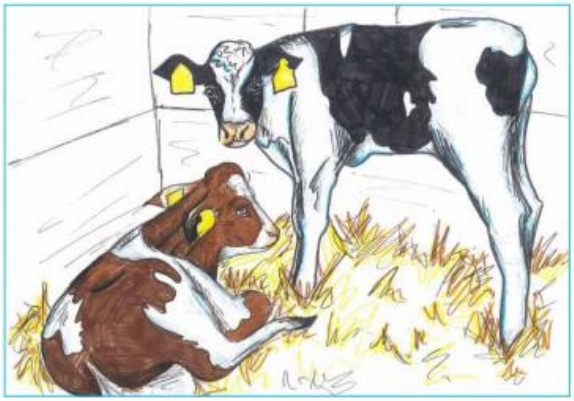
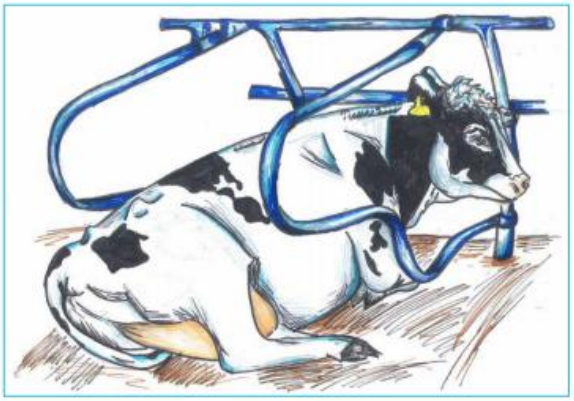
Blueprint for calf rearing

Areas for improvement in the calf-rearing process



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Implementation of the Blueprint for calf rearing

This Blueprint was developed in order to provide cattle farmers with insight into potential areas for improvement in the calf-rearing process. This process has been sub-divided into four phases:
• Phase 1: The birth of the calf;
• Phase 2: Single-calf housing;
• Phase 3: Group housing on straw substrate and
• Phase 4: Group housing in cubicles and introduction.
It is possible to implement the Blueprint in its entirety, or per phase, or one component of a calf's phase of life at a time. The Blueprint may be applied in two ways:

1. **Voluntary score model**

The success factors from the Blueprint present at the farm are assigned a score by the cattle farmer themselves or by an external party (adviser/veterinarian/another farmer). There are a number of open questions; these concern matters for which it is not possible to assign a score. For each success factor (line in the Blueprint) a score of 0, 3 or 5 will be assigned.* A score of 5 indicates an optimum situation. These scores can then be used to determine the farm's strengths and areas for attention, first line by line and then for entire components. While the list of scores itself can serve as the basis for discussion, the adviser can also choose to create a schematic representation of the scores (for instance, using a spider chart like the one in fig. 1). Not all (guide)lines are equally crucial. In the resulting discussion, it is then possible to set priorities and formulate actions for the specific farm in question. In this way, the Blueprint can be a tool for gaining insight into the calf-rearing process at the dairy farm and can, potentially in combination with an adviser, serve as a means for drafting an improvement plan.

2. **Checklist**

The Blueprint can be used as a checklist by an external party or by the cattle farmer themselves. A gut check for each part in the calf-rearing process is to ask yourself: *Am I doing this in the best possible way for the calf and in such a way that I am satisfied with my actions?* *It is not possible to directly compare the results (scores) of individual farms. The Blueprint is not suitable for use as an objective measuring instrument and is intended solely as a guidance tool. This is because, in the Blueprint, a score of 3 on an absolutely crucial point carries equal weight as a 3 for an aspect that is ‘merely’ important.

