DONNER LE GOÛT DU QUÉBEC

# Solutions to Minimise Drought Impacts

Presented by François Biron, Stéfani Daigle and Guy Lapointe

August 6, 2012 - Thurso QC
August 7, 2012 - Luskville QC
August 9, 2012 - Gracefield, QC

Agriculture, Pêcheries et Alimentation Québec

# Situation

- Drought
- Lack of food for cows
- Solutions

*Presentation plan*

# Solutions to minimise drought impacts

*Introduction*

*François Biron*

- **Sowing back up culture for 2012 and 2013**

*Stéfani Daigle*

- **Method to calculate the amount of hay needed**
- **Optimizing the pasture and forage for 2013**

*Guy Lapointe*

- **Nitrate poisoning**
- **Corn silage quality**
- **Early weaning**
- **Economics calculation**
- **Customs feeding**

*Conclusion*

# Alfalfa yellowing: boron or potato-leafhopper

## SUMMER SEEDING

- Oat
- Forage kale
- Fall cereals

**Soil moisture?**

## IN 2013

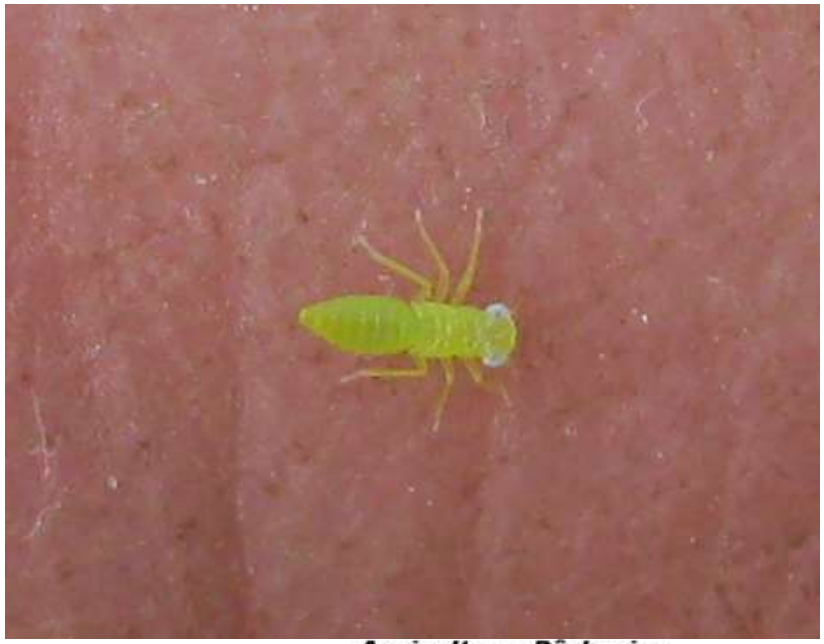
- Drought tolerant species
- Corn intercropping

