas	372,249	3.58	1,332,905
Chihuahua	901,830	4.59	4,138,681
Distrito federal	12,322	7.68	94,609
Durango	1,037,452	4.49	4,659,088
Guanajuato	684,202	3.91	2,673,266
Guerrero	82,045	4.72	387,404
Hidalgo	452,977	4.39	1,987,368
Jalisco	1,861,333	4.15	7,714,352
Mexico	464,624	4.38	2,036,234
Michoacan	334,850	4.36	1,460,683
Morelos	18,809	4.72	88,841
Nayarit	62,019	3.68	228,180
Nuevo Leon	39,696	3.92	155,644
Oaxaca	145,213	5.87	851,993
Puebla	385,066	4.78	1,840,807
Queretaro	195,791	4.21	824,209
Quintana Roo	5,601	3.68	20,603
San Luis Potosi	141,778	4.45	630,268
Sinaloa	108,075	4.15	448,833
Sonora	131,937	4.86	640,743
Source: SIAP, 2008			

Region	Production (1,000 litre)	Price (MXN per litre)	Production value (1,000 MXN)
Tabasco	110,694	3.4	375,810
Tamaulipas	30,209	3.92	118,457
Tlaxcala	110,924	4.43	491,765
Veracruz	683,203	3.74	2,551,558
Yucatan	5,608	5.08	28,487
Zacatecas	164,950	4.07	670,832
National	10,589,481	4.32	45,775,180
Source: SIAP, 2008			

Appendix 7

Import of dairy products by Mexico

Import portfolio in USDm (average 2006-2008) and growth 2001-2003 to 2006-2008 in %													
	Milk and cream, not conc.		Milk and cream, conc.		Butter-milk, yogurt		Whey		Butter		Cheese		Total
HS-code	401		402		403		404		405		406		
	USD	%	USD	%	USD	%	USD	%	USD	%	USD	%	USD
World	44.1	4	591.2	11	48.7	16	219.7	40	149.3	16	311.7	11	1364.8
USA	31.0	4	355.3	26	13.2	15	196.9	42	18.4	33	160.0	18	774.9
Brazil			0.6										0.6
New Zealand	0.5	18	153.8	10	4.8	-13	10.5	79	89.0	17	25.0	0	283.5
Netherlands			0.1	-33			0.1	3	0.8	-1	26.8	10	27.8
Argentina	0.9		19.6	-4	0.1	-3	1.6	253	5.2	26	4.3	-19	31.8
Australia			8.7	-3	0.3	-36	3.0	31	8.8	3	0.3	-48	21.0
Belgium			1.7	18	0.0	-45			15.1	3			16.8
Chile	0.5	34	31.3	25	1.0	104	0.1		0.9		51.6	43	85.4
Uruguay	11.3	0	5.3	-3	29.0		0.3		4.5	38	32.0	15	82.4

Source: UN Comtrade.

Import in USDm and growth based on average 2001-2003 to average 2006-2008 in %						
Product	Milk and cream, not concentrated	Milk and cream, concentrated	Buttermilk, yogurt	Whey	Butter, milk fats, dairy spreads	Cheese and curd
HS code	401	402	403	404	405	406
1998	14.3	256.9	18.0	43.9	52.6	82.7
1999	12.3	233.3	16.6	36.6	65.2	98.7
2000	22.0	301.7	21.1	38.6	58.2	128.8
2001	27.4	441.0	25.6	45.9	66.1	181.9
2002	37.5	278.3	21.8	39.8	69.6	179.3
2003	46.6	325.6	20.9	38.0	81.1	189.7
2004	50.5	385.9	18.2	53.1	144.9	223.6
2005	47.1	506.7	26.3	101.6	181.6	256.8
2006	27.5	393.9	21.4	179.2	111.0	257.3
2007	63.0	683.5	57.8	327.4	157.7	344.7
2008	41.9	696.1	67.0	152.4	179.2	333.3
Growth	4%	11%	16%	40%	16%	11%
Source: UN Comtrade.						

