Farming Connect Management Exchange

Background

I’m a first generation farmer. I completed an organic dairy apprenticeship in Norway before moving back home to Wales where I have established a direct sales business on tenanted land. I keep a herd of goats and micro herd of Jersey cows. They are raised on a pasture based, rotational, grazing system. Calf and kids are kept at foot and milking is once a day. Milk is processed on farm into a range of small batch products.

For my exchange I was interested in how a dairy farmer can develop a cheese that reflects the region and farm it’s from. My visits have allowed me to learn from people who have made cheeses that reflect their farm culture and create a report that farmers can use to diversify their farm and showcase the quality of their milk.

During my exchange period I talked with the farmers I was visiting but also cheesemongers that specialise in farmstead cheeses.

Itinerary

Lost Valley Dairy

Located outside of Cork. Mike and Darcie operate with 4 milking cows. The cows are a dairy shorthorn, red Holstein mix. The business is relatively new but they are innovative in their approach, specialising in making cheese from a culture developed on the farm. They have created delicious cheese despite the marginal nature of a lot of their land, only 5 acres of land would be described as quality grazing. They were incredibly generous with their time and knowledge.

They currently make two kinds of cheese Carraignamuc which is made 100% from their own milk and Crumbly Cheddar/Caerphilly style tome that’s made with a quarter of their own milk and the rest from a local organic dairy. The cheese is aged on site for 3-5 months.

 Originally selling at a range of farmers markets they now prefer to sell at one market and the majority of their cheese is sold to cheesemongers across Ireland.

Many farmers looking to diversify will find the LVD set up to be accessible. The milking parlour is in an existing building and operates on a simple bucket system. The processing room and aging room are in two storage containers. These were bought complete with electric and hygiene plastic. A ‘plug in and go’ set up costing £12000.

During my visit we toured the facilities and land. Took part in milking, cheesemaking and cheese tasting.

During our conversations it was clear that the factors they feel are most important in developing a farm specific cheese were milk quality (for Mike and Darcie that means microbially healthy raw milk), starter (a starter developed on the farm), and aging conditions. Mike spoke about making a cheese that was suited to their environment being the primary goal when developing their products, an example of this is choosing to make a cheese that works with the high humidity of the area. Mike encourages aspiring cheesemakers to “Focus on making the right cheese for where you are.”

St Tola

St Tola is a family business with a team of 8 people. They farm on 65 acres and are located outside of County Clair. They have a roughly 200 strong herd of mostly Saanens, Toggenburg and British alpine. I was hosted by Petru, the farm manager, Carmen a production manager, Brian a production manager and Grainne who runs farm tours and visits as well as helping with whatever needs doing on the production side.

 During my visit Carmen explained that diversity is key to success as a small dairy. St Tola sell a mix of raw and pasteurised cheeses. Their main product is the goats cheese log that they sell fresh, matured and ash rolled as well as cream cheese, Greek style, Greek style in oil, Crottin and a hard cheese when there is surplus milk. Additionally there are some seasonal flavours like cranberry for Christmas ect. The range of products gives St Tola flexibility to make what is appropriate for the market but also the season, this reduces waste that would otherwise occur if the concentrated their efforts on the log alone.

 This abundance is sold mostly to stockists in Ireland with some being exported to the UK and during the recent pandemic they adapted by opening an online shop.

Recent work has been done to expand the production space at St Tola and the milking parlour has seen upgrades which made milking so many goats a clean, efficient process.

During my visit I milked, toured the facilities, watched the barn cleaning procedure, harvested some forage for the goats, observed some cheese making and tried my hand at buttering, a shaping process that the goat logs go through before maturing and packaging the Greek Style cheese.

My visit and conversations with the team at St Tola illustrated that what makes their cheese reflect the farm is quality. For Petru it was the quality of the animals, ensuring they are healthy and that each goat is selected for the best genetics. That their diet is natural and predominantly made of forage from the farm. A forage based diet was noted as producing the best tasting products. Inside the production rooms it was about the quality of the end product. The hygiene standards it’s “60% cleaning” they only half joked. The attention to detail that goes into making the cheese, creating the right aging environment and it’s packaging.

A guide for farmers looking to create a regionally specific cheese

Cheese is complex. There are many microbial and environmental factors that influence the taste of a cheese. Terpens, acids, aldehydes (transferred from pasture into milk and created during the maturing process) and added microbes, mainly lactic acid bacteria, yeasts and moulds, that are part of the processing and maturing process. Rather than seeing this as daunting a farmer looking to create a cheese has plenty of options for creating a product that will showcase their milk.

