EGONOPOULOS CORPORATE CONSULTING

Project presentation
For a sheep milking facility in Greece.
May 2017.

It has been an idea for years.
This Project is a collaboration of an Architect and sheep breeders in Thessaly.
As an architect I always respected all environmental parameters in my projects.
A brief presentation of my work can be found on my site.**www.egonopoulos.com**
When chance brought it that I met people that were close to my desires, this project arose.
To build a sheep farm that will produce milk to be sold at the cheese industry here in Greece.
The farm will be situated in the Thessaly Prefecture, which is mainly an agricultural area. The animal stock will be permenantely housed in barns.
Easy access to agricultural produce will ensure good quality nutrition for the sheep.
A hydroponic installation will ensure that the animals get stable and nutricious feed which is the most important parameter for a successful farm.
The farm will house a milking parlor installed by the **Delaval** company, which is specialized in animal management. The parlor will have a milking capacity or 400 sheep per hour .
Milk production is estimated to reach 350 liters per animal per year in the first 4 years.
The herd will consist of the Lacone breed. We will start the herd importing 1400 animal and after the first year we will reach +2300 milking animals.
Each year we calculate to be able to sell live stock .The male sheep will be sold when they reach 60 days.
We will also sell about 50 males for breeding. From the female sheep we will keep 460 for our own flock and the rest we will sell for milking.
The Lacone breed is one of the most famous breeds and we plan to keep the breed pure to be able to provide a fine breeding line.
The farm will use the manure produced to develop a biogas facility. The energy produced will be use for heating the farm and to produce electricity that will be sold to the national grid. As a environmentally friendly energy it is well sought and the Greek state offers fixed contracts for 20 years.
The biogas plant will also produce fine fertilizer that is also sold. Finally we will also sell the wool.
The project will be certified and operated following ISO and HACCP certifications.

Project certification from the Polytechnic Faculty in Thessaloniki.

The project plans and licensing will be certified by the **Polytechnic Faculty of Agricultural Structures in Thessaloniki**. The scientists that certify each project have developed their experience with years of experience, thus adding to our project the necessary gravity needed for a project of this scale.

Αριστοτέλειο Πανεπιστήμιο Θεσσαλονίκης
ΓΕΩΠΟΝΙΚΗ ΣΧΟΛΗ
Τομέας Εγγείων Βελτιώσεων, Υδραυλικής και Γεωργικής Μηχανικής

Κέντρο Ελέγχου Γεωργικών Κατασκευών
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Θεσσαλονίκη 18/6/2012

Προς
Κάθε ενδιαφερόμενο

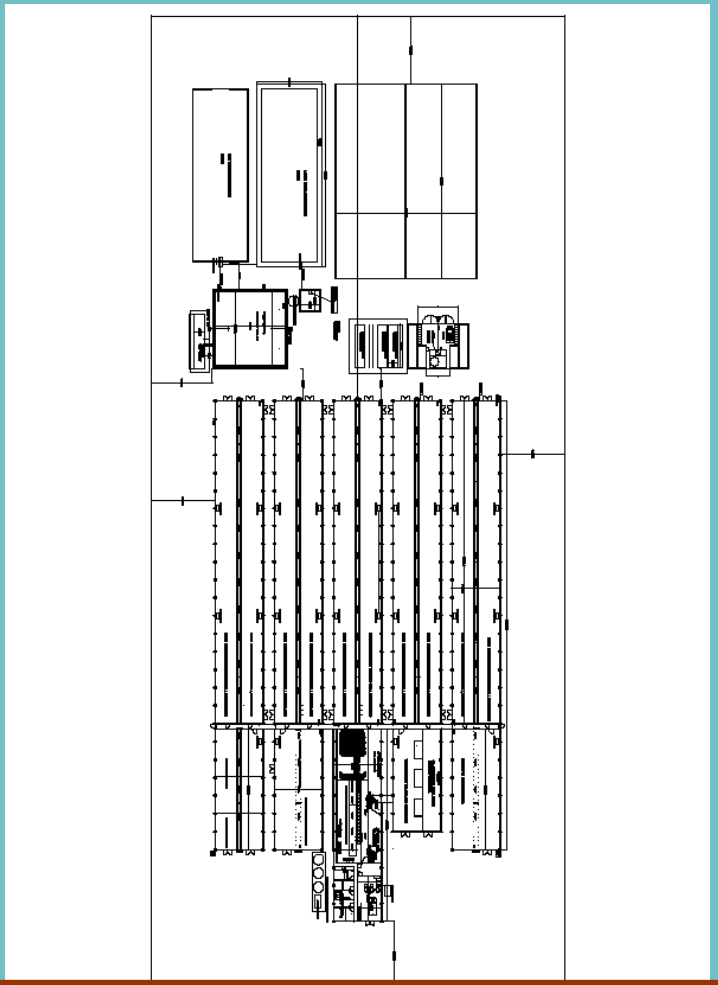
Το Κέντρο Ελέγχου Γεωργικών Κατασκευών (ΚΕΓΚ) προκειμένου να εκδώσει πιστοποιητικό καταλληλότητας μιας αγροτικής εγκατάστασης ζητάει από κάθε ενδιαφερόμενο να καταθέσει τα ακόλουθα:

1. Αίτηση Ελέγχου Κατασκευής
2. Αρχιτεκτονικά σχέδια (κάτοψη, όψεις, κάτοψη οροφής, θεμελίωση)
3. Στατική μελέτη
4. Δομικά στοιχεία – Κατασκευαστικό υλικό
5. Τεχνική περιγραφή
6. Μελέτη αερισμού και συνθηκών περιβάλλοντος
7. Ανάθεση της πιστοποίησης στην Επιτροπή Ερευνών Α.Π.Θ. (υπογεγραμμένο σχετικό έγγραφο).