Appendix 8

Dairy trade of selected countries

Dairy trade in 2008 and annual growth 2003-2008				
Country	Import		Export	
	USDm	growth %	USDm	growth %
World	56,329	15.3	64,601	14.9
USA	1,680	7.2	2,994	38.1
Brazil	212	13.6	509	60.0
New Zealand	75	29.7	6,563	19.0
Netherlands	3,189	10.2	6,908	10.0
Argentina	20	9.6	812	24.6
Mexico	1,470	17.5	91	14.2
Australia	538	24.2	2,208	10.8
Belgium	3,520	15.2	3,451	11.5
Chile	84	4.9	221	34.5
Uruguay	8	40.7	430	26.0
Source: UN Comtrade.				

Appendix 9

Personnel and production value in the dairy milk industry a)

Year	Personnel involved	Hours-men worked	Total pay-ment	Production value	Sales value	Charged for maquila b)	Use of in-stalled ca-pacity
	number persons	1,000 hrs	MXNm	MXNm	MXNm	MXNm	%
1998	29,222	72,291	1,876	34,707	33,734	32	
1999	30,403	75,356	2,206	42,321	40,857	74	
2000	32,417	80,717	2,716	48,529	47,912	65	71
2001	33,218	82,944	3,027	51,155	51,037	71	70
2002	33,733	84,018	3,405	54,851	53,811	78	65
2003	34,743	86,754	3,722	59,860	59,401	171	62
2004	35,413	90,134	3,934	69,461	67,759	56	62
2005	36,498	93,613	4,170	73,465	73,338	78	67
2006	37,010	95,397	4,410	78,818	79,390	143	78
2007	36,389	93,589	4,579	87,108	86,741	265	84
2008	36,822	94,817	4,858	90,496	89,924	111	81

a) In the table are taken into account: condensed, evaporated and powder milk, cream, butter and cheese.
 Not included ice-cream, caramel and other dairy derivatives; b) Imported inputs processed in a factory in Mexico for costs-tariff reasons and generally re-exported.
 Source: SIAP (2009).

Appendix 10

List of companies related to the Mexican dairy sector

Note: For all telephone communications, please dial +52 before each number.

Name	Street	Place	Telephone	URL	Products/ Activities
<i>Dairy producers</i>					
ALIANZA DE PRODUCTORES RURALES DE LECHE DE LA PIEDAD, S.A. DE C.V.	Calz. el Cuitzillo No. 509	59360 La Piedad, Mich.	(352) 522-66-34		Fresh milk
ALIMENTOS J. GARCIA, S.A. DE C.V.	25 de Mayo No. 137	66149 Sta. Catarina, N.L.	(81) 8336-1747		Powdered milk
CAMPO ALEGRE ALIMENTOS	Carr. Sahuayo La Barca Km. 6	59000 Sahuayo, Mich.	(353) 572-05-57		Dairy
COMERCIAL ALIMESA, S.A. DE C.V.	Fraternidad No. 411	91710 Veracruz, Ver.	(229) 938-12-37	www.alimesa.com.mx	Fresh milk
CORPORATIVO SMP	Carretera a Morelia No. 3583	45645 Tlajomulco de Zuñiga Jalisco ((33) 1201-2236	www.corporativosp.com/	Dairy
CREMERIA AGUASCALIENTES	Km. 545 Carr. Panamericana	20909 Jesús María, Ags.	(449) 910-92-70	www.cremeriaaguascalientes.com.mx	Fresh milk
CREMERIA DEL YAQUI, S.A. DE C.V.	Calle de la Plata No. 372	83299 Hermosillo, Son.	(662) 251-07-54		Fresh milk
DISTRIBUIDORA DE LACTEOS ALGIL, S.A. DE C.V.	Instituto Técnico Industrial No. 172	11340 México, D.F.	(55) 5089-2800	www.esmeralda.com.mx	Fresh milk (distributor)
DM LATTEE, S.A. DE C.V.	Tuxpan No. 15	54500 Atizapán	(55) 5397-5359		Fresh milk for industrial use

