Change of Land use

Introduction to closed loop high performance Dairy production systems for NZ dairy farms

Introduction of terms

* Land based investment (Cap. gain)
* Share based investment (Fonterra)
* Production based investment (Housed AMS no Land)

* FPU (Feed production unit , land no cows)
* RPU (Replacement stock production unit)
* MPU (Milk production unit, 5-10 Ha no land)

(N)utrient value

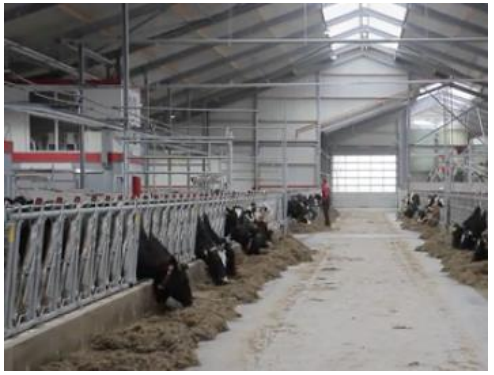
* 6.2 Million dairy cows
* 100Kg N/ cow if captured
* 620.000.000 Kg N
* At $2/ Kg on the ground that is $1.24 billion
* 11000 dairy farms
* Per farm over $100.000 in lost nutrients
* Per farm $100.000 plus spent on chemical fert. Why?
* Organic matter improves top soil and carbon levels

Some Numbers to wake up to

* 35% overall improvement last 20 years (grass, cows, skills)
* 200% land value increase 20 years
* Latent genetic production capability (385KgMs to 750KgMs)
* Housed cows 100% production increase (in 3-5 years)
* Housed cows 100% (N)utrient capture possible

Closed Loop through change of land use and nutrient capture

FPU



MPU

Nutrient Capture

Milk
(sold)

Meat
(sold)

5 freedoms “critical drivers”

* 1. Freedom from hunger or thirst by ready access to fresh water and a diet to maintain full health and vigour
* 2. Freedom from discomfort by providing an appropriate environment including shelter and a comfortable resting area
* 3. Freedom from pain, injury or disease by prevention or rapid diagnosis and treatment
* 4. Freedom to express normal behaviour by providing sufficient space, proper facilities and companionship of the animals own kind
* 5.Freedom from fear and distress by ensuring conditions and treatment which avoid mental stress

Environmental

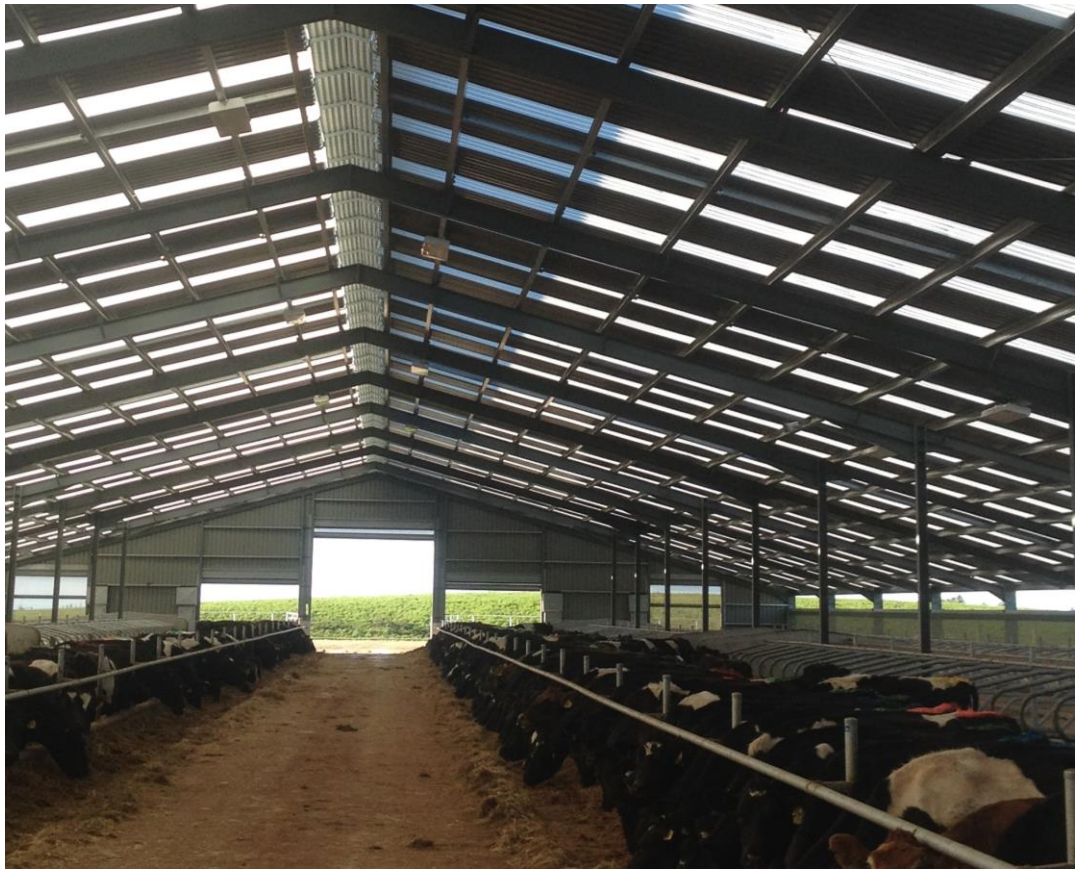
* The experience to date has shown us a halving of N leaching can be achieved.
* With Innovation this can be brought back further
* We still need nutrients to grow feed, protein needs Nitrogen!
* There is a (negative) balance between cows needs (feed) land needs to grow that feed (ha) and nutrients.
* Old farming systems were closed loop but the living derived from them was very poor