General considerations when deciding what type of cheese to produce.

1. What animal is suited to their land/ do they enjoy working with. If already milking and looking to process your own milk is your herd suitable for the kind of cheese you are thinking about, examine milk solids and herd health.
2. Raw or pasteurised. Cheeses made with raw milk are well received by cheesemongers and are in short supply in Wales. But when considering making a raw milk cheese the farmer should consider the receptiveness of their local EHO’s and their willingness to add additional time onto milking to achieve the hygiene standards required for raw milk. Herd health can also help a farmer make this decision, farms struggling with TB in high TB areas or herds with Johns should not opt for a raw milk cheese.
3. Size of their operation- farms with larger volumes of milk will have an easier time making hard cheeses. They will have the volume to make larger batches and they have longer shelf lives for the larger volumes made. It may be more economically beneficial for smaller farms to make younger, softer cheeses as you get a higher weight of cheese for amount of milk used than you do with a hard cheese.
4. Biodiversity of the land- access to quality grazing. Both farms visited feed lower amounts of grain than the average dairy farm and state the sensory quality of cheese is improved by a diverse animal diet. Willingness to improve the range of species in a dairy animals diet will help create a superior product.
5. Area specific opportunities- Farmers can look into the history of cheesemaking in their area, although predominantly known for Caerphilly there are records of pre and post-industrial farmhouse cheeses that could be revived. If farmers are looking to site their cheese in the local area then look for local ingredients that can be included in the cheese making process or businesses that you can collaborate with. A farm near the sea might wish to include seaweed and one surrounded by forestry might like to create a spruce bark wrapped cheese.

Factors that inform the cheeses identity on the farm side.

Quality Milk

Cheese reflects the quality of the milk that makes it. Healthy animals, kept in clean conditions and miked to good hygiene standards are all factors that are controllable by the farmer. Using quality milk will go a long way to creating good tasting cheese.

Pastured Diet

In the case of cows pastured dairy has an increased yellow colour that correlates with an increase in B carotene. Predominantly grazed diets increase omega 3 fatty acids which is implicated in texture changes in the milk. These are all favourable qualities in a cheese.

If interested in showcasing milk that comes from a diverse pasture based diet, it should be noted that in a study detailing trained tasters (cheesemongers and competition judges) sensory perception of pastured dairy it was noted that increasing additional grain supplementation, pasteurisation and lengthy cheese ripening times (3months vs 6 months) have been linked to reducing ability to taste the “Pastured characteristics” of the dairy.

B- carotene concentrations vary between early and late season. Given that the B carotene is what is linked to factors that increase perception of “pastured” in the end product. It is logical that a spring cheese will best showcase a farmers pasture.

The flavour profile of milk changes through the season with early spring and summer milk having a grassy flavour and winter hay or grain fed milk having a sweeter flavour. Firmness of curd is said to be better from pastured milk. Alpine style cheeses where the process is more rigorous on the curds are said to work better with pastured milk.

Diversity of Pasture

There are plenty of benefits to raising dairy animals on a pastured diet but information learned during my exchange suggests it isn’t as simple as upping the amount of time the animals spend at grass. The diversity of their diet also impacts flavour.

There are other Volatile compounds that have been linked to milk flavour. These can be absorbed by the animal in the digestive tract before diffusing into the blood and being transferred to the mammary glands or absorbed via the pulmonary route, where the volatiles are inhaled into the lungs first. The VC terpenes and aldehydes are said to play a role in the flavour of some milks and cheeses. Produce made from animals grazing at pasture is said to have a greater diversity of terpenes and aldehydes than milk from a confined system. The greater the diversity of pasture and forage the higher the levels of aldehydes and greater the diversity of the terpenes. The absorption of terpenes in the milk appears to be rapid with taste profiles showcasing changes within 9 hours and disappearing after within a few days of the animals diet changing. This means the flavour profile of pastured dairy will fluctuate with the seasons and forage available in the pasture. Mineral rich herbal lays, meadow systems and tree brows have all been linked to increases in taste positive VCs.

Factors that inform the cheese on the processing side

There are many ways to influence cheese during processing. The way the cheese is made and handled, the culture added and controlling the ecological conditions required for aging.