Με εκτίμηση

Χ. Νικήτα-Μαρτζοπούλου
Καθηγήτρια Α.Π.Θ.
Διευθύντρια Κέντρου Ελέγχου
Γεωργικών Κατασκευών

Document from the Polytechnic describing the necessary documentation for certification.

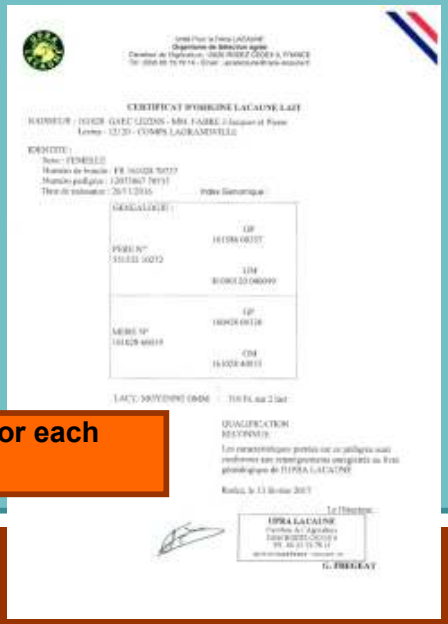


Overall plan of facility

Lacaune breed data

The farm will incorporate the Lacaune breed. The final flock will number 2300 animals.
Two technical bodies (Coopérative OVI-TEST and Confédération de ROQUEFORT) are responsible for managing the selection program. UPRA Lacaune coordinates activity and registers breeding stock. Lacaune Milk breeding stock is produced by selection breeders members of the two genetic programs mentioned above.

These breeders are involved in official milk recording and extensively use animal insemination. This allows accurate breeding value evaluations of the animals both on milk and functional traits.
Selection flocks are also submitted to an official health monitoring (Visna/maedi virus, Scrapie etc) in order to comply with sanitary requirements for intra-community movements of breeding livestock.
Only breeding animals from these selection flocks are eligible for pedigree certificates of origin provided by UPRA LACAUNE.
This is the best dairy breed of sheep in France. The breed got its name from the district of Mont-de-Tarn department of Laconia. Sheep Laconia obtained by cast-restricted sheep blood to local blood Merino and Southdown in the XIX century. The main selection was carried out on milk production. Officially, the breed was approved in 1902. The head of sheep is small, slightly elongated, covered with fleece wool light yellow, chest deep, back and well muscled. The live weight of rams 90 — 120 ewes — 55 — 70 kg. Weaning lambs spend 4 — 5 weeks of age, and then begin to milk the sheep.
Sheep milk for cooking Roquefort cheese and other delicious cheeses (pikarino, Brie, Camembert, Feta, Taleju and others.). Due to the peculiarities of the breed have no peculiar smell of milk, which favourably affects the taste of the products. Sheep milk is 1.5 times more nutritious cow's milk. It is rich in B vitamins and vitamin A. It is especially useful sheep milk to pregnant women and to children, adolescents. This milk is known for its antioxidant properties. With regular use it improves the absorption of oxygen and nutrients to brain cells, resulting in improved memory, concentration, increases the ability to learn. Sheep's milk protein has less allergenic than proteins of goat or cow's milk. Sheep milk is indicated for asthma, eczema and other allergic diseases and diseases of the gastrointestinal tract. Protein content of the sheep milk of 5.6% and the calorie content of 100.0 g of this product — 109.7 kcal.
Due to the constant improvement of the breed Lacaune, milk yields average about 400 liters per lactation.
With 810,000 ewes, the Lacaune dairy sheep breed is the first French sheep population . It is famous for its milk production processed into Roquefort cheese. Lacaune sheep also have a meat line specialized for the production of lambs, with its own specific breeding program. The Lacaune breed originated in the Lacaune region of France and is located in the South of the Massif Central mountains (Aveyron and Tarn Departments and the surrounding regions).A high milk yield level :
Due to limitation of production per flock to comply with new economical rules, the high milk yield level of the Lacaune ewe is no more fully expressed in its native Roquefort area of production.
However, recorded average milk yield is 277 litres per ewe over a milking period of 163 days per ewe. These results do not include the first month of lactation (before the lamb is weaned) and the final part of the lactation (since ewes are dried off before the normal physiological end of the lactation when dairy plants stop to collect milk).
Breeding objectives:
From the beginning, selection objective has emphasized milk yield produced per ewe in the milking period.
From 1985, the selection was re-oriented to improve both milk yield and milk composition (fat and protein content); more recently in the 2000's, new traits as mastitis resistance (somatic cells counts), udder conformation and resistance to Scrapie (PrP genotyping) were included in the global breeding objectives.
Annual genetic gain in the selection flocks:
* Milk yield : 6.4 litres per ewe and per lactation.* Protein content : 0.19 grams per litre.* Fat content : 0.19 grams per litre