NPM™ Naked production models

* Understanding dairy housing farm system versus conventional pasture based farm systems (intensive or efficient)
* Transparency in activity drives efficiency and defines what pays and what does not.

  A transparent farm model defines activity and outcomes
  (Production model, Land/FeedStock Model, Share model (NPM))
* Removing the noise around housed farm system – common misconceptions.ie increased feed cost
* New definations MPU™FPU™RPU™
* Skill and Technology to drive production

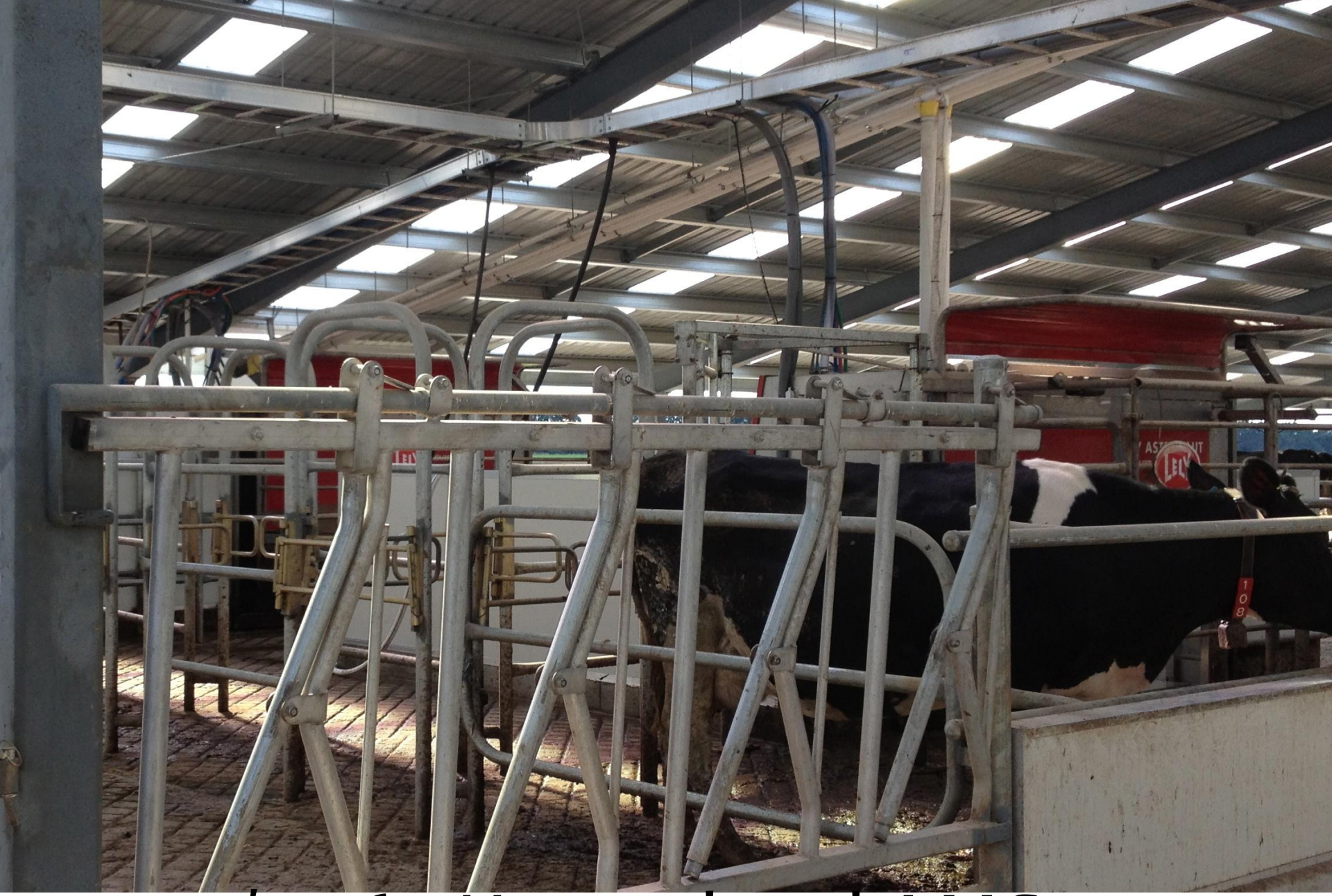
Cowhouse examples in NZ



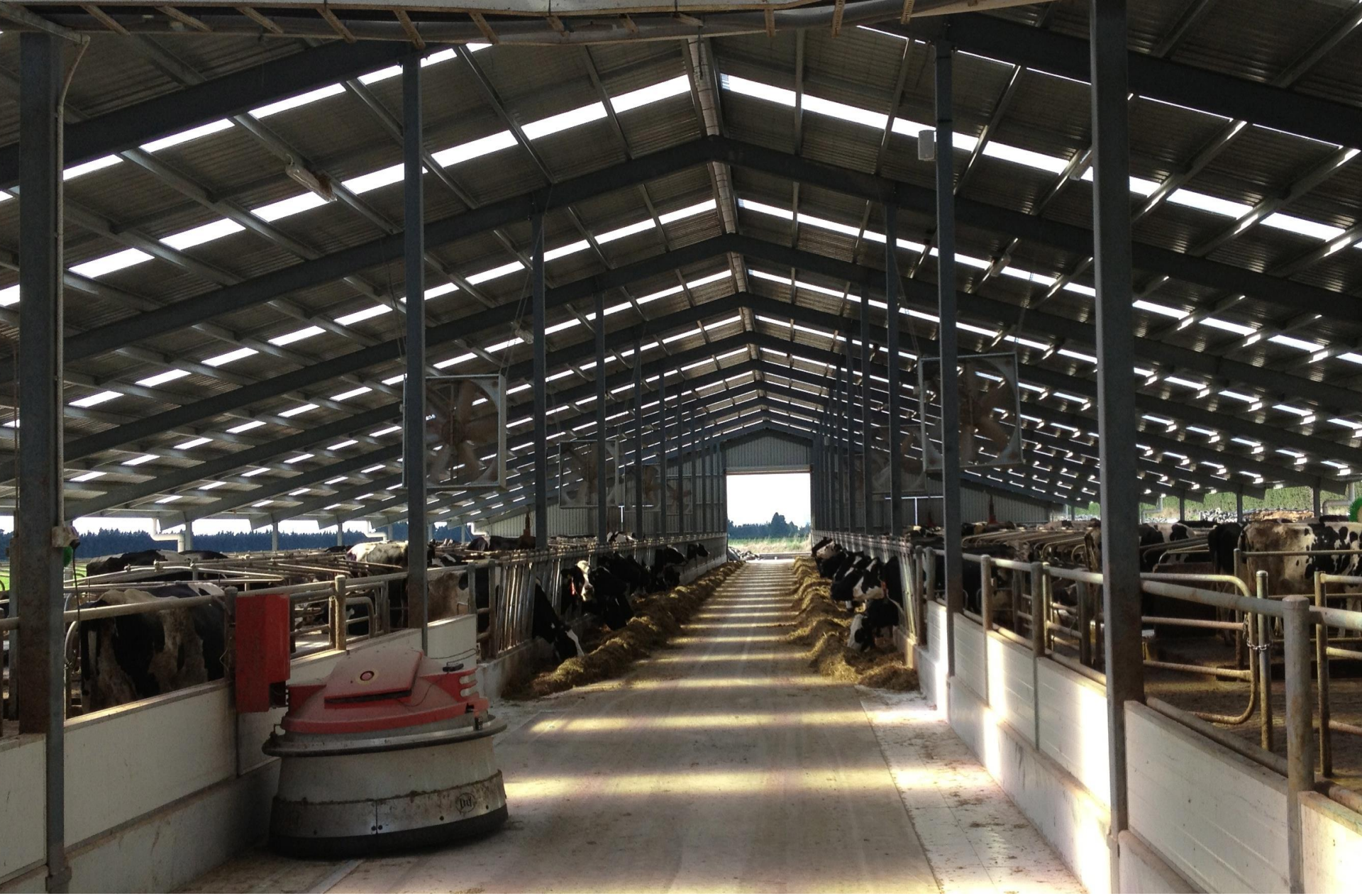
Fully housed

Nutrients recycled

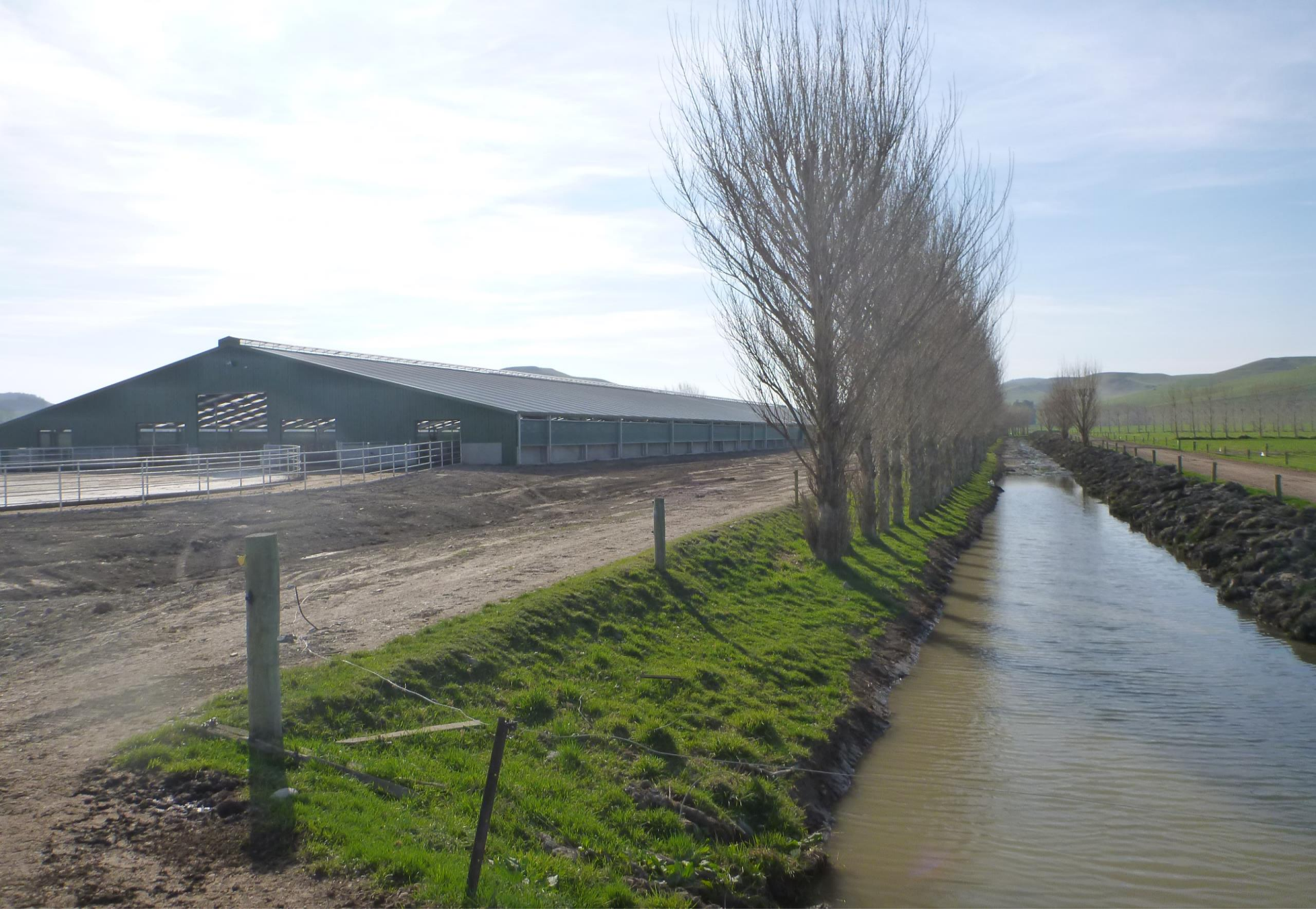
100% recycling of Nutrients through Pivot and Super Duper Separator