Name	Street	Place	Telephone	URL	Products/ Activities
EMBOTELLADORA LA VICTORIA, S.A. DE C.V.	Av. Constituyentes No. 40 Ote.	76040 Querétaro, Qro	(442) 211-4044		Fresh milk
GANADEROS PRODUCTORES DE LECHE PURA, S.A. DE C.V.	Km. 37.4 Autopista México-Querétaro	54730 Cuautitlán Izcalli,	(55) 5899-2000	www.alpura.com	Fresh milk, dairy products
GRANJA PLANTA LA PERLA, S.A.	Av. Magnolia No. 1979 Ote.	64550 Monterrey, N.L.	(81) 8375-0561		Fresh milk
GRUPO LA JOLLA	Electricistas No. 590	23060 La Paz, B.C.S.	(612) 121-11-85		Fresh milk
GRUPO REAL DE GANADEROS, S.A. DE C.V.	Eje Oriente-Poniente Manz. 5 Lte. 5	43800 Tizayuca, Hgo.	(779) 796-01-17		Fresh milk
INDUSTRIALIZADORA DE LECHE DELICIAS, S.A.	Av. Plutarco Elías Calles No. 700	33000 Cd. Delicias, Chih.	(639) 472-50-51	www.alpura.com.mx	Dairy
LA CREMA, S.A. DE C.V.	Díaz Mirón No. 921 Ote.	89000 Tampico, Tamps.	(833) 214-07-83		Fresh milk
LACTE DU MONDE, S.A. DE C.V.	Pochtecas No. 61	09040 México, D.F.	(55) 5694-6887	www.lactedumonde.com	Dairy products
LACTEOS DE GUAYMAS, S.A. DE C.V.	Calz. Agustín G. López y Atún S/N	85427 Guaymas, Son.	(622) 222-03-70		Fresh milk
LACTEOS INDUSTRIALIZADOS, S.A. DE C.V.	Alfonso Bernal Sahagún No. 102	20290 Aguascalientes, Ags	(449) 971-02-35		Fresh milk
LAGRANGE, S.A. DE C.V.	Callejón de Santo Domingo No. 1000	66499 San Nicolas de los Garza, N.L.	(81) 8353-2200	www.lagrange.com.mx	Fresh milk

Name	Street	Place	Telephone	URL	Products/ Activities
LALA MEXICO, S.A. DE C.V.	Av. Ceylán No. 1016	02300 México, D.F.	(55) 5729-3200	www.lala.com.mx	Fresh milk
LECHE DIECINUEVE HNOS., S.A. DE C.V.	Km. 5 Carr. Tototlán-Atotonilco	47730 Tototlán, Jal.	(391) 916-07-97	www.19hnos.com.mx	Fresh milk
LECHE LA ESCONDIDA	Carr. J. Gómez Portugal Km. 1	20900 Aguascalientes, Ags	(449) 973-07-90	www.agroindustrializadora.com	Fresh milk
LECHE LA PERLA	Av. de los Cometas No. 23	Hermosillo, Son.	(662) 251-01-04	www.laperla.com.mx	Fresh milk
LECHE SAN MARCOS	Josefa O. de Domínguez No. 84	76900 Querétaro, Qro.	(442) 225-07-37	www.gilsa.com	Fresh milk
LECHERA GUADALAJARA, S.A. DE C.V.	Río Alamo No. 2381 S.R.	44890 Guadalajara, Jal.	(33) 3657-9297	www.sellorojo.com.mx	Fresh milk
LICONSA, S.A. DE C.V.	Av. Ricardo Torres N. 1	53390 Naucalpan,	(55) 5237-9100	www.liconsa.gob.mx	Fresh milk
MEGALAC, S.A. DE C.V.	Av. Huehuetoca No. 3	54714 Cuautitlán Izcalli	(55) 5365-8994		Powdered milk
NESTLE MEXICO, S.A. DE C.V.	Av. Ejército Nacional No. 453	11520 México, D.F.	(55) 5262-5000	www.nestle.com.mx	Dairy products,
NUEVA INDUSTRIA DE GANADEROS DE CULIACAN, S.A. DE C.V.	Dr. Mora No. 1230	80060 Culiacán, Sin.	(667) 760-60-47	www.santamonica.com.mx	Fresh milk
ORGANISMO AGROINDUSTRIAL	López Mateos No. 34	54713 Cuautitlán Izcalli,	(55) 5872-1643	www.organismoagroindustrial.com.mx	Fresh milk, cheese, dairy