Certification for each animal

AUTOMATED HYDROPONICS UNIT FOR ORGANIC FARMING FEED

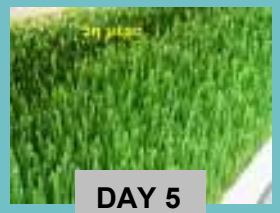
Animal feed is a major factor that will influence the success our farm.
We will have daily stable production of the feed we need, throughout the year and even in a very small space. That will allow the optimal timing of production. Supply of food for 365 days a year steadily and surely.
Produces no waste and does not pollute the environment at all, unlike conventional crops in the ground. The production of feed can be done even in prolonged drought and frost. The process has a short food production time. In 7-10 days after 'sowing', depending on the seed and the kind of food, our animals have ready and fresh food. High performance in a very small space. We do not need rain or fertilizers to grow.
The acquisition and operating costs are low and rapidly depreciable. We will get the redemption of the whole installation in less than one year, only by the difference in the price of food costing, not counting all the other benefits that will be in the herd ,such as **better animal health**, more and **better milk**, **better quality and price of the meat.**
Extremely **low water** consumption as compared to traditional methods of irrigation, absolutely necessary for the biological needs of the plant. In cultivation it takes only two to three liters of water to produce one kilogram of hydroponic fodder during the seven days that develops, when for example to produce a kilogram of feed corn in the ground, respectively requires 200 liters of water.
Shoots produced are always clean and free of pests and soil residues. Furthermore in hydroponics have fewer diseases in plants and the root, that from the ground because the root is growing in a controlled area. In this case indeed, the requirement of good quality water will be treated by oxygen and ozone, produced in the tank and the water will eventually provide the shoots will be of better quality than bottled. The need for using pesticides is zero, the resulting plants produced is not contaminated at all. Ozone is capable of destroying bacterial cells, within a few seconds and after 20 minutes turns it to its original form and leaves no residue on the surfaces and where else the water is used. The quality of food is consistent and stable.
Ability for absolute control of nutrition, using the combination of seeds we plant each time, depending on the animal for which the feed is intended and the particularities of each species. There is also the possibility to change the food from week to week, with different grains (corn, barley, wheat, oats, rye, clover, etc.) for better nutrition of the animal.


DAY 1

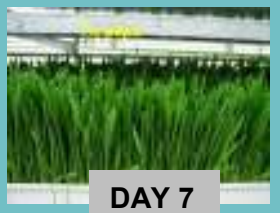

DAY 2


DAY 3


DAY 4


DAY 5


DAY 6


DAY 7

AUTOMATED HYDROPONICS UNIT FOR ORGANIC FARMING FEED

Biostalis has worked a long time to perfect the hydroponic forage production systems barley for c[illegible]on. This technology has been successfully developed abroad, namely in Australia, Canada and the US and therefore requires our cooperation with universities and companies abroad.

Currently we are proud because we have developed the knowledge that we have added our own innovation as the **"pre-germination chamber"** and above all we have confidence for issuing rations to the "germ" hydroponics, adapted to each farm.

Today we are pleased to be **the first Greek company** that built hydroponics systems, which work perfectly and keep our breeders !!!

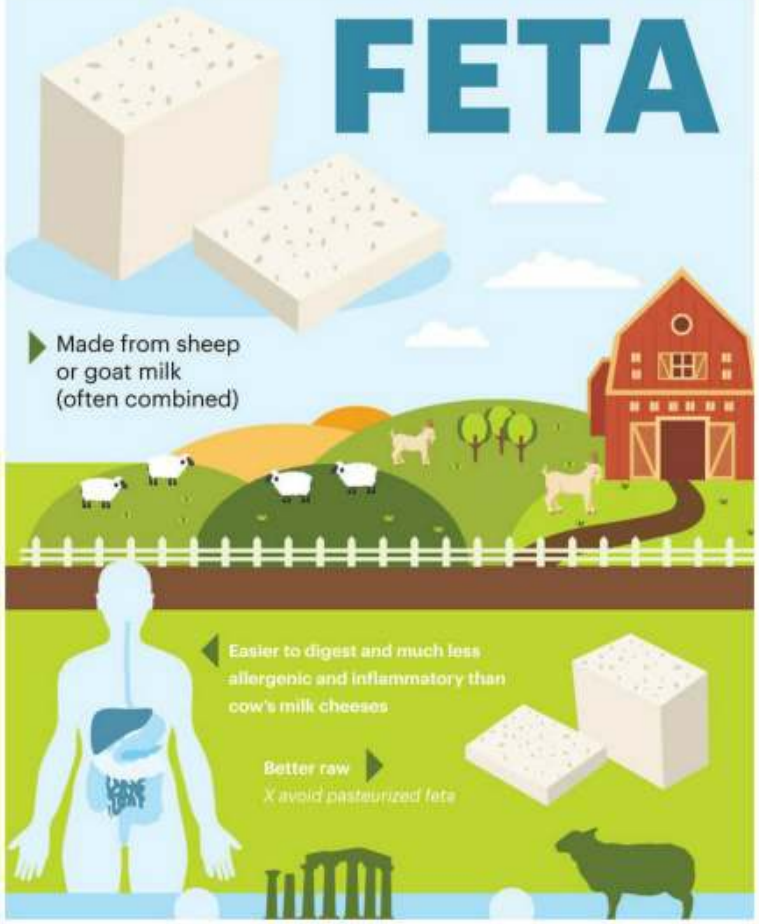
We hope to have the opportunity to meet you and invite every livestock farm owner, who wish to take **365 days** , fresh, nutritious feed cereal fruit to come to discuss how the Biostalis can help to:

to improve animal health to increase their productivity significantly reduce the cost of food

Benefits of cheese from sheep's milk

THE HEALTHIEST CHEESE

FETA



THE HEALTHIEST CHEESE

The earliest documented reference to the production of feta cheese was in Greece, in the 8th century B.C.

The technology described in Homer's Odyssey to create this cheese from sheep and goat milk is actually similar to the method modern shepherds employ

Only Greece can use the term "feta cheese," as specific breeds of sheep and goats within Greece are what give real feta its distinctive aroma and flavor

FETA CHEESE NUTRITION

Traditional feta is made either from pure sheep's milk, or a combination of sheep's and goat's milk (and no more than 30 percent goat's milk)

74	CALORIES	1	GRAM SUGAR
1.2	GRAM CARBOHYDRATES	260	MILLIGRAMS SODIUM
4	GRAMS PROTEIN	6	GRAMS FAT

VITAMIN B2	0.2 mg | 14%DV
CALCIUM	140 mg | 14%DV
SODIUM	312 mg | 13%DV
PHOSPHORUS	94 mg | 9%DV
VITAMIN B12	0.5 mcg | 8%DV
VITAMIN B6	0.1 mg | 6%DV
SELENIUM	4.2 mcg | 6%DV

THE HEALTHIEST CHEESE

7 Benefits of Feta Cheese

1. **PROTECTS AGAINST CANCER**
   Calcium (combined with vitamin D) helps protect the body against various types of cancer
2. **SUPPORTS BONE HEALTH**
   Calcium supports your bones and increases peak bone mass, especially in children and teens into those in their 20s
3. **BOOSTS IMMUNE SYSTEM**
   Feta cheese contains certain proteins that boost the immune system
4. **HELPS YOU MAINTAIN A HEALTHY GUT**
   Provides you with probiotics or the bacteria that line your gut
5. **PREVENTS HEADACHES, INCLUDING MIGRAINES**
   A good source of vitamin B2, it serves as a natural remedy for headaches, migraines included
6. **PROTECTS YOUR EYES AND PREVENTS DEGENERATIVE EYE DISEASE**
   Studies show that people whose diets are high in vitamin B2 are at a lower risk of degenerative eye diseases
7. **PART OF A NATURAL TREATMENT FOR ANEMIA**
   Associated with low levels of iron, folic acid or vitamin B12, anemia can be naturally treated with certain foods like feta cheese

Benefits of cheese from sheep's milk

The sheep cheese contains all the essential amino acids. Onbogat protein, trace elements and vitamins. Cheese can be easily compared with the milk concentrate, wherein all useful and nutrients contained in much greater concentrations. Among those peoples who regularly eat cheese from sheep's milk, there is considerably less of eye diseases, gastrointestinal tract. Much content in these cheeses calcium and phosphorus, and even in the most optimal ratio, making use of their excellent preventive measure for osteoporosis, and helps to shorten the healing of fractures. Cheese from sheep's milk contains more than 30% fat, and it refers to fatty and high-calorie foods. Therefore, despite all the nice features of eating it should be within reasonable limits. So adult per day should eat no more than 100.0 — 150.0 g sheep cheese. This amount will allow to fill the body fat, protein, lecithin, vitamins and minerals, but not lead to deposition of excess fat in the form of excess kilos. Especially useful cheese from sheep's milk for pregnant women, nursing mothers, children and adolescents, as well as people engaged in heavy physical labor and energy costs are too much. Cheese seems to be the primary source of calcium in Western diets.
Furthermore, milk from sheep and goats contains more calcium and phosphorus than cow's milk. Therefore, incorporating cheeses like feta into your diet could help you achieve the recommended daily intake of calcium .

Feta. How is it made.