24/7 365 Housed and AMS



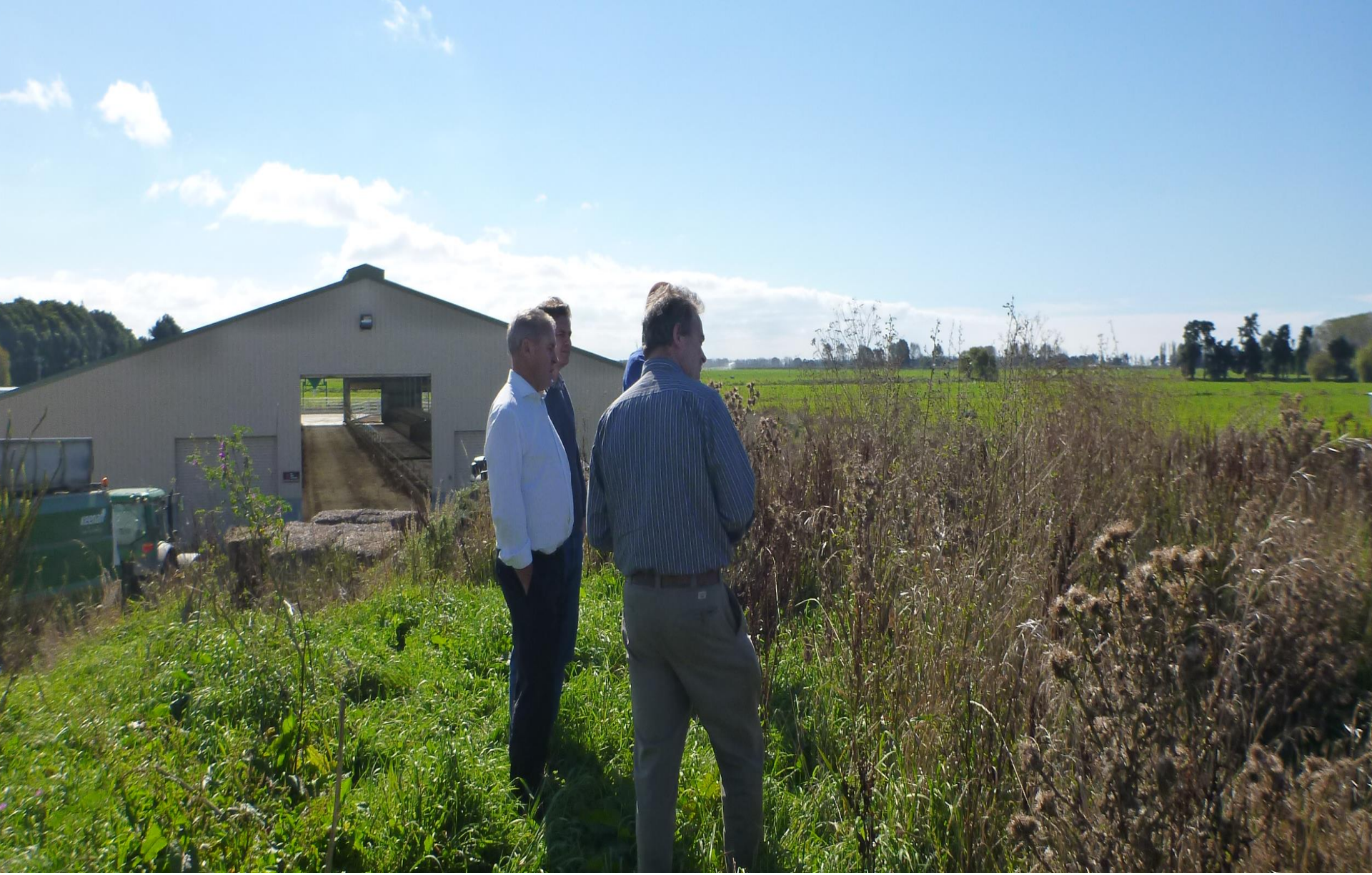
TMR Nutrition matched to production of 850 Kg Ms/cow