Name	Street	Place	Telephone	URL	Products/ Activities
PASTEURIZADORA DE LOS PRODUCTORES DE LECHE, S.A. DE C.V.	Ricardo Flores Magón No. 4201	31030 Chihuahua, Chih.	(614) 418-6451	www.lechezaragoza.com	Fresh milk
PASTEURIZADORA FRONTERIZA, S.A. DE C.V.	Texcoco No. 415	88631 Cd. Reynosa, Tamps.	(899) 923-3048	www.pafrosa.com.mx	Fresh milk
PASTEURIZADORA HILL CREST DE TAMPICO, S.A.	Av. Ejército Mexicano No. 302	89120 Tampico, Tamps.	(833) 213-23-90		Fresh milk
PASTEURIZADORA JERSEY DEL NOROESTE, S.A.	Calle 1ra. Artículo 123 No. 6861	22000 Tijuana, B.C.	(664) 687-17-01	www.jersey.com.mx	Fresh milk, cheese, cream, yoghurt
PASTEURIZADORA MAULEC, S.A. DE C.V.	13 Sur No. 3108	72410 Puebla, Pue.	(222) 237-25-81	www.tamariz.com.mx//maulec/	Fresh milk
PRODUCTORES DE LECHE DE PARRAL, S.A.	Carr. Esmeralda Km. 1	33820 Parral, Chih.	(627) 522-50-00	www.lechezaragoza.com	Fresh milk
PRODUCTOS ARACELI	Carr. Querétaro-La Griega Km. 1 S/N	76240 El Marquez, Qro.	(442) 221-53-33	www.foque.com.mx	Fresh milk
PROTEINA ANIMAL S.A. DE C.V.	Gustavo baz Prada No. 3333	54030 Tlalnepantla	01-800-832-27-45	www.proan.com.mx	Fresh milk
REAL DE TIZAYUCA, S.A. DE C.V.	Eje Oriente Poniente Mz. 5 Lt. 5	43800 Tizayuca, Hgo.	(779) 796-01-17		Fresh milk

Name	Street	Place	Telephone	URL	Products/ Activities
ULTRALACTEOS, S.A. DE C.V.	Av. Adolfo Ruiz Cortines No. 2221	86100 Villahermosa, Tab.	(993) 310-02-50	www.ultralacteos.com.mx	Fresh milk, yoghurt, butter, cheese
UNIFOODS, S.A. DE C.V.	Poniente 122 No. 459	02300 México, D.F.	(55) 5333-1200	www.unifoods.com.mx	Fresh milk
UNION DE GANADEROS LECHEROS DE CD. JUAREZ, S.A. DE C.V.	Ramón Rayón No. 1351	32553 Cd. Juárez, Chih.	(656) 892-50-00	www.fuentesagroindustrial.com	Fresh milk
UNION DE PASTEURIZADORES DE JUAREZ, S.A.	Calle 14 No. 2650	44940 Guadalajara, Jal.	(33) 3812-0290		Fresh milk, yoghurt
UNION DE PRODUCTORES DE LECHE DE QUERETARO, S.A. DE C.V.	Av. 5 de Febrero No. 273 Km. 5.5	76130 Querétaro, Qro.	(442) 217-02-28		
GANADEROS PRODUCTORES DE LECHE PURA, S.A. DE C.V.	Kilometro 37.4 Autopista México - Querétaro	Cuatitlán Izcalli 54730	52 55 5899 2000	www.alpura.com.mx	Manufacturing and distribution of dairy
GRUPO INDUSTRIAL LALA, S.A. DE C.V.	Lázaro Cárdenas No. 185	Gómez Palacio 35070	52 871 729 3123	www.lala.com.mx	
LALA DERIVADOS LACTEOS, S.A. DE C.V.	Adolfo Aymes No. 99	Torreón 35090	52 871 750 6529		Manufacturing and distribution of dairy products