Phase 1: The birth of the calf

1.1 Biosecurity

Factors for success		Score (0,3,5)		
1. Hygiene of calving pen	Every calf is born into a thick layer of clean, dry straw			
	The calving pen is used only for cows delivering calves			
	The feed is not contaminated by manure			
	The drinking water is fresh and appetising			
2. Livestock diseases	BVD-free:			
	ParaTBC Status A:			
	IBR-free :			
	No suspicion of Salmonella:			
3. Relocating a calf	Clean calf barrow			
	Calf barrow is filled with clean straw			
	Cuddle-Box			
4. Materials	Clothing worn around cows kept separate from clothing worn around calves			
	Materials used around cows kept separate from materials used around calves			
5. Prevention	Vaccination			
	The farm is a closed population			
	Newborn calves to be sold on kept separate from future heifers			

1.2 Needs of cows and heifers

Factors for success		Score (0,3,5)		
1. Preparing the cow	Choosing a bull: taking easy births into account			
	Breeding farm: taking easy calving into account			
	Cows not too fat: BCS < 4.0			
	Healthy, pain-free hooves			
	Has eaten calibrated rations for the past four weeks			
	Mineral levels in keeping with the standard			
	Clean cow (CowSignals Hygiene score of 1 on all points)			
	Twin gestation: confirmed or suspected			
	Vaccinated (antigens for calf scours)			
	Has not been milked in the preceding 42 days			
	In case of continued milking, do not milk for last 7 days			
	Cows in calf have sufficient opportunity to move about			
2. Preparation of the heifer	Option 1: 14 days before expecting calving date			
	Option 2: If heifer is unfamiliar with dairy barn, 6 weeks prior			
	Is in calf by bull with high stud value in connection with easy births			
	Has been impregnated using X-sorted semen			

1.3 Calving pen

Factors for success		Score (0,3,5)		
1. Cow comfort	Good ventilation			
	Soft, thick, dry litter bed			
	Sufficient room to move about			
	No changes to rations in the last two weeks			
	No sharp parts anywhere			
	Fresh, clean drinking water			
	Visual and physical contact with other dry cows			
	Round-the-clock access to feed and places to lay down			
	It is possible for all cows to reach feed at the same time			
	Relocation of the herd 1x per week or less			
	Sufficient light present, at least 250 lux			
2. Labour efficiency	Easily accessible			
	Gate			
	Effective catch fence			
	Easy-to-clean mini-milker			
	Materials are within arm's reach			
	Water and cleaning products are within arm's reach			
	No dog is present			
	Power outlet or extension cord is on hand			

1.4 Birthing process

Factors for success		Score (0,3,5)		
1. Spontaneous birth	First choice: Cow gives birth in the herd and is placed in the bedded pen two weeks prior to calving date			
	Second choice: Cow maintains physical contact with the herd and is placed in the bedded pen 1-3 days before calving date			
	Second choice: Just-in-time calving: cow is placed in the calving pen only when she about to drop her calf (bladder, hooves). At minimum, the pelvic ligaments must have slackened (feel to check)			
2. Timely and professional obstetrical assistance	First signs of labour are recorded (bladder, hooves)			
	Protocol for providing obstetrical assistance			
	Vink Calf Puller			
	Two or more sets of calving rope (braided)			
	Bucket of lukewarm water and soap-free disinfectant			
	Halter is present			
	Cattle farmer is able to ease open the birth canal and lay the cow down			
	Cattle farmer has a protocol in place for aftercare following births			

1.5 Giving colostrum and aftercare

Factors for success		Score (0,3,5)		
1. General	Materials have been cleaned and disinfected			
	Colostrum is expressed as cleanly as possible			
	Cow is milked until completely dry			
	Calf receives first portion of colostrum (at least 2 litres) within one hour of birth			
2. Fresh colostrum from own mother	Cow is milked within one hour			
	Colostrum is kept as close to proper temperature as possible			
	Leftover colostrum is cooled down immediately with maximum efforts to prevent the growth of bacteria			
3. Frozen colostrum	Convenient system for warming colostrum			
	Check quality before freezing			
	Pasteurisation before freezing			
4. Aftercare calf	Disinfect umbilicus with tincture of iodine or antibiotic spray			
	Insert ear tags			
	Register the birth			
	Protocol for special care for weak calf			
	Transport to single calf hutch			

There are two possible scenarios for providing colostrum. Number 1 applies to both scenarios, number 2 is fresh colostrum and scenario number 3 entails frozen colostrum.