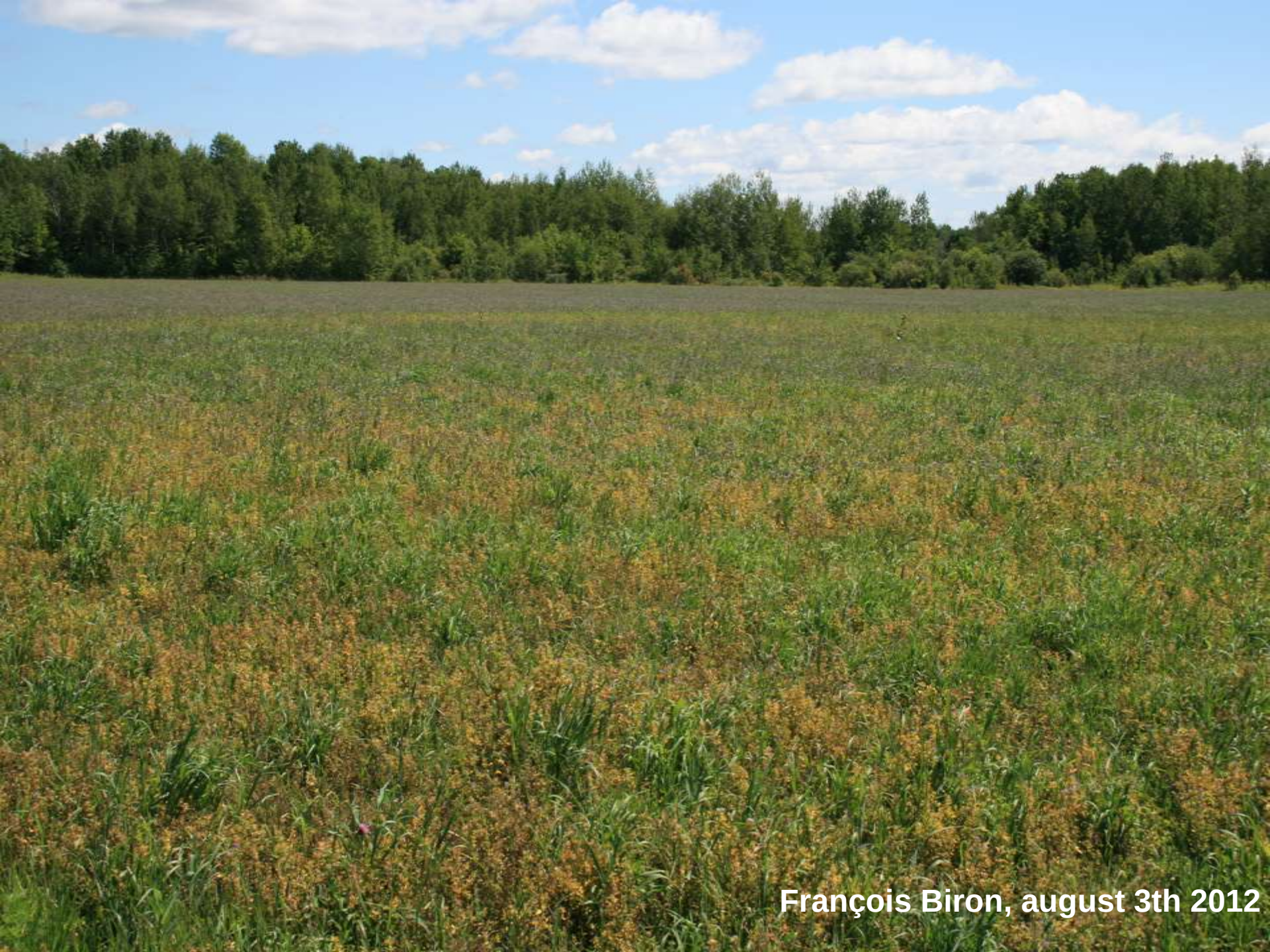
## LONG TERM

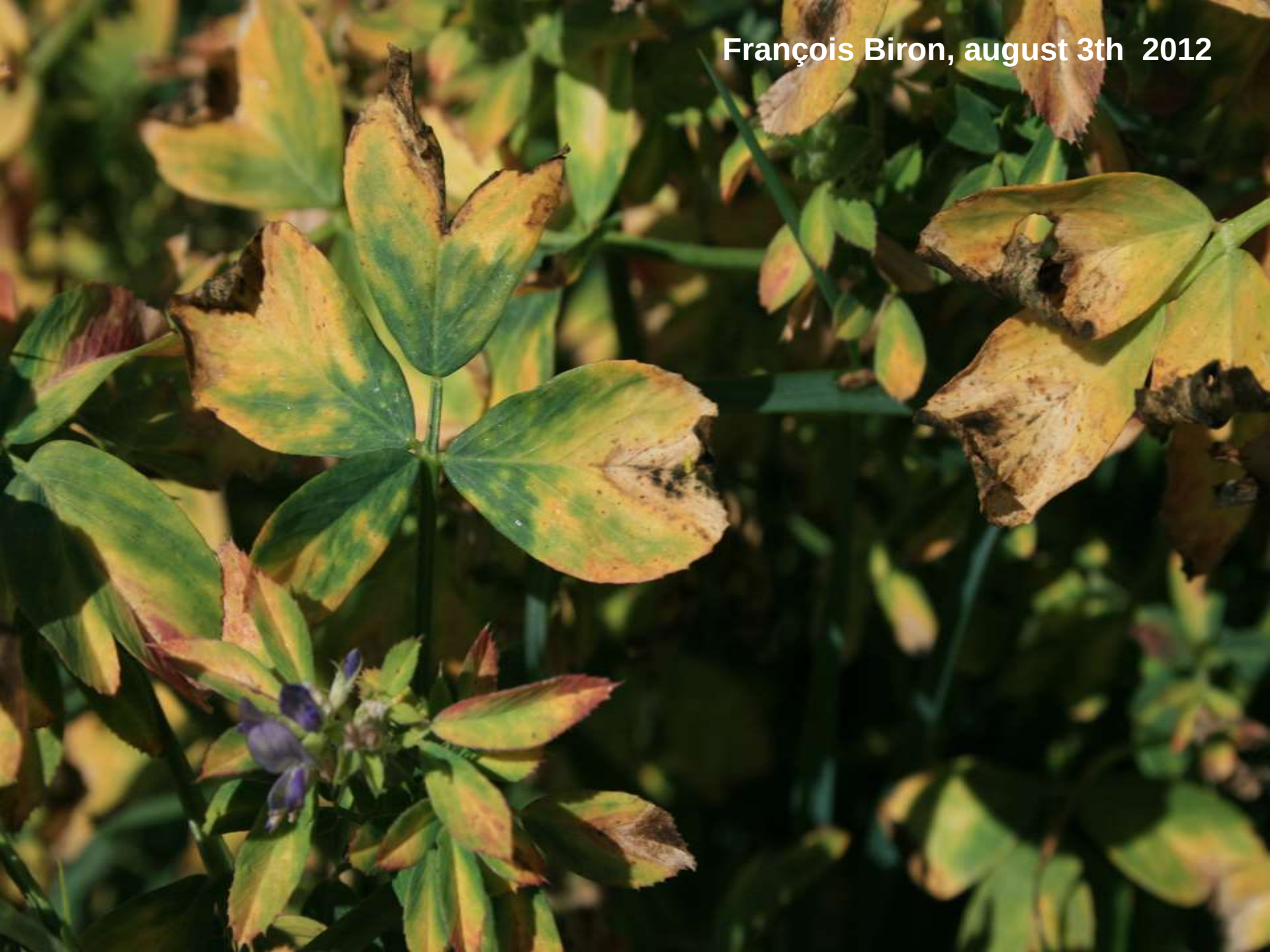
- Organic matter
- Lime

# Alfalfa yellowing

- **Boron or potato-leafhopper**
- Information available on agri-réseau
- Scouting necessary
- Yield and quality loss
- Harvest recommended
- Talk with your agronomist




François Biron, august 3th 2012


François Biron, august 3th 2012

# SUMMER SEEEDING : OAT

- Every type of soil (see what can be worked and is available)
- Fertilization (manure), lime
- Common cereal seeder
- Expected yields: 3 t dry/ha
- Strip grazed (if the soil can handle)
- Consult your agronomist (PAEF)

# SUMMER SEEEDING : OAT

**Partial budget for oat per hectare**

- Oat seeds (shaffed): 150 kg/ha = 72 $/ha
- Lime : 3 t/ha = 24$/ha (amortized 5 years)
- Plowing : 35 $/ha
- Cultivator (disc and harrow) : 14 $/ha
- Seeder :16 $/ha
- **Total: 161 $/ha**
- **54 $/ ton**