Name	Street	Place	Telephone	URL	Products/ Activities
TECNICA MEXICANA DE ALIMENTACION, S.A. DE C.V.	Av. Adolfo López Mateos No. 81	54769 Mexico City	52 55 5000 3400	www.cafenex.com.mx	
GERBER ALIMENTA, S.A. DE C.V.	Av. México 201	06100 Mexico City	52 55 5212 1691	www.gerbercal.com	Trading of (canned) dairy products
PROVEEDOR INTERNACIONAL DE QUIMICOS, S.A. DE C.V.	Filberto Gómez No. 100 A	54030 Mexico City	52 55 5390 9099	www.proveinterquim.com.mx	Manufacturing and distribution of food additives and dairy preparations
NESTLE MEXICO, S.A. DE C.V.	Ejército Nacional No. 453	11520 Mexico City	52 55 5262 5000	www.nestle.com.mx	Manufacturing and distribution of food products
UNILEVER DE MEXICO, S. DE R.L. DE C.V.	Paseo de Tamarindos #150	Mexico City	52 (55) 1105-4486	www.unilever.com.mx	Production of household and food products
NUTRICAL, S.A. DE C.V.	Av. Palmas No. 215 Desp. 401Lomas de Chapultepec	México 11000	52 55 5284 6120	www.nutrical.com.mx	Manufacturing, trading, imports and exports of raw materials for the dairy and food industry

Name	Street	Place	Telephone	URL	Products/ Activities
DANONE DE MEXICO, S.A. DE C.V.	Guillermo González Camarena No. 333	México 01210	52 55 5258 7200	www.danone.com.mx	Manufacturing and trading of fresh dairy prod- ucts
HOOGWEGT MEXICO, S.A. DE C.V.	Av. Tecnológico No. 100-705	Querétaro 76000	+52 442 215 9312	www.hoogwegt.com	Wholesale trading of dairy products
ALIMENTOS J. GARCIA, S.A. DE C.V.	25 de Mayo No. 213-D	Santa Catarina 66149	+52 81 8336 1 747		Manufacturing and trading of milk powder
ECOVAL DAIRY TRADE, S.A. DE C.V.	Homero No. 1804 Int. 1003	México 11510	+52 55 5557 8020	www.oaktrading group.com	Dairy trade
DANISCO MEXICANA, S.A. DE C.V.	Poniente No. 627	México 02300	+52 55 5078 4400	www.danisco.com	Trade of food ad- ditives and ingre- dients.
GRUPO INDUSTRIAL CUADRITOS BIOTEK, S.A. DE C.V.	Rancho San Jorge de la Concepción Km. 9	Celaya 38104	+52 461 618 300	www.cuadritos. com.mx	Manufacturing of dairy products
ESTABLO NACIONAL, S.A. DE C.V.	Av. Panamericana Poniente No. 4	San Juan del Río 76800	+52 427 272 7766	www.product ossaijuan.com.mx	Manufacturing and trading of dairy products

