FARM PLAN Imagine a Sustainable World



Imagine a Sustainable Dairy Business









Presentation Dutch Farm Plan







Who

- collection, ventilation, manure handling and cow comfort.
- Development, Exploitation and Management!

FARM PLAN

Since 1896 we are involved in the dairy business, throughout the years we got more experienced in milking cows. By the growing scale of our farms we have discovered that the buildings, cows, feed, management and more are crucial for a healthy and profitable future.

• With our "Holistic Dutch approach" We have constructed dairy facilities of all sizes; past projects have accommodated anywhere from 100 cows up to 10,000 animals. Projects include all types of buildings such as milking parlors, free stall barns, bunker silos, commodity barns, manure storage and calf raising facilities. Our designs include the latest in data

Dutch Farm Plan is the unique partnership of Dutch experts parties in the Dairy Chain



Integrated Turn Key business

We deliver Sustainable **Turn-Key** facilities:

- 1. Irrigation installations and equipment
- 2. Feed mill and feed storage
- 3. Dairy farms including barn equipment
- 4. Dairy processing factory
- 5. Offices and housing
- 6. Fencing, infrastructure, etc.







Business Management & Training

We deliver more than a Turn-Key project, our work starts at the start of your business. We stay closely involved in managing the farming and processing businesses for the long therm:

- 1. Animal feed production (both; arable farming & feed milling)
- 2. Heifer (& optional bull-) raising
- 3. Dairy farming
- 4. Dairy processing
- 5. Marketing and sales
- 6. Recruiting and training staff (& optional local farmers)









Our overall approach

- refining the businessplan;
- Start **recruiting** people and the **training** of the farm manager and herds manager(s)
- **Tendering** for constructing and installations
- **Executing** the construction
- Start **importing** pregnant heifers
- Start of the **farming & processing**



Draft Business plan
Approval of the plan
Local study
Engineering
Tendering
Earthworks
Construction transition- and heifer barn
Installation technique
Construction lactating cow barn
Installation technique
Construction office and canteen
Installation technique
Construction Commodity barn
Installation technique
Construction manure silo's and biogas pl
Construction feed storage
Civil works
Installation technique
Importing cows
Purchasing commodities and roughage
Selecting and training employees
Start up the dairy

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• Feasibility Study: investigating all aspects on climate, availability and quality of water, feed, writing and / or

• **Developing** and **Engineering** the farm, Dairy processing plant, biogas energy plant and waste water facility.









Feasibility

We usually start our projects with a Feasibility Study on the project. This study helps the sponsors management to make decisions on the exploitation in the project. The study contains:

- Project overview & Business Model
- Market Assessment
- Technical Assessment
- Financial Assessment
- Risk Assessment
- Conclusion









Development and engineering

- will make a go-/ no go decision.
- produce, are the base for the further project.
- conditions.
- Each phase will be presented to sponsor, before the next step will be taken.

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Based on the feasibility study, we establish the program requirements together with the client.

• We develop the complete integrated dairy farm and dairy processing plant in the end stage, and phase the plan. In this stage, we will make a budget proposal. According to this proposal, sponsor

• Each phase will be designed according to the specific needs of the housing. The 3D drawings we

• Each building will be engineered according to the requirements we established earlier in the project. In the engineering we will take care of all specific aspects on local climate and other local











Cow Wellness®

To meet the UN COP 21 Sustainable Development Goals, the farm to build needs to be **CO₂ neutral** also.

With our Cow Wellness® Concept, the Dutch Farm Plan team is able to develop and engineer an Integrated Sustainable Dairy Farm. We use **Geothermic energy** to acclimatize barns. Our unique techniques provides a low-humid, cool climate 24/7/365. This enables cows to produce high amounts of quality milk in a healthy way. It reduces the need for antibiotics and improves the durability of the cows.

SUSTAINABLE G ALS







Professional Dairy Farming





Healthy and Нарру Cows





FARM PLAN

In a clean & Sustainable Environment













- Livestock feed production
- Cows
- Milk processing
- Energy use
- Waste water treatment









- Water-saving and non-GMO crops -> animal feed
- Use of surface water as far as possible (= renewable)
- Limit losses in the total chain
- Reduced use of antibiotics
- Use of renewable energie: solar energy and / or biogas

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Sustainable Dairy Farming Chain

Local feed production (reduction of transport and dependence)





Animal feed production

• Use of surface water as far as possible Cultures that are water and nutrient-friendly Locally grown foods (reduced transportation and dependency) Crop rotation • Without GMO









Avoid wastage



• Avoid heating feed during storage

• Limit energy loss









Healthy and Sustainable cows • Comfortable buildings, cool climate, smooth surfaces, comfortable cubicles Animal health management using data collection • Hygiene protocols Reduction of antibiotic use • Healthy cows, happy and long-lasting!







Data analysis

- Prevent cows from becoming ill by intervening quickly
- Collect cow health information 24/7, analyze it and put in place a quick action plan
- Monitoring Key Performance Indicators (KPIs)











Economic sustainability

- The basis of sustainable agriculture is economic feasibility!
- The cost price must be able to compete with the world market











Cow Wellness®

FARM PLAN

Benefits for cow, farmer and the environment







Dairy Themes Economy

• Heat stress

- Animal health
- License to produce

Legislation









Heat Stress

- Comfort zone between: -5° en +18°C
- Combination of temperature and humidity
- Above 20°C and 60-80% Humidity: Heat Stress
- Leads to decreased production and fertility, ruminal acidosis, decreasing feed intake and claw problems

Themperature											% Rel	ative H	lumidit	ty								
°F	°c	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
72	22.0	64	65	65	65	66	66	67	67	67	68	68	69	69	69	70	70	70	71	71	72	72
73	23.0	65	65	66	66	66	67	67	68	68	68	69	69	70	70	71	71	71	72	72	73	73
74	23.5	65	66	66	67	67	67	68	68	69	69	70	70	70	71	71	72	72	73	73	74	74
75	24.0	66	66	67	67	68	68	-8	69	69	70	70	71	71	72	72	73	73	74	74	75	75
76	24.5	66	67	67	68	68			70	70	71	71	72	72	73	73	74	74	75	75	76	76
77	25.0	67	67	68	68			70	70	71	71	72	72	73	73	74	74	75	75	76	76	77
78	25.5	67	68	68	I K		70	70	71	71	72	73	73	74	74	75	75	76	76	77	77	78
79	26.0	67	68	69	ે 🤧	70	70	71	71	72	73	73	74		75	76	76	77	77	78	78	79
80	26.5	68	69			70	71	72	72	73	73	74			76	76	77	78	78	79	79	80
81	27.0	1			70	71	72	72	73	73	74	TP,		76	77	77	78	78	79	80	80	81
82	28.0	6		70	71	71	72	73	73	74	1		76	77	77	78	79	79	80	81	81	82
83	28.5	69	70	71	71	72	73	73	74	75	1 3	76	77	78	78	79	80	80	81	82	82	83
84	29.0	70	70	71	72	73	73	74	75			77	78	78	79	80	80	81	82	83	83	84
85	29.5	70	71	72	72	73	74	75		70	77	78	78	79	80	81	81	82	83	84	84	85
86	30.0	71	71	72	73	74	74	7		77	78	78	79	80	81	81	82	83	84	84	85	86
87	30.5	71	72	73	73	74	75		77	77	78	79	80	81	81	82	83	84	85	85	86	87
88	31.0	72	72	73	74	7		76	77	78	79	80	81	81	82	83	- 84	85	86	86	87	88
89	31.5	72	73	74	75	(7		77	78	79	80	80	81	82	83	84	85	86	86	87	88	89
90	32.0	72	73	74			n	78	79	79	80	81	82	83	84	85	86	86	87	88	89	90
91	33.0	73	74	75		76	77	78	79	80	81	82	83	84	85	86	86	87	88	89	90	91
92	33.5	73	74	75	76	77	78	79	80	81	82	83	84	85	85	86	87	88	89	90	91	92
93	34.0	74	75	76	77	78	79	80	80	81	82	83	85	85	86	87	88	89	90	91	92	93
94	34.5	74	75	76	77	78	79	80	81	82	83		86	86	87	88	89	90	91	92	93	94
95	35.0	75	76	77	78	79	80	81	82	83	84		86	87	88	89	90	91	92	93	94	95
96	35.5	75	76	77	78	79	80	81	82	83	8	50	87	88	89	90	91	92	93		95	96
97	36.0	76	77	78	79	80	81	82	83			86	87	88	89	91	92	93	94		96	97
98	36.5	76	77	78	80	80	82	83		85	86	87	88	89	90	91	92	93			96	98
99	37.0	76	78	79	80	81	82	3		65	87	88	89	90	91	92	87			96	98	99
100	38.0	77	78	79	81	82	83	54	15	86	87	88	90	91	92	93			96	98	99	100
101	38.5	77	79	80	81	82	83	84	86	87	88	89	90	92	93	94		96	98	99	100	101
102	39.0	78	79	80	82	83	84	85	86	87	89	90	91	92	94	95	20	97	98	100	101	102
103	39.5	78	79	81	82	83	84	86	87	88	89	91	92	93			97	98	99	101	102	103
104	40.0	79	80	81	83	84	85	86	88	89	90	91	93		- 25	96	98	99	100	101	103	104
105	40.5	79	80	82	83	84	86	87	88	89	-91	-92	92		96	97	99	100	101	102	103	105
106	41.0	80	81	82	84	85	87	88	89	90	91	93		172	97	98	99	101	102	103	104	106
107	41.5	80	81	83	84	85	87	88	89	91	-			96	98	99	100	102	103	104	106	107
108	42.0	81	82	83	85	86	88	89	90	92	97		96	- 97	98	100	101	103	104	105	107	108
109	43.0	81	82	84	85	87	89	89	91	-92	11	95	96	- 98	99	101	102	103	105	106	108	109
110	43.5	81	83	- 84	86	87	89	90	-91	- 93	- 14	96	- 97	99	100	101	103	104	106	107	109	110
111	44.0	82	83	85	86	88	90	-91	.92	-94	- 95	-96	- 98	99	101	102	104	105	77	108	110	111
112	44.5	82	84	85	87	88	90	-91	.93	- 94	- 96	-97	99	100	102	103	105			109	111	112
113	45.0	83	84	86	87	89	57	92	93	95	96	23	99	101	102	104			108	110	111	113
114	45.5	83	85	86	88	89	52	92	94	96	57	99	100	102	103	10		208	109	111	112	114
115	46.0	84	85	87	88	90	92	93	95	96	98	99	101	102	104			109	110	112	113	115
116	46.5	84	86	87	89	90	93	94	95	97	98	100	102	107	105	4	108	110	111	113	114	116
117	47.0	85	86	88	89	91	93	94	96	98	99	101	102	104	0.0	107	109	111	112	114	115	117
118	48.0	85	87	88	90	92	94	95	97	58	100	102	103	105	1.16	108	110	111	113	115	116	118
119	48.5	85	87	89	90	92	94	96	87	99	101	102	104	106	107	109	111	112	114	116	117	119
120	49.0	86	88	89	91	93	95	96	98	100	101	103	105	106	108	110	111	113	115	117	118	120







Acidosis-related troubles



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High ambient temperature



Reduced milk yield





Dry cows

- Effect on lactation: cows do not peak or insufficiently, so loss of production;
- Effect heat stress during dry period:
 - considerable production loss in lactation;
 - lower weight calves, and lagging youth-growth.

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rumination Less saliva to the run Acidosis-related troubles









Relation Temperature & Humidity. 2012-2014 (NL)

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100,00% 90,00% 80,00% 70,00% 60,00% 50,00% 40,00% 30,00% 20,00% 10,00% 0,00%













Av. milk production 2012-2014 (NL)





Conclusion

- Heat stress is visible in the company
- Variation of 15% in milk production
- 10% real increase in production at exclude heat stress





Conclusion

- Heat stress is serious issue in the companies
- Variation of 45% in milk production
- 30% real increase in production at exclude heat stress

from nearest weather station: Kiev, Ukraine (0.0 KM).

The mean monthly relative humidity over the year in Kiev, Ukraine.

from nearest weather station: Kiev, Ukraine (0.0 KM).

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UTRECHT NETHERLANDS

FARM PLAN

Cow Wellness®

- dried where necessary heated in winter with 'free' energy.
- Our unique combination of cooling and drying provides cows an extreme healthy climate.
- If desired, an air washer can be installed in the climate system to reduce Ammonia and Methane up to 90%.

• Our Dutch Innovation 'GeoBalance' ensures a constant stable climate with minimum ventilation levels. This system uses ground water where possible (to be investigated) which is pumped through heat exchangers in the air inlet of stable. The outgoing air temperature is also reused by the use of heat exchangers. This technique has successfully been used in over 25 barns for 7 years now in combination with .

• The energy from the water is transferred in the incoming air. In summer, the ventilation air is cooled and

Cow Welness®

Conditioning of indoor climate barn

emission and methane reduction)

Energy generation for own use

• Less use of Water

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Optional washing/cleaning of outgoing air (ammonia)

Cow Wellness®

• Healthier cows

• Healthier farmer

• Healthier environment

• Sustainable dairy farming!

Dairy Processing

- Fresh pasteurized drinking milk
- Yoghurt varieties (plain, fruit)
- Cream & butter
- Leban, drinking yoghurt, Kefir
- Cheese (Gouda, Cheddar, Feta etc.)
- Et cetera

Basics

- Integrated chain helps to secure food safety, non antibiotic residues
- Track- and traceability with the use of Block Chain technology
- High tech computerized proces technology
- In house marketing and sales.

High tech tools and equipment

- management data we need to optimize the production.
- chain.

FARM PLAN

• We use the most modern equipment, techniques and sensors for irrigation, dairy farming and dairy processing. This gives us all the

• With the equipment and tools we use, we deliver a complete trackable and traceable, high quality and food-secure dairy product, from "soil to shop". For that, we integrate "block chain technology" in the complete

Biogas

Optionally we combine our projects with renewable energy for example Biogas.

- Waste treatment (manure, waste from dairy processing, other organic waste products
- Gas production for electricity generator
- Improving manure to organic fertilizer

- Processing
 - Netherlands/ Europe

 - Payment based on our performance!

FARM PLAN

• 3-5 years (or more) commitment in managing the Dairy Farms and Dairy

Dutch manager on site, supported by our Expert Team in the

Local team trained by the "Dutch Farm Plan College" team

• Performance measured by SMART Key Performance Indicators (KPI)

Exploitation

- and successful!

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• Our program contains 3-5 years or more of management support. In this period we start up the dairy farm and the processing and stay involved. We train the potential local management to manage the complete business after our presence. In this way our management team will make itself superfluous.

• At the start of the operation, together with sponsor we establish a set of "Key Performance Indicators" to which we conform. These KPIs we will make S.M.A.R.T. (Specific, Measurable, Attainable, Relevant and Timely). These KPIs are the basis for our fee. Our unique Bonus / Malus approach according to our involvement helps us to do our very best to make your business durable

Recruiting

- Recruitment of the team starts with determine the functions necessary for running the farm and job descriptions are made.
- Job openings will be posted, based on job application, selection will be made by the DFP management team.

Training different competence levels

Example of job profiles (not complete)

- management. Works together closely with the marketing and sales team.
- partly on site.
- These people will be trained on site by our certified trainers.
- Our training will lead to **certified** employees in every competent level.

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• Farm Manager: responsible for the over all farm management, people management, purchase. Training takes place partly abroad, partly on site. Training already starts at the period of the development of the farm. By doing so, the farm manager is involved from the start and understands the specific design aspects and details.

• Food Technologist: responsible for the product quality, for product development and dairy process

• Herd manager(s): responsible for animal health, feeding management, reproduction, training partly abroad,

• Livestock caretakers & executive staff: responsible for milking, stable care, daily animal care and feeding.

Tendering

- Dutch Farm Plan draws up the building specification in which specifications of material choices, installations and the technique to be applied are described.
- Contractors will be selected to do a quotation for the construction of the buildings, based on our unique specs
- Maintenance will be selected, based on the requirements; also this will be offered by suppliers

Importing heifers

Our Livestock partner "Heemskerk Global Livestock Company" takes care of the complete process, ranging from transaction to transport. We will select livestock in Europe, in countries such as the Netherlands, Germany, Denmark, and other European countries.

We supply various breeds, and are specialized in Holstein-Friesian. Animal welfare is paramount. Every animal is examined and comes with a health certificate issued by a vet.

We are also highly conscientious when it comes to animal transports, where quality and health always come first. Not only with state-of-theart cattle lorries for road haulage, but also for long-distance sea or air transport.

The Heemskerk team has been exporting breeding cattle for over 30 years!

Approac

1. Januari 2019: Formel Discuss approach & scope of project cooperation

- the business
- 4. June July 2019 Design and engineering;
- 5. From July 2019- September 2019: tendering buildings and start constructing;
- 6. From September 2019; Recruiting and training staff
- 7. May / June 2020: Start farming and processing | Management

2. February 2019: Visit location and close collaboration agreement February - May 2019: Feasibility study, scope of project in all stages; from short-, mid- and long term plan, up until starting up and managing

3. April - June 2019: Refining budget plan for Dairy farm and Dairy processing -> go-/no-go