Type of cheese you want to make.

Mike from the Lost Valley Dairy says “Regional cheeses came from the necessity to preserve and make food. The primary goal wasn’t to make a delicious cheese, it was to make a cheese that worked with the place and a process that worked for the farmer.”

The size of the farm and the time the farmer has to devote to cheesemaking all influence the cheese that will suit the farm. Softer cheeses age quicker due to their higher moisture content, which encourages bacterial and fungal development and are processed in a way that’s easier to fit in around other tasks on the farm.

Culture used

Making your own starter culture is a way of creating a cheese that is distinct in part because it is made from bacterial cultures unique to the bacteriological profile of your farm. In short it has the imprint of all aspects of the farm from the field to the milk and the environment it is cultured in. An on farm starter culture can be developed by Clabbering milk. Clabber is raw milk that is left to ferment for 24 to 48 hours, this is the on farm culture preferred by Lost Valley Dairy. A traditional on farm culture used by cheesemakers and at least one farm in England is a whey starter. Whey starters are a good substitute for a cheese that requires thermophilic cultures. A kefir starter can also be used. Kefir is a type of fermented yogurt made from ‘kefir grains’, the grains are a colony of fungal culture, proteins and lipids. After straining the kefir the liquid part can be used as a cheese culture. I have had particular success using kefir in place of mesophilic culture to make white mould cheeses.

For farmers interested in making their own culture, encouraging a bacterial ripening process during maturation would best showcase it but it will add depth to any cheese.

Ireland has a thriving raw milk cheese culture and the LVD’s environmental health operative’s were receptive to them using their own culture but that is not currently the case in Ceredigion. For some aspiring cheesemakers making and using an on farm starter culture might not be possible or desirable. If that is the case you can use freeze dried cultures. The benefit of these is the results are more consistent and they are easy for first time and established cheesemakers to use.

The aging environment

The aging environment can be controlled via temperature, humidity and air flow. Temperature wise a higher temperature development will encourage the cheese to ripen faster and lower temperatures slow It down. Most cheeses will be aged at around 10’C or less but it depends on the kind of cheese you are interested in making. White mould cheeses prefer a warmer environment but blues prefer a colder. Making a white mould cheese and maturing it at a cooler temperature can make it susceptible to blue fungal growth.

Most cheeses want about 90% humidity, these conditions encourage fungal ripening. The exception to this is a brined cheese like feta and waxed cheeses like gouda because their rind is protected from the air so they won’t lose moisture.

Plenty of contemporary cheesemakers age their cheese in vacuum sealed plastic or wax but air flow is essential for a cheese where you want to develop a natural rind. The cheese needs to breath for the fungal and bacterial cultures on its surface to grow. The process of turning maturing cheeses is to ensure air gets to all sides. The exception to this is the triangular shaped cheeses, these are left unturned so that the exposed side ages fungaly and the bottom of the cheese will not, instead it will be encouraged to ripen bacterially.

Encouraging fungus or bacteria

Cheeses can be matured in an environment or style that creates a complex relationship between the (usually) externally ripening fungus, think bloomy white mould cheeses, the internally ripened bacteria and yeasts, think cheder. There will be elements of both in all cheese but it is possible to make decisions that favour a more bacterial or more fungal process.

The shape of the cheese can influence this. Large cheeses are less influenced by the fungal growth on the surface and age from the interior. Cheese shaped and aged in thinner, flatter disk shape like camembert age primarily from the surface. You can encourage fungal growth on a larger cheese by piercing it, this is the case for many blue veined cheeses.

Many types of cheese exist where fungal growth is limited. The process of waxing, brining, bandaging or smearing all restrict air to the surface of the cheese and halt or slow fungal growth.

Handling of the cheese during aging can also keep fungal development at bay. Most commonly cheese is washed with salty whey. This treatment produces an environment that favours yeasts and bacterias and typically makes a “stinky” orange type of cheese. Washing is an element of the aging process where farmers can add local flavour to their cheese. Washing cheese in local beer or a honey mix has proved to be successful at creating unique and flavourful cheeses.

Next Steps

* Update Dyfi Dairy social media with pictures and short videos of the management exchange
* Experiment with making a range of cheeses and choose one which I feel best reflects the farm.
* Work with the Food Hub to develop the process once a cheese has been chosen
* Organise a tasting on farm once developed cheese is ready
* Share knowledge or processes with other farmers looking to develop their own.