Genuine Greek feta is made from sheep's milk or a mixture of sheep and goat's milk.
However, goat's milk cannot be more than 30% of the mixture.The milk used to make the cheese is usually pasteurized, but it can also be raw.
As it is expected, the largest part of feta quantities (for export and for domestic consumption) is produced in modern industrial units. This comes from the need to minimize the production cost and to improve product quality.
Towards this direction, the production method is as follow:
Feta is made primarily from sheep's milk or a mixture of sheep and goat milk (maximum 30% goat's milk). Milk is collected by producers and brought to the cheese dairy in large kegs. The milk coagulation has to occur within 2 days from its collection.
Traditionally feta was made with unpasteurized milk however industrial diaries now use pasteurized milk due to concerns over public health and export regulations.
The milk is pasteurized at a minimum of 72 C for 15 seconds or any equivalent time-temperature combination.
After the milk is pasteurized, lactic acid starter cultures are added to separate the whey from the curds, which are made of the protein casein. Then, rennet is added to set the casein.
The use of pasteurized milk necessitates the use of lactic acid starter cultures and calcium chloride to help achieve the right taste profile. These are added after pasteurization as the milk is being held at 34-36 C. These are the only additives allowed in feta production. After the milk has been refrigerated for 20 minutes enough rennet is added to coagulate the milk
Once this process is complete, the curd is shaped by draining the whey and placing the curd in molds for 24 hours.
Once the curd is firm, it is cut into cubes, salted and placed in wooden barrels or metal containers for up to three days. Next, the blocks of cheese are placed in a salted solution and refrigerated for two months.
Once the cheese has been salted it is matured for 14 - 20 days in brine. This part of the process takes place in rooms at 16-18 C, with high relative humidity. At this point the cheese will have humidity less than 56% and pH 4.4 - 4.6. After this the second maturation takes place. For two months the feta is kept refrigerated in its brine at 1-4 C.
Finally, when the cheese is ready to be distributed to consumers, it is packaged in this solution (called brine) to preserve freshness.
Bottom Line: Feta cheese is a fresh cheese that is shaped into cubes. It is stored in salted brine and matured for only two months.).
Feta Cheese Is Packed With Nutrients
Feta cheese seems to be a healthy choice. One ounce (28 grams) provides:
Calories: 74,Fat: 6 grams,Protein: 4 grams,Carbs: 1.1 grams.Riboflavin: 14% of the RDI,Calcium: 14% of the RDI
Sodium: 13% of the RDI,Phosphorus: 9% of the RDI,Vitamin B12: 8% of the RDI,Selenium: 6% of the RDI
Vitamin B6: 6% of the RDI.Zinc: 5% of the RDI.It also has decent amounts of vitamins A and K, folate, pantothenic acid, iron and magnesium.
What's more, feta is lower in fat and calories than aged cheeses like cheddar or Parmesan.
One ounce (28 grams) of cheddar or Parmesan contains more than 110 calories and 7 grams of fat, while 1 ounce of feta has only 74 calories and 6 grams of fat.
Additionally, it contains more calcium and B vitamins than other fresh cheeses like mozzarella, ricotta, cottage cheese or goat cheese. Feta is prepared either in small cheese dairies where traditional methods are applied, or in large industrial units that respect the traditional making of authentic feta. In both cases, as feta is far from being simple to produce, one can say that is an artisan cheese.

History of Feta cheese.

The milk produced will be sold to the cheese producers that mainly produce the famous Feta cheese.
The earliest references to cheese production in Greece date back to the 8th century BC and the technology used to make cheese from sheep's or goat's milk, as described in Homer's *Odyssey* involving the contents of Polyphemus's cave, is similar to the technology used by Greek shepherds today to produce feta. Cheese made from sheep's/goat's milk was a common food in ancient Greece and an integral component of later Greek gastronomy. Feta cheese, specifically, is first recorded in the Byzantine Empire (*Poem on Medicine* 1.209) under the name *prósphatos* (Greek: πρόσφατος, "recent" or "fresh"), and was produced by the Cretans and the Vlachs of Thessaly. In the late 15th century, an Italian visitor to Candia, Pietro Casola, describes the marketing of feta, as well as its storage in brine.
The Greek word *feta* (φέτα) comes from the Italian word *fetta* ("slice"), which in turn is derived from the Latin word *offa* ("a morsel", "piece"). It was introduced into the Greek language in the 17th century, became a widespread term in the 19th century, and probably refers to the practice of slicing cheese in order to place the slices into barrels.

Feta as a commodity.

Tasty and nutritious, feta is one of the most sought after Greek products. The large cheese manufacturers, representing the most traditional sub-sector of the Greek dairy industry have managed to combine the tradition of authentic feta making with high quality standards. For the production of feta it is used milk by sheep and goat races, bred in the traditional way. The milk collection and its transport to the processing facilities as well as the production method itself are according to the hygiene and security standards of European Union's legislation.

By employing the HACCP system and complying with the ISO production standards, Greek cheese manufacturers ensure high quality products. With an exceptional combination of expert stuff, highly qualitative products, modern technology, state of the art facilities and a customer-oriented attitude, the large cheese manufacturers of Greece gave feta a worldwide recognition conquering the international markets. Feta is exported throughout the world and is present in the most important markets of the planet. The clientele of Greek feta producers includes retail chains (super markets chains and smaller retailers), wholesalers, as well as Food industry. The exports of feta marked a gradual rise during the last years reaching about 30,000 tons per year, while this export increase is expected to continue in the years to come. Greek feta producers cater the growing number of people, who seek for highly quality products, by seizing every opportunity to expand in new markets.

Feta is a fresh, white cheese with a soft and creamy texture.

Compared to other cheeses, it’s low in calories and fat. It also contains a high amount of B vitamins, phosphorus and calcium, which can benefit bone health.

Additionally, feta contains beneficial bacteria and fatty acids.