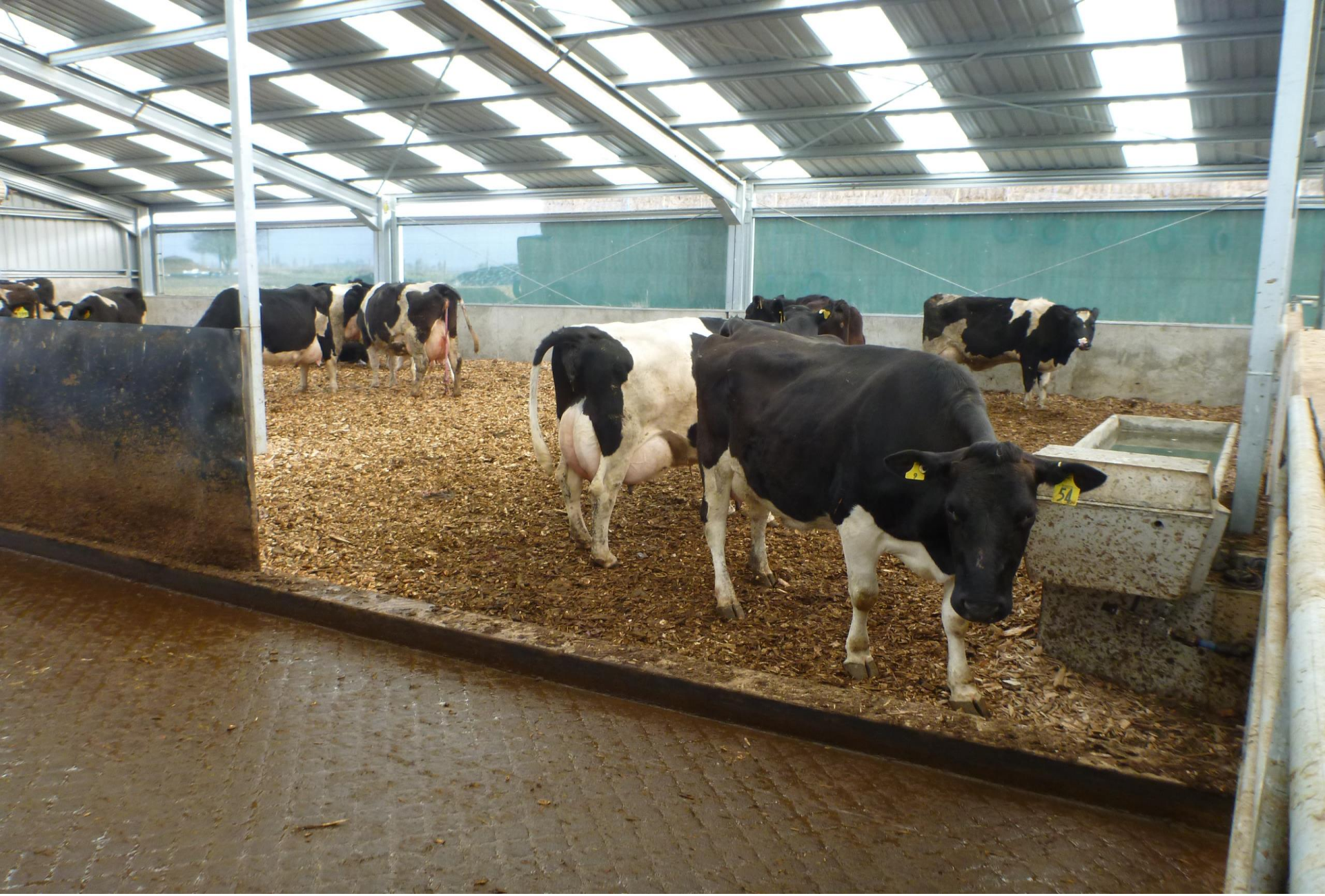
High soil & impact high water table - N leaching below 13 Kg /Ha