1.6 Single-calf housing

Factors for success		Score (0,3,5)		
1. Single-calf housing	Always ready and waiting before the calf is born			
	Clean, disinfected and has been empty for at least 1 week prior			
	Thick straw bedding: nest score 0			
	A system for marking sick and weak calves			
	If the temperature in single-calf housing is lower than 10˚C, cold-weather protocol is applied			
	If the temperature in single-calf housing exceeds 28˚C, hot-weather protocol is applied			
	The minimum number of single-cow cubicles needed is equal to 10% of the number of dairy cows.			
	Effective colostrum absorption is monitored via blood tests (random sampling 2x year)			

Phase 2: Single-calf housing

2.1 Biosecurity

Factors for success		Score (0,3,5):		
1. Optimum hygiene of calving pen	Every calf is born into a thick layer of clean, dry straw			
	The calving pen is not used to house sick cows			
	The cow has access to fresh, nutritious feed with			
	The cow has access to plentiful clean drinking water that is suitable for livestock at all times.			
2. Animal diseases	BVD-free:			
	ParaTBC Status A:			
	IBR-free :			
	No suspicion of Salmonella:			
3. Hygienic relocation of calf	Clean calf barrow			
	Calf barrow is filled with clean straw			
	Cuddle-Box			
4. Prevention	Vaccination against calf scours			
	The farm is a closed population			
5. No transmission of pathogens from older to younger livestock	Separate overalls and boots are worn when tending young calves			
	Separate materials are used when tending young calves			
	Sick calves are cared for in a separate area, and last			
	Calves are fed from young to old			
	Straw is laid down from young to old			
	Younger calves are never allowed to eat feed to which older calves have had access			
	Younger calves are protected from exposure to older calves' manure			
	Calves are protected from exposure to adult cows' manure			
6. Separation between clean and dirty (black/white)	Visitors must wear clothing provided by the farm			
	If visitors touch the calves, they must do so using clean materials and clean hands/gloves			
	Livestock transporter/trader must not be allowed to enter the white (clean) zone of the calves			

2.2 Providing colostrum

2.2.1 a. Factors for success first meal of colostrum

Factors for success		Score (0,3,5):		
1. Provision of first meal of colostrum	1A: Every new calf drinks at least 2 litres of colostrum within an hour of its birth			
	1B: Same, but within 2 hours			
	The colostrum is at body temperature (37-40˚C)			
	A protocol for weak calves exists at the farm			
2. Colostrum from mother	Every cow is milked until dry within one hour of delivering her calf			
	Materials used have always been cleaned and disinfected			
	Milking is done in hygienic fashion so that the colostrum is clean			
	Colostrum is tested and an effective protocol is in place for cases of insufficient-quality colostrum			
3. Colostrum from stock	The colostrum is subjected to reliable testing and is not used if quality proves insufficient			
	An automated system is used to conveniently warm the colostrum and feed it to calves			
4. Other actions	The umbilicus is disinfected using an appropriate product			
	A protocol exists for drying off the calf and keeping it warm in periods of cold weather			
5. Ease and convenience	The carer is able to conveniently, safely and easily milk each cow fully within 1 hour of delivery and give the colostrum to the calf without delay			

2.2.2 b. Factors for success giving colostrum

Factors for success		Score (0,3,5):		
1. Top-quality colostrum	First colostrum: the cow is milked until completely dry			
	All colostrum is immediately cooled in single-meal portions (2L) with each portion labelled by the number of the milking and calf number			
	An additive such as potassium sorbate or acidifier is used to safeguard the microbial quality			
2. Colostrum is given for 3 days	1. Every calf drinks at least 6 litres of colostrum (15% of its body weight) in the first 24 hours after birth			
	2a. Every calf drinks colostrum from its own mother for the first 3 days, the first-milked colostrum first, then the second 'batch' produced, and so on			
	2b. Every calf drinks pasteurised colostrum from the supply on hand for the first 3 days			
3. Management	Everyone applies the same standard ways of doing things			
	These working methods have been set out in writing (protocols)			
	Check antibodies in calves' blood at least twice a year			
	Review and evaluate hygiene protocols twice a year			
4. Ease and convenience	It is easy and straightforward to collect colostrum in a clean fashion, cool it immediately and feed it to the right calf later on			