Name	Street	Place	Telephone	URL	Products/ Activities
DISTRIBUIDORA CHANTILLY, S.A. DE C.V.	Chicle No. 255	México 08400	+52 55 3688 0500	www.grupochantilly. com.mx	Wholesale and re- tail sales of dairy products for the bakery industry
YAKULT, S.A. DE C.V.	Av. División del Norte No. 1419	03310 México, D.F.	(55) 5422-1450	www.yakult.com.mx	Dairy products
ABARROTES OCAMPO, S.A.	Priv. de Ochoa No. 1400	31030 Chihuahua, Chih.	(614) 410-52-20		Cheese
CAMPO ALEGRE ALIMENTOS	Carr. Sahuayo La Barca Km. 6	59000 Sahuayo, Mich.	(353) 572-05-57		Cheese, cream, butter
CHILCHOTA ALIMENTOS, S.A. DE C.V.	Av. Lerdo de Tejada y Periférico S/N	35078 Gómez Palacio, Dgo.	(871) 719-16-84	www.chilchota.com	Cheese
COMERCIALIZADORA LÁCTICA, S.A. DE C.V.	Pochtecas No. 46	09030 México, D.F.	(55) 5600-7077	www.chen.com.mx	Cheese, butter, cream
COMERCIALIZADORA LE BLANC, S.A. DE C.V.	Av. Lázaro Cárdenas No. 872	03440 México, D.F.	(55) 5033-6349		Cheese
CREMERIA CHIAPAS, S.A. DE C.V.	Bldv. Renacimiento No. 38	34759 Acapulco, Gro.	(744) 441-50-29		Cheese
DANONE DE MEXICO, S.A. DE C.V.	Guillermo Camarena No. 333	01210 México, D.F.	(55) 5258-7200	www.danone.com.mx	Cheese, yoghurt, dairy
DERIVADOS DE LECHE LA ESMERALDA, S.A. DE C.V.	Frente a la estación del FFCC s/n	37759 San Miguel de Al- lende, Gto.	(415) 152-25-48,	www.delesa.com.mx	Cheese

Name	Street	Place	Telephone	URL	Products/ Activities
DILASA, S.A.	Toltecas No. 332	54030 Tlalnepantla, Edo. de México	(55) 5390-0878		Cheese
DISTRIBUIDORA D LACTEOS	Puente Coatzacoalcos No. 72	58150 Morelia, Mich.	(443) 326-03-07		Cheese
DISTRIBUIDORA DE LACTEOS ALGIL, S.A. DE C.V.	Instituto Técnico Industrial No. 172	11340 México, D.F.	(55) 5089-2800	www.esmeralda. com.mx	Cheese
ELABORACION DE PRODUCTOS LACTEOS	31 puente No. 2924A	72400 Puebla, Pue.	(222) 249-47-79		Cheese
ESTABLO NACIONAL S.A. DE C.V.	Panamericana Poniente No. 4	76800 San Juan del Río, Qro.	(427) 272-00-63	www.product ossanjuan.com.mx	Cheese, cream, butter
FOOD TECHNOLOGIES TRADING, S.A. DE C.V.	Roble Manz. 63 Lote 8	52924 Atizapán de Zaragoza	(55) 5341-8288		Cheese
GRUPO INDUSTRIAL CUADROS BIOTEK, S.A. DE C.V.	Km. 9 Carr. Cel.- S. Miguel Allende	38104 Celaya, Gto.	(461) 618-83-00	www.grupocuadritos. com.mx	Cheese, cream, butter
IBERTRADE	Texas No. 100	03810 México, D.F.	(55) 5543-9933	www.alimentos europeos.com	Cheese
INDUSTRIAL QUESERA SAN ESTEBAN	Av. del Parque Oriente No. 713	33000 Cd. Delicias, Chih.	(639) 474-04-62		Cheese