However, this type of cheese is high in sodium and lactose. Pregnant women should also be sure to avoid unpasteurized feta.

Yet for most people, feta is perfectly safe to eat. What’s more, it can be used in a variety of recipes, ranging from appetizers to desserts.

At the end of the day, feta is a delicious and healthy addition to most people’s diets

Feta as a commodity.

The unique quality of the authentic Greek feta is its assurance for achieving the best results in the future. The upward trend in feta exports of recent years continued in the current year 2013, as the first quarter the change in volume of exports reached 13.95% According to the data announced, Ukraine consumed over 200% more Greek feta in 2012 compared to last year. There is increased demand in the United Arab Emirates (+108%), Ireland (+66%) and Australia (+60%). Total exports of feta in 2011 amounted to 34 thousand tons, which is a 3% increase compared to 2010. Its exports involve 35 countries, both within the EU and outside, such as Asia, Africa , Oceania , and North America. The 59.18 %, ie the bulk of exports went to many countries; specifically in Germany, the United Kingdom and Sweden. Around 40% of the exports of Greek feta cheese is focused on Germany, which remains the main foreign market for local producers. Next is the United Kingdom with a market share of 14%, Italy with 12% and Sweden, Cyprus, Austria, USA, France, Switzerland, Belgium and Canada are considered important markets with prospects for growth. Feta represents between 70% and 76% of exports of dairy products.

German Market

The German market is by far the largest market for feta exports. In value terms, the German market absorbed throughout the period of six years 2007-2012, nearly one third of feta exports, while in terms of quantity, the share of the German market between the countries of export is slightly higher - about 36% in 2012.

US Market

Feta cheese is one of the most famous cheeses in the U.S. According to data from the National Cheese Institute (Cheese Market Research Project), sales of feta cheeses reached a volume of 14.4 million pounds in 2006 and a value of 122.8 million dollars, in total sales of dairy products of 8,881 million dollars. One of the main reasons that have contributed to the wide distribution of the product in recent years is the fact that feta cheese is one of the key items in the "basket" of the Mediterranean diet that has now become known to all for its beneficial properties for the body. The basic features of the traditional Greek diet, which is one of the healthiest worldwide, have a great impact on American consumers. Feta cheese contains less fat than many other cheeses marketed. Used as an ingredient in increasingly diverse type dishes, salads , snacks , sandwiches and other foods while more and more food packaging encountered on the shelves of supermarkets and chain stores delicatessen, are represented by feta . At high levels of consumption of feta, has also contributed the existence of a major Greek-American community , particularly in the states of New York and New Jersey , which has strong ties to the birthplace and adheres to a large extent, especially Greek Americans first and second generation , traditional habits of Greek and Mediterranean diets .

Milking facility collaboration with DeLaval

In our project we decided to incorporate the milking equipment from Delaval.
DeLaval is a world leader in the dairy farming industry, providing integrated milking solutions designed to improve dairy farmers' production, animal welfare and overall quality of life. The company develops, manufactures and markets equipment and complete systems for milk production and animal husbandry worldwide. Service and sales of a wide range of accessories are also key aspects of DeLaval's operations. The company supplies highly efficient system solutions for milking, herd management, animal traffic control, feeding, cooling, manure handling, ventilation and energy recovery.
DeLaval offers automatic and conventional milking systems, cooling and feeding systems, effluent & housing systems and farm management support systems.
DeLaval customers can also choose from a wide range of services and consumables which are grouped in four portfolios: liners & tubes, farm supplies, services & original parts, and milk quality & animal health.
Company statistics in brief
Employees: 4,600+ Local sales organizations: 35.Manufacturing units: 18 .Number of factories: 19. Sales offices: 34. Markets covered: 100+. Research and development units: 3 .Mobile shops and delivery trucks: 700+. Net annual sales: 1 billion EUR

MILKING PARLOUR

Milking facility collaboration with DeLaval

MILKING PARLOUR HERE SHOWN WITH GOATS

Baby sheep milking

ANIMAL FEED TRANSPORTER.

MILKING PARLOUR

ELECTRONIC EQUIPMENT

FLOW METER MESSURING MILK QUALTITIES

DIGITAL CONTROLERS

AMONIA SENSORS

LED LIGHTING

LIGHTNING PROTECTION

HAY SHREDER

ΠΕΤΡΟΣ ΠΕΤΡΟΠΟΥΛΟΣ

PETROL GENRATOR

LOADERS

STABLE CLEANER

Ventilation fans

Biogas installation

To establish our project in the 21 century we will incorporate a very important environmental parameter.

We will use the manure produced by our animal to extract Methane that will in turn produce electricity sold on the national grid and also heat that will be used to support the needs of the farm during winter.

The Biogas System concept has been developed for farms that wish to process their own slurry. The slurry is digested anaerobically and converted to electricity and useable heat. Depending on the size of the business, the farm is able to supply its own energy needs in full, and even supply green energy to the national power grid. The Microferm is extremely suitable for agricultural businesses where sufficient quantities of slurry are produced, such as on cattle farms, pig farms and calf-fattening units.

Small-scale slurry digestion

The system, focuses on small-scale anaerobic digestion. For farms, the efficiency of the system is ideal for businesses that process slurry volumes in the region of 4,000 m3 – 11,000 m3 per annum.

High-yield digester

It's possible to digest slurry under highly efficient and stable process conditions for short residence times of 8 to 12 days.

Combined heat and power

The biogas system consists of a digester and a container with a combined heat and power (CHP) plant comprising a gas engine, a generator and the control system.

Self-sufficiency in energy

The biogas produced from digestion is converted by the CHP to sustainable electricity and heat. The electricity generated can be used on the farm itself with a proportion of the heat used to maintain the digestion process. Farm buildings and dwellings can be heated using surplus heat generated at a temperature of approximately 90°C. Heat energy can also be used in an absorption refrigerator unit for the refrigeration of milk, for example. As a result, the farm can be fully self-sufficient in its energy needs and no longer victim to hikes in energy prices.

Revenue from electricity

Any electricity not required is supplied as green energy to the national grid. In practice, output is between 50 kW and 100 kW. This means that the plant can be connected up to the existing grid with no difficulty whatsoever. An expensive transformer is therefore surplus to requirements.

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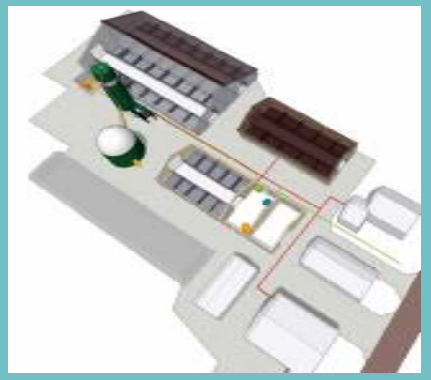
Biogas installation

High efficiency through integration

Livestock is housed indoors to ensure a continuous year-round supply of slurry. Maximum efficiency is achieved using an optimally designed shed using a system that discharges slurry directly to a central sump. The slurry is pumped from this central sump to the Digester. Because of the immediate digestion of the slurry, production of gas is raised considerably. This contrasts with a traditional shed where part of the slurry is already converted to gas during its storage in the slurry sump, thus wasting valuable energy.



Data	Sheep farm in the Thessaly Prefecture of Greece. Herd 2300 milking Lacone sheep. Milk production min700.000 liters, max 880.000 liters Production of 440.000 KWH electricity sold on national grid
Layout	6000 m2 stables Delaval milking parlor with a milking capacity of 400 sheep per hour. Biogas facility producing Methane.
Specifications	Construction period 6 months .Estimate start up April 2018.
INVESTMENT	The total investment. Buildings, equipment ,animal stock and working capital for construction and first year operations is 2.750.000,00 euro.

Project Presentation Financial Projections:16 Years

	REVENUE PER YEAR	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10	Y11	Y12	Y13	Y14	Y15	Y16	
3.1	MILK SALES	666.835	829.742	883.263	940.869	951.597	961.113	948.213	910.091	892.340	947.227	984.660	1.020.241	1.032.795	1.019.956	974.877	929.490	14.893.308
3.2	MALE SHEEP REPRODUCTION SALES	50.000,00	51.000,00	52.020,00	53.060,40	54.121,61	55.204,04	56.308,12	57.434,28	58.582,97	59.754,63	60.949,72	62.168,72	63.412,09	64.680,33	65.973,94	67.293,42	931.964
3.3	MALE SHEEP 60 DAYS SALES	68.950,00	119.595,00	121.986,90	124.426,64	126.915,17	129.453,47	132.042,54	134.683,39	137.377,06	140.124,60	142.927,10	145.785,64	148.701,35	151.675,38	154.708,88	157.803,06	2.137.156
3.4	FEMALE SHEEP SALE 180 DAYS	14.950,00	167.739,00	171.093,78	174.515,66	178.005,97	181.566,09	185.197,41	188.901,36	192.679,39	196.532,97	200.463,63	204.472,91	208.562,36	212.733,61	216.988,28	221.328,05	2.915.730
3.5	MANURE SALES	115.334,59	116.487,94	117.652,82	118.829,35	120.017,64	121.217,82	122.429,99	123.654,29	124.890,84	126.139,75	127.401,14	128.675,15	129.961,91	131.261,53	132.574,14	133.899,88	1.990.429
3.6	BIOGAS ELECTRICITY	96.800,00	96.800,00	96.800,00	96.800,00	96.800,00	96.800,00	96.800,00	96.800,00	96.800,00	96.800,00	96.800,00	96.800,00	96.800,00	96.800,00	96.800,00	96.800,00	1.548.800
3.7	SHEEP WOOL	6.472,20	10.894,87	11.112,77	11.335,02	11.561,72	11.792,96	12.028,82	12.269,39	12.514,78	12.765,08	13.020,38	13.280,79	13.546,40	13.817,33	14.093,68	14.375,55	194.882
3.7	DEAD ANIMALS COMPENSATION	621,00	1.035,00	1.035,00	1.035,00	1.035,00	1.035,00	1.035,00	1.035,00	1.035,00	1.035,00	1.035,00	1.035,00	1.035,00	1.035,00	1.035,00	1.035,00	16.146
3.8	SUBSIDY	22.770,00	31.941,25	41.938,86	55.065,72	72.301,30	79.771,66	80.569,38	81.375,07	82.188,82	83.010,71	83.840,82	84.679,23	85.526,02	86.381,28	87.245,09	88.117,54	1.146.723
3.9	ANNUAL PRODUCTION COAST	501.237,92	645.762,42	656.956,66	648.847,02	652.086,60	644.053,93	641.062,59	641.961,82	639.179,10	631.344,80	633.371,45	636.021,76	644.055,61	653.844,88	662.108,13	664.983,18	
3.10	VAT SALES	250.255,78	342.056,34	359.256,84	378.224,89	386.965,29	393.108,95	392.309,82	385.498,43	383.618,25	399.213,52	410.663,50	421.713,16	427.281,66	426.801,61	418.630,96	410.434,27	