2.3 Single-calf housing

Factors for success		Score (0,3,5):		
1. Comfort-able for the calf	The calf wears a calf blanket for the first 3 days			
	A cold-weather protocol is in place (i.e. what to do at which temperature)			
	A warm-weather protocol is in place (if calves are housed in full sun)			
	There is a thick layer of dry straw on the floor			
	Air circulation is present everywhere in the hutch at all times			
	There are never pockets of cold air or draughts in the hutch			
	It is easy for calves to drink their milk			
	It is easy for calves to drink their water			
	It is easy for calves to eat their solid feed			
2. Comfort-able for the livestock carers	It is easy to add fresh straw			
	Providing milk: inspection, cleaning and filling are easy and convenient			
	Solid feed: feeding troughs are easy to inspect, empty, clean and fill			
	Water troughs are easy to inspect, empty, clean and fill			
	Sufficient artificial light is present to allow for inspection and treatment after sunset			
	The calf is easy to inspect, capture and treat			
3. Easy to clean	Surfaces are smooth and there are very few places where filth may be trapped			
	Can easily be transported to a separate cleaning area			
	The location itself can be cleaned easily and effectively			
	Each hutch can remain empty for at least 1 week before being reused for a new animal			
4. Hygiene	It is possible to prevent all contact between sick calves and other calves			
	Hutch and straw bedding are sheltered from rain and moisture from other hutches			
	Single-calf housing units are cleaned and disinfected immediately once the calf is moved out (the same day)			

2.4 Daily tasks and organisation

Factors for success		Score (0,3,5):		
1. Feeding milk	1A: Calves are given unlimited milk (acidified, under expert supervision)			
	1B: Calves are given 2 litres of milk 3x a day			
	1C: Calves are given 2.5 litres of milk 2x a day for the first week, followed by 3 litres (or more) 2x a day			
	2. Temperature of fresh (or powdered) milk is checked at each feeding and is between 38 and 40˚C			
	3a. Drinking materials are thoroughly cleaned and disinfected with soap after every feeding			
	3b. Drinking materials are thoroughly cleaned and disinfected with soap once a day			
	4. Each calf has its own dedicated drinking materials; these are numbered for identification			
2. Water and solid feed	Starting no later than day 3, the calf also has access to clean, fresh water that is changed daily			
	Starting no later than day 3, the calf also has continuous access to clean, fresh solid feed that is changed daily			
	Solid feed is composed of concentrated feed and roughage as recommended by an expert			
3. Easy to clean	Protocol for providing milk is present in feed preparation kitchen			
	Milk is gradually warmed to proper temperature			
	It is easy to prepare the powdered milk substitute; the final product is completely dissolved and homogeneous			
	The working method ensures that every meal has the same nutritional composition			
	The mixing ratio of powdered milk substitute is calibrated each month (the measuring cup/scoop is weighed and the automatic mixer is calibrated)			
	Colostrum can easily be refrigerated for storage			
	Materials can easily be washed using soap			
	Materials can effectively be allowed to drip dry			
4. Illness and prevention	The logical order of working with animals is from young to old			
	A protocol exists for the care and treatment of sick calves and keeping them separate/protecting the other calves			
5. Housing in pairs	The two calves are no more than 3 days apart in age			
	The pair have enough room for two calves to lie down at the same time			
	The calves can drink milk and eat solid feed at the same time (i.e. access is sufficient for both)			