Source: AGDEX 113/821a CRAAQ novembre 2010

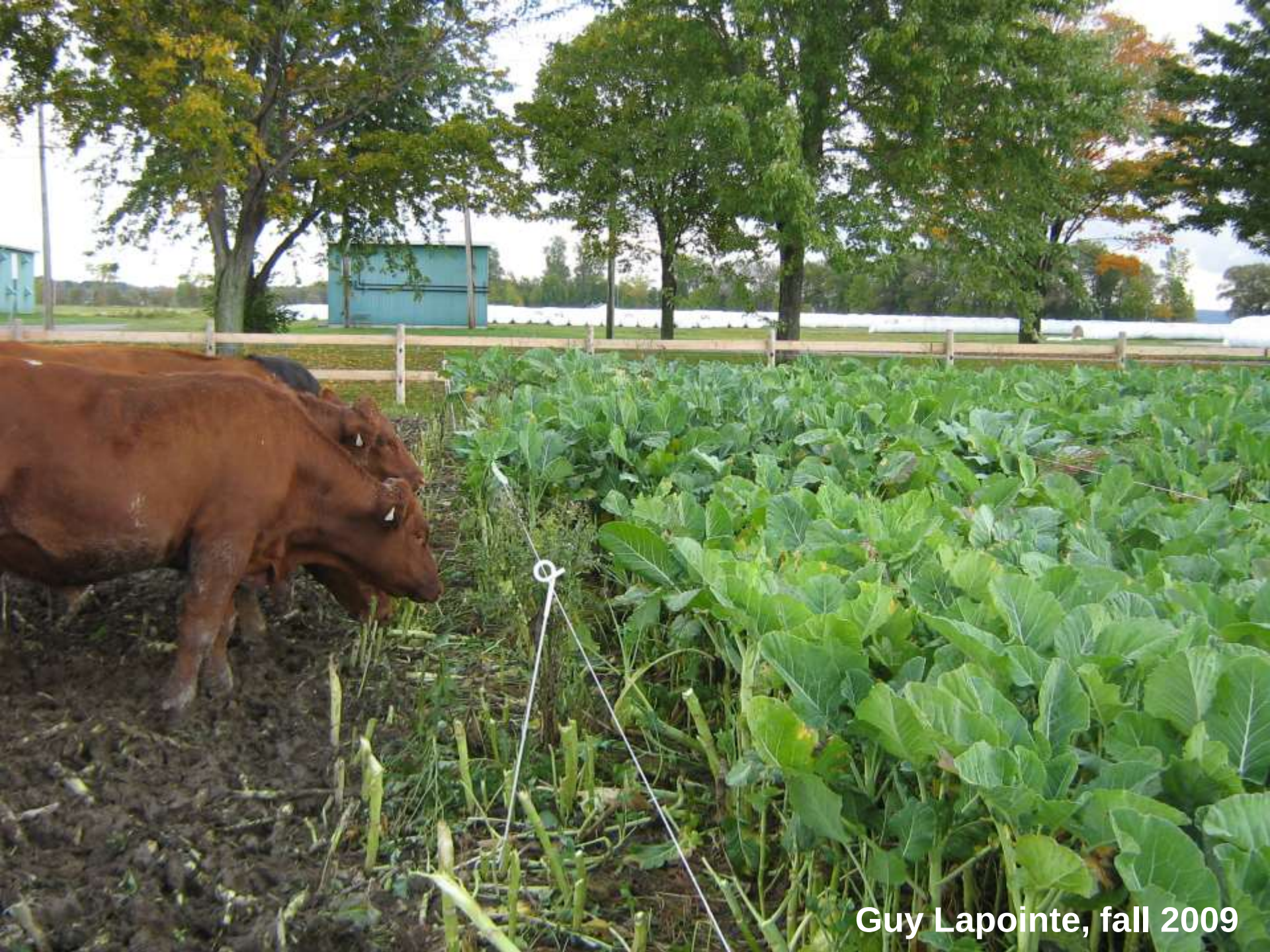
# SUMMER SEEDING: FORAGE KALE