Project Presentation Financial Projections:16 Years

		Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10	Y11	Y12	Y13	Y14	Y15	Y16	
1.1	INCOME SALES	1.042.732	1.425.235	1.496.904	1.575.937	1.612.355	1.637.954	1.634.624	1.606.243	1.598.409	1.663.390	1.711.098	1.757.138	1.780.340	1.778.340	1.744.296	1.710.143	
1.2	ANNUAL PRODUCTION COST	501.237,92	645.762,42	656.956,66	648.847,02	652.086,60	644.053,93	641.062,59	641.961,82	639.179,10	631.344,80	633.371,45	636.021,76	644.055,61	653.844,88	662.108,13	664.983,18	
1.3	EBITA	48,07%	45,31%	43,89%	41,17%	40,44%	39,32%	39,22%	39,97%	39,99%	37,96%	37,02%	36,20%	36,18%	36,77%	37,96%	38,88%	
1.4	DEPRECIATION 4%	25.013,86	25.013,86	25.013,86	25.013,86	25.013,86	25.013,86	25.013,86	25.013,86	25.013,86	25.013,86	25.013,86	25.013,86	25.013,86	25.013,86	25.013,86	25.013,86	
1.5	DEPRECIATION 10%	100.538,17	100.538,17	100.538,17	100.538,17	100.538,17	100.538,17	100.538,17	100.538,17	100.538,17	100.538,17							
1.6	NET INCOME	415.942	653.920	714.395	801.538	834.717	868.348	868.010	838.730	833.678	906.493	1.052.713	1.096.103	1.111.271	1.099.481	1.057.174	1.020.146	
1.7	TAX 13%	54.072,52	85.009,64	92.871,33	104.199,94	108.513,18	112.885,24	112.841,25	109.034,85	108.378,17	117.844,07	136.852,64	142.493,33	144.465,20	142.932,57	137.432,58	132.618,95	
1.8	INVESTMENT CAPITAL RETURN TO INVESTORS PER YEAR			342.543,21	342.543,21	342.543,21	342.543,21	342.543,21	342.543,21	342.543,21	342.543,21							2.740.346
1.9	WORKING CAPITAL FOR FOLLOWING YEAR	645.762,42	656.956,66	648.847,02	652.086,60	644.053,93	641.062,59	641.961,82	639.179,10	631.344,80	633.371,45	636.021,76	644.055,61	653.844,88	662.108,13	664.983,18	664.983,18	10.360.623
1.10	PROFIT AFTER TAXES and capital for next year	342.897	683.268	412.642	477.107	517.245	541.463	537.278	515.486	516.143	569.631	938.224	970.589	982.030	973.299	941.880	912.541	10.831.724
1.11	2% BONUS TO SUPERVISOR IF EBITA OVER 30%	6.857,95	13.665,37	8.252,84	9.542,15	10.344,90	10.829,26	10.745,56	10.309,73	10.322,86	11.392,62	18.764,47	19.411,78	19.640,60	19.465,99	18.837,60	18.250,81	216.634
1.12	3% BONUS TO PERSONEL IF EBITA OVER 30%	10.286,92	20.498,05	12.379,26	14.313,22	15.517,35	16.243,89	16.118,34	15.464,59	15.484,30	17.088,93	28.146,71	29.117,68	29.460,90	29.198,98	28.256,40	27.376,22	324.952
1.13	BONUS PER PERSONEL PER YEAR	1.285,87	1.863,46	1.125,39	1.301,20	1.410,67	1.476,72	1.465,30	1.405,87	1.407,66	1.553,54	2.558,79	2.647,06	2.678,26	2.654,45	2.568,76	2.488,75	29.892
1.14	EARNING AFTER TAXES	32,88%	47,94%	27,57%	30,27%	32,08%	33,06%	32,87%	32,09%	32,29%	34,25%	54,83%	55,24%	55,16%	54,73%	54,00%	53,36%	

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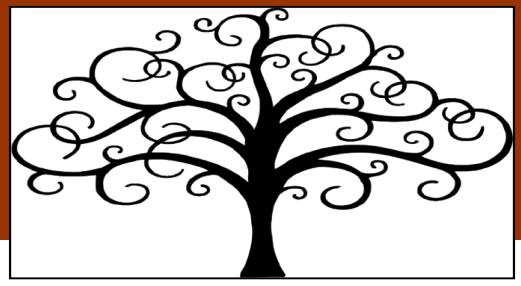

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