Name	Street	Place	Telephone	URL	Products/ Activities
INDUSTRIALIZADORA DE LACTEOS SANTA ANITA, S.A. DE C.V.	Av. Patria No. 1347-22	45054 Zapopan, Jal.	(33) 3628-7394		Cheese
INDUSTRIAS COR, S.A. DE C.V.	Av. La Cañada No. 19	76246 Santiago de Querétaro, Qro.	(442) 221-52-52	www.lyncott.com.mx	Cheese
INDUSTRIAS LACTEL, S.A. DE C.V.	Prolongación Cuauhtémoc No. 262	76905 Villa Corregidora, Qro.	(442) 225-04-77	www.lactel.com.mx	Cheese, yoghurt
KRAFT FOODS DE MEXICO, S.A. DE C.V.	Congreso de la Unión No. 5840	07820 México, D.F.	(55) 5729-2800		Cheese
LA RISUEVA, S.A. DE C.V.	Becerra No. 20	11870 México, D.F.	(55) 5271-9273		Cheese
LACTEOS ABUNDIS	Av. 8 Poniente No. 303	33000 Cd. Delicias, Chih.	(639) 472-25-58		Cheese, cream, butter
LACTEOS DEL CONCHOS	Km. 113 al Norte	33620 Saucillo, Chih.	(621) 475-06-12		Cheese
LACTEOS GOSA, S.A. DE C.V.	Hombres Ilustres No. 555	47400 Lagos de Moreno, Jal.	(474) 742-09-10	www.lacteosgosa.com	Cheese, cream
LACTEOS Y CARNES FRIAS LOPEZ, S.A. DE C.V.	Aramberri y Guerrero	64000 Monterrey, N.L.	(81) 8343-5857		Cheese
LACTICA, S.A. DE C.V.	Pochtecas No. 46	09030 México, D.F.	(55) 5600-7077	www.chen.com.mx	Cheese
LACTICINOS DEL NORTE, S.A. DE C.V.	Antigua Carr. a Roma Km. 8.5	66600 Apodaca, N.L.	(81) 8386-1467		Cheese, milk

Name	Street	Place	Telephone	URL	Products/ Activities
LACTO PRODUCTOS DE ORIENTE, S.A. DE C.V.	Av. Cd. Militar No. 15	72380 Puebla, Pue.	(222) 235-49-01		Cheese, cream, yoghurt
LAGRANGE, S.A. DE C.V.	Callejón de Santo Domingo No. 1000	66499 San Nicolás de los Garza, N.L.	(81) 8353-2300	www.lagrange.com.mx	Cheese
NEW ZEALAND MILK MEXICO, S.A. DE C.V.	Av. de la Exportación No. 205	45690 El Salto, Jal.	(33) 3689-1248	www.sigma.com	Cheese
ORGANIZACION KESOS Y KOSAS	Av. Chapultepec No. 800 Bod. 238-239	67140 Guadalupe, N.L. (81) 8317-0656			Cheese
PASTEURIZADORA LAGUNA, S.A. DE C.V.	Calz. Cuauhtémoc No. 1422 Nte.	27000 Torreón, Coah.	871) 713-13-12		Cheese
PROCESADORA DE LACTEOS, S.A.	Cayetano Andrade Mz. 38 Lt. 1	09510 México, D.F.	(55) 5732-8830		Cheese
PRODUCTOS ALIMENTICIOS MENONITAS, S.A. DE C.V.	Av. Los Angeles No. 1000 Bod. 308-A	66480 San Nicolás de los Garza, N.L.	(81) 8351-0865	www.menonitas.com.mx	Cheese, yoghurt
PRODUCTOS CARRANCO, S.A. DE C.V.	Valentín Gama No. 510	78220 San Luis Potosí, S.L.P.	(444) 813-13-32	www.carranco.com.mx	Cheese, cream, butter
PRODUCTOS LACTEOS DE CALIDAD	Fresno No. 176	06400 México, D.F.	(55) 5547-0469		Cheese
BEDACOM	Torres Landa No. 204,	38010 Mexico	52 461 615 8908	www.bedacom.com.mx	Processing, packaging and trading of dairy products