2.5 Weekly tasks and organisation

Factors for success		Score (0,3,5):		
1. Calf day	1. A fixed day of the week has been set for relocating calves, cleaning hutches and carrying out weekly tasks and maintenance			
	2. A work list is present; it includes all tasks and instructions for the work			
	3. Calves that are leaving the farm are placed in a separate area to await transport so that the transporter can load them hygienically			
	4. Calves that are being transferred on are weighed and measured			
	5a. Cleaning takes place in an area well-removed from where the calves are kept			
	5b. If cleaning must take place in the same area, low-pressure cleaning only			
2. Labour efficiency	Walking routes are logical and short			
	Provision of information is clear, minimal and sound (small likelihood of miscommunication) with regard to marking sick calves, recording treatments, whiteboard, etc.			
	Materials are easy to work with: feeding, relocating, cleaning			
	The work is simple, logical, ergonomically comfortable and safe			
3. Staff	There are clear work instructions in place for staff (protocols, timelines)			
	Staff are familiar with the targets, so they know what is expected of them; they have received proper instruction and training			
	Staff are aware of results			
	Staff receive praise for a job well done and assistance in order to realise improvement			
4. Management, working according to plan and evaluations	Cattle farmer has set targets and evaluates at least once per year			
	Cattle farmer has contracted a calf adviser to provide supervision and advice			
	All animal carers record all cases of illness, treatments administered and losses			
	Ask the calf carers to describe themselves according to p. 9 of 'Calf Signals' (*Jongveesignalen*). What score do they give themselves (scale of 0 to 10)?			
5. Results	Stillbirth and perinatal mortality < 6.0%			
	Mortality before day 90: < 5%			
	Treatments: ≤ 10%: (or: cases of illness: ≤ 10%)			

Phase 3: Group housing with straw substrate

3.1 Biosecurity

Factors for success		Score (0,3,5):		
1. No transmission of pathogens from older to younger livestock	Separate overalls and boots are worn when tending young calves			
	Separate materials are used when tending young calves			
	Calves are fed from young to old			
	Straw is laid down from young to old			
	Younger calves are never allowed to eat feed to which older calves have had access			
	Younger calves are protected from exposure to older calves' manure			
	Calves are protected from exposure to adult cows' manure			
	Work involving a group with a sick calf is carried out last			
	Group hutches are emptied completely and then cleaned and disinfected			
	Hutches are filled and emptied according to the all-in, all-out principle			
2. Strict separation	Visitors must wear clothing provided by the farm			
	If visitors touch the calves, they must do so using clean materials and clean hands/gloves			
	Livestock transporter/trader must not be allowed to enter the white (clean) zone of the calves			
3. No diseases	There are clear work instructions in place for staff (protocols, timelines)			
	Staff are familiar with the targets, so they know what is expected of them			
	Staff are aware of results			
	Staff receive praise for a job well done and assistance in order to realise improvement			
4. Prevention	BVD-free:			
	ParaTBC Status A:			
	IBR-free :			
	No suspicion of Salmonella:			
5. Minimum of stress	No more than 1 stress factor per week			
	Disbudding is done by vet, with painkillers, as young as possible and only on healthy calves			
6. Is aware of current situation, works according to a plan, implements improvements	Farmer checks colostrum absorption ≥2x per year via blood tests Carer records all treatments administered			
	Carer records all cases of illness			
	Le soigneur enregistre tous les cas de maladie			
	Carer records whether each sick animal has recovered following treatment			
	Farmer periodically evaluates overall health statistics with veterinarian for the purpose of improvement			
	Once per year, farmer reviews all biosafety-related measures taken in the work with a veterinarian			

3.2 The first days in the group

Factors for success		Score (0,3,5):		
1. The calf	The calf is at least 10 days old			
	The calf is at least 14 days old			
	The calf has had access to unlimited water in the preceding three days			
	The calf has had access to unlimited solid feed in the preceding three days			
	The calf has been drinking very well in the preceding three days			
	The calf has appeared completely healthy in the preceding three days			
	The umbilicus has dried out precisely as it should			
	The calf is placed in with the group after a feeding			
2. Members in the group	No calf in the group has been ill in the preceding week			
	The calf is placed in with the group after a feeding			
3. Daily rhythm	In the first 3 days, the calf has exactly the same daily rhythm as in single-calf housing (with regard to feeding times in particular)			
	Automatic milk feeder: at each feeding, the calf's milk intake is checked and they are given a teat if needed			
4. Providing milk	The calf is given the same size portion as in single-calf housing			
	The calf is given the same milk formula as in single-calf housing			
5. Water	A water trough is present in the hutch			
	The edge of the trough is positioned lower than the breastbone of a small calf			
	The water trough always contains a layer of fresh, clean water			
6. Solid feed	The calf can very easily reach the solid feed			
	The calf is given solid feed identical to what is given in the single-calf housing			
	The calf is able to eat this solid feed together with other calves			
7. Hutch	The straw bedding is freshly strewn			
8. Ease and convenience	A single carer can easily and safely place a new calf in with the group			
	The carer can also conveniently determine and record the calf's weight			

3.3 Entire period : provision of solid feed and water

Factors for success		Score (0,3,5):		
1. Water	At least 2 water troughs per group			
	At least 1 water trough for every 5 calves			
	Drinking troughs are easy to inspect, empty, clean and fill			
	Tap water is provided			
	The water can easily be reached by all calves in the group			
	The drinking water is supplied from a circulating system; there are no dead-end pipes			
	The drinking water must not be allowed to freeze			
2. Solid feed, feeding	Once a day, all the solid feed is removed and replaced with fresh feed			
	Calves are given both roughage and concentrated feed			
	The ration amount and content is ideally suited for young calves (as established by a nutritional consultant or vet)			
	Calves are not given mown grass, but hay from pastures that have not been fertilised with slurry (manure)			
	Calves have round-the-clock access to all solid feed			
3. Awareness, planning and implementing improvement	Each calf is weighed at least 3 times between birth and 6 months of age			
	The amount of concentrated feed consumed each day is measured			
	The actual growth curve achieved is evaluated every 3 months for the purposes of improving results			

3.4 Housing and climate

Factors for success		Score (0,3,5):		
1. Comfort for the calf	Calves can lie down in a straw-lined hutch until 6 months of age			
	There is a thick layer of dry straw on the floor			
	Nest score of 2 and dry (after 30 seconds of kneeling): Air circulation is present everywhere in the hutch at all times			
	There are never pockets of cold air or draughts in the hutch			
	The size of the group is: - no more than 6 calves: - no more than 8 calves			
	Calves in a group are no more than 3 weeks apart in age			
	A cold-weather protocol is in place (i.e. what to do at which temperature)			
2. Comfort for the carer	Feeding troughs are easy to empty, clean and fill			
	Water troughs are easy to inspect, empty, clean and fill			
	Sufficient artificial light is present to allow for inspection and treatment after sunset			
	The calves are easy to inspect, capture and treat			
3. Hygiene	Cleaning and disinfecting can be done easily			
	Surfaces are smooth and there are very few places where filth may be trapped			
	Each hutch can remain empty for at least 1 week before being reused for a new animal			
	No contact between sick calves and other calves is possible			
	Hutch and straw bedding are sheltered from rain and moisture from other hutches			

3.5 Giving milk

Factors for success		Score (0,3,5):		
1. Milk feedings	Calves are given milk 3 times a day			
	Portions are always the same size and no more than 3.0 litres			
	No milk that contains antibiotics is given			
	Temperature of fresh (or powdered) milk is checked at each feeding and is between 38 and 40˚C			
	Drinking materials are thoroughly cleaned and disinfected after every feeding in accordance with an effective cleaning protocol			
	Drinking materials are thoroughly cleaned and disinfected once per day in accordance with an effective cleaning protocol			
	The sides of all drinking containers are smooth and flat			
2. Automatic calf feeder	Portion size at least 1.5 litres, but no more than 2.5			
	Calf drinks equivalent of at least 1 kg of dry matter (in milk or powdered substitute) per day			
	Teat is replaced with a clean one each day			
	Daily maintenance according to guidelines			
	Milk tubes are switched out for clean ones each week			
	The automatic feeder is inspected and calibrated once a month			
3. Efficient kitchen for feed preparation	Protocol for providing milk is present in feed preparation kitchen			
	Milk is gradually warmed to proper temperature			
	It is easy to prepare the powdered milk substitute; the final product is completely dissolved and homogeneous			
	The working method ensures that every meal has the same nutritional composition			
	Materials can easily be washed using soap			
	Materials can effectively be allowed to drip dry			
4. Weaning	Reduction in amount of milk given begins no earlier than day 35			
	Gradual tapering off lasts at least 14 days			
	Weaned after 8 weeks of age (3 points)			
	Weaned after 10 weeks of age (5 points)			
	Calf eats at least 2.0 kg concentrated feed a day, incl. the day before weaning			
	After weaning, calf remains with group and in hutch for one week more			

3.6 Weekly tasks and organisation

Factors for success		Score (0,3,5):		
1. Calf day	A fixed day of the week has been set for relocating calves, cleaning hutches and carrying out weekly tasks and maintenance			
	A work list is present			
	Calves that are leaving the farm are placed in a separate area to await transport so that the transporter can load them hygienically calves that are being transferred on are weighed and measured			
	All hutches that are newly vacant are cleaned and disinfected the very same day			
	Cleaning takes place in an area well-removed from where the calves are kept			
	- if it must be in the same area, low-pressure cleaning only			
2. Labour efficiency	Walking routes are logical and short			
	Provision of information is clear, minimal and sound (small likelihood of miscommunication) with regard to marking sick calves, recording treatments, whiteboard, etc.			
	Materials are easy to work with: feeding, relocating, cleaning			
	The work is simple, logical, ergonomically comfortable and safe			
3. Staff	There are clear work instructions in place for staff			
	Staff are familiar with the targets, so they know what is expected of them; they have received proper instruction and training			
	Staff are aware of results			
	Staff receive praise for a job well done and assistance in order to realise improvement			
4. Management working according to a plan and evaluations	Cattle farmer has set targets and evaluates at least once per year			
	Cattle farmer has contracted a calf adviser to provide supervision and advice			
	All animal carers record all cases of illness, treatments administered and losses			
	Ask the calf carers to describe themselves according to p. 9 of 'Calf Signals' (*Jongveesignalen*). What score do they give themselves (scale of 0 to 10)?			
5. Results	Stillbirth and perinatal mortality (within first 24 hours) < 6.0%			
	Mortality between day 2 and day 90: < 5%			
	Treatments: ≤ 10%: (or: cases of illness: ≤10%)			

Phase 4: Group housing in cubicles and introduction

4.1 Housing in cubicles

Factors for success		Score (0,3,5):		
1. Beds	Each calf has a cubicle			
	The cubicles: have a soft, dry substrate			
	Offer sufficient room for every calf to manoeuvre and swing head, lie down and stand up			
	Are sufficiently wide: twice the width of the pelvis			
	Bed is of sufficient length: calf fits in the box lying down, with body extended full-length			
	Are dry: free from manure (flank hygiene score: ≤2): are inspected and strewn with fresh bedding daily			
2. Feed	It is possible for every calf in the group to eat at the same time			
	The feed in the feeding trough is not contaminated by manure or mould			
	The ration has been established by a qualified expert adviser			
	The feed is fresh and appetising			
	Roughage being fed was not harvested from pasture fertilised with animal manure			
	i. Up to 1 year			
	ii. Up to 6 months			
	The feed barrier does not get in the calf's way when it is trying to feed			
3. Water	Drinking water is clean; it smells and tastes fresh			
	Well water meets IKB standards (ensured by lab testing)			
	Drinking water has not been contaminated by manure from another group of animals			
	Drinking water is easily accessible for every calf			
	At least 2 drinking stations (troughs) are present in each group			
4. Light	Light conditions of at least 200 lux in all animal housing (at the animals' eye level) during the day			
5. Ventilation	The shed offers sufficient ventilation (no cobwebs, no mould spots on roof or walls)			
	Draughts are rare or non-existent in the calves' housing			
6. Floor	The calves' legs and hooves remain clean at all times (leg hygiene score ≤21)			
	Grate floor: the gaps are ≤18 mm wide			
	The floor offers sufficient traction for a calf that is walking calmly			
7. Space	There are no dead-end aisles			
	Animals are able to pass one another easily			
8. Hygiene	The carer is able to enter the hutches with clean boots and to rinse them with a hose when leaving the hutches			

4.2 Management: growth, comfort, health

Factors for success		Score (0,3,5):		
1. Hoof health	Farmer evaluates the hooves of every heifer in calf using a crush			
	Farmer is aware of whether digital and/or interdigital dermatitis are present among the young stock			
	If so, farmer administers effective treatment as advised by a veterinarian			
2. Growth	Farmer weighs/measures all young stock at least twice per year and uses that data to plot out a growth curve, including target line			
3. Nutrition	Animals of all ages are fed the ration recommended for them by a nutritionist			
	Measures are taken to ensure that animals of all ages receive the correct amounts of minerals, trace elements and vitamins			
	Farmer assigns each animal older than 12 months a BCS (body condition score) each month and adjusts feed to ensure proper growth and BCS			
	The feeding trough is emptied and cleaned at least once every 2 days			
4. Livestock health	Notes all cases of illness and evaluates these findings at least once a year			
	A vaccination schedule has been established with the vet and is carefully implemented to protect against:			
	Respiratory-tract infections in calves			
	BVD			
	IBR			
	Sources of scour			
	Creates a parasite management plan for outdoor grazing season: Actively applies the farm health plan for the purposes of annual strategic decision-making			
5. Staff	There are clear work instructions in place for staff (protocols, timelines)			
	Staff are familiar with the targets, so they know what is expected of them; they have received proper instruction and training			
	Provision of information is clear, minimal and sound (small likelihood of miscommunication) with regard to marking sick animals, recording treatments, animals to keep an eye on, whiteboard, etc.			
	Staff are aware of results			
	Staff receive praise for a job well done and assistance in order to realise improvement			

4.3 Insemination

Factors for success		Score (0,3,5):		
1. Bull selection	A selected stud bull that is suitable for yearlings is used			
	X-sorted (female-producing) semen from the selected stud bull is used			
2. Detection of oestrus	The floor offers sufficient traction; you cannot see or hear any animals slipping when being driven in and out			
	There are no obstacles or protruding objects on which yearlings at heat might injure themselves			
	Animals are inspected twice a day: Heat is recorded so that all fertile cycles are known			
	Tools are used: sensors, tail paint, Kamar heat detector, stratch-off stickers, etc.			
	An effective head stall is present			
	A yearling at heat is inseminated 0 to 12 hours after her condition is observed			
	Inseminator can reach the animal to be inseminated via a step-through or gate			
3. Weight of yearling	The cattle farmer inseminates each yearling based on its individual weight (chest circumference) and/or height at the withers.			
4. Health and tranquility	The yearling is not relocated in the month prior to insemination			
	The yearling is not relocated in the month following insemination			

4.4 Introduction of heifers

Factors for success		Score (0,3,5):		
1. Planning	There is a fixed timeline based on			
	1. How familiar the heifer is with the housing in which the dairy cows are kept;			
	2. New animals are introduced to the herd ≤ once a week;			
	3. An animal is moved to a new group ≤ once every 2 weeks			
2. Housing	The heifer calves are housed:			
	i. in a seperate group			
	ii. with the close-up cows			
	iii. with the dry cows			
	All animals in a given group can feed at the same time (≥80 cm feeding space per animal, or access to pasture for grazing)			
	Space to lie down:			
	iv. ≥1,0 cubicle per animal :			
	v. ≥1.1 cubicle per animal :			
	vi. ≥9,0 m2 bedded pen space per animal			
	First rule of effective treatment: One person should be able to catch one heifer in one minute			
	There are no dead-end aisles			
	Bedded pens: ≤10 animals ≥2 passageways between feed/bedded pen that is ≥3 m wide; one additional passage for every 10 additional animals			
	10% of the animals can drink at the same time; water is clean/fresh/odourless; ≥20 litres per minute, at least 2 water troughs per group			
	An effective system for managing hyperthermia/heat stroke is in place			
3. Nutrition	The ration has been established by a nutritionist and the nutritional values of all feed products are known			
	The animals always have access to appetising feed with the proper nutritional composition			
	The animals are not able to pick and choose their feed to any significant degree			
	The feed consumption of each group is measured (in kg dry matter per day)			
4. Heifer inspection	Every heifer in calf is inspected before introduction using a checklist (			
	This heifer check includes, at minimum, hoof health, BCS, weight, resistance to gastrointestinal and lung worms, and mineral levels			
	The heifer check is carried out in combination with other handling of the heifer such as shaving the udder, attaching a collar, inserting a magnet, and so on			