WARWICK SMITH/Fairfax NZ

IMPROVING PRODUCTIVITY: Cows are being housed in a new barn at Massey University's No 4 dairy farm. The project co-ordinator is agricultural research officer Christine Christensen.

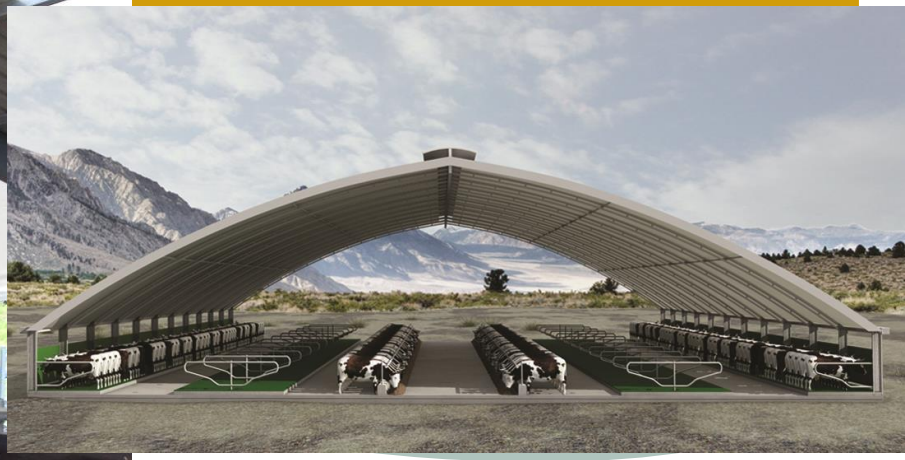


400 Cows 50/50 Hybrid low lying land high water table N leach below 13 Waimate Coastal



Hybrid housed Cows in calving bay eating separate from calving area

All In, cows, calves and calving 4-5 months no easy pasture access



Dairy House Membrane high production unit Taranaki

Currently 600 Kg Ms on Pasture

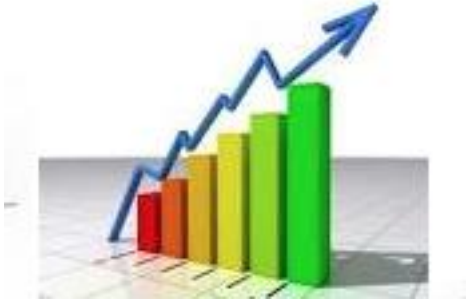
Aiming for 700-750 KgMs and reduced N impact (Waitara)

Cows In June 2015

Summary and Considerations

* Farming efficiently will bring higher production, reduced N leaching and improved profitability
* Separation of business units allows different investment/ownership/operational models and capital flows
* Production function format allows specialisation and thus better outcomes
* Opportunity to create a local production Co-op and vertically intergrate a number or all MPU's
* Skill and expertise will drive other economic benefits/needs

* Even without the N leaching benefits production based models work!



Landward Management

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