Name	Street	Place	Telephone	URL	Products/ Activities
CREMERIA SAN JOSE	Central de Abastos - Bodega G-79	09410 México, D.F.	+52 55 5694 1463		Importer and dis- tributor of cheese
DISTRIBUIDORA DE LACTEOS ALGIL	Instituto Técnico Industrial No. 172	1340 Mexico	+52 55 5089 2800	www.esmeralda. com.mx	Manufacture and trade of dairy products
EUROLAC	Maquiladores No. 211	León 37490	+52 477 763 6444	www.eurolac. com.mx	Manufacturing and trade of dairy products
INDUSTRIAS COR	Av. La Cañada No. 19	El Marqués 76264 Querétaro	+52 442 221 5252	www.lyncott.com.mx	Producer and dis- tributor of dairy products
PRODUCTOS LACTEOS EL SABINO	Revolución S/N Zona Centro	San José de Gracia 59500	+52 381 537 0023	www.elsabino. com.mx	Manufacturing and trade of dairy products
RIEX, S.A. DE C.V.	Solidaridad 2008 Col. Fraccionamiento Unidad Nacional	66350 Santa Catarina, Nuevo León	+52 81 83-36- 1350	www.riex.com.mx	Import and distri- bution of cheeses
QUESOS PADILLA	Tulipanes No. 10 Col. Valle de Oro	San Juan del Río 76802	+52 427 266 0282		Manufacture and trade of dairy products

Name	Street	Place	Telephone	URL	Products/ Activities
<i>Dairy organizations</i>					
ASOCIACIÓN NACIONAL DE GANADEROS LECHEROS, A.C. (ANGLAC)	MELCHOR OCAÑO # 405-201	11590 Mexico, D.F.	(+52-55) 52 55-18 33		
HOLSTEIN DE MEXICO, A.C.			52 442 2120269	www.holstein.com.mx	
CÁMARA NACIONAL DE LA INDUSTRIA DE LA LECHE CANILEC	Av. Benjamín Franklin No. 134	11800 México, D.F.	+52 55 5271-2100		
CIGAL	Francisco Fagoaga No. 10	C.P. 76000 Querétaro	+52442-224-1684	www.cigal.biz\	
Consejo para el Fomento de la Calidad de la Leche y sus Derivados COFOCALEC	Simón Bolívar 446	44160 Guadalajara, Jalisco	+52 33 36 30 58 31	www.cofocalec.org.mx	
Animal Breeding Material and Vaccines					
Reproducción Animal, S.A. DE C.V./Holland Genetics	Viveros de Atizapán 62	54080 Tlalnepantla,	+52-55 53-62-1400	www.reproduccionanimal.com.mx and www.hg.nl	Bovine semen

Name	Street	Place	Telephone	URL	Products/ Activities
Intervet México, S.A. DE C.V.	Av. Paseo de los Frailes 22	52600 Santiago Tlaxiaco	+52 713 13 50 00	www.intervet.com.mx	Vaccines, medicines, feed enhancers
<i>Animal Feed</i>					
DSM Nutritional Products	Km. 22.5 Carretera Guadalajara	45680 El Salto, Jalisco	+52-33 36 68 60 19	www.dsmnutritionalproducts.com	Animal nutrition products
Semillas Papalotla Sloten - Animal Feed and Pharmaceutical Divisions (Nutreco)	Orizaba 195	06700 Mexico DF	+52-55 52-64-0364	www.grupopapalotla.com and www.sloten.com	Milk replacers, electrolyte mixture, glucose, aminoacids and Vitamins
Trouw Nutrition (Nutreco)	Luis Enrique Williams 792	45150 Zapopan, Jalisco	+52-33 36-56-6400	www.trouwnutrition.com	Animal nutrition products (pre-mixes) and vitamins
Provimi México	Bosque de Duraznos 63	11700 Mexico, D.F.	+52 55 52 51 10 09	www.provimi.com	Animal nutrition products

Name	Street	Place	Telephone	URL	Products/ Activities
<i>Animal Processing and Machinery</i>					
Stork Mexico	Amores 334	03100 Mexico, D.F.	+52-55 56-82-2908	www.stork.com and www.fds.stork group.com	Food processing machinery (dairy and poultry)
Van Aarsen de Mexico	Calle 12 No. 191	97137 Mérida, Yucatán	+52-999 926-7433	www.aarsen.com	Equipment for the production of ani- mal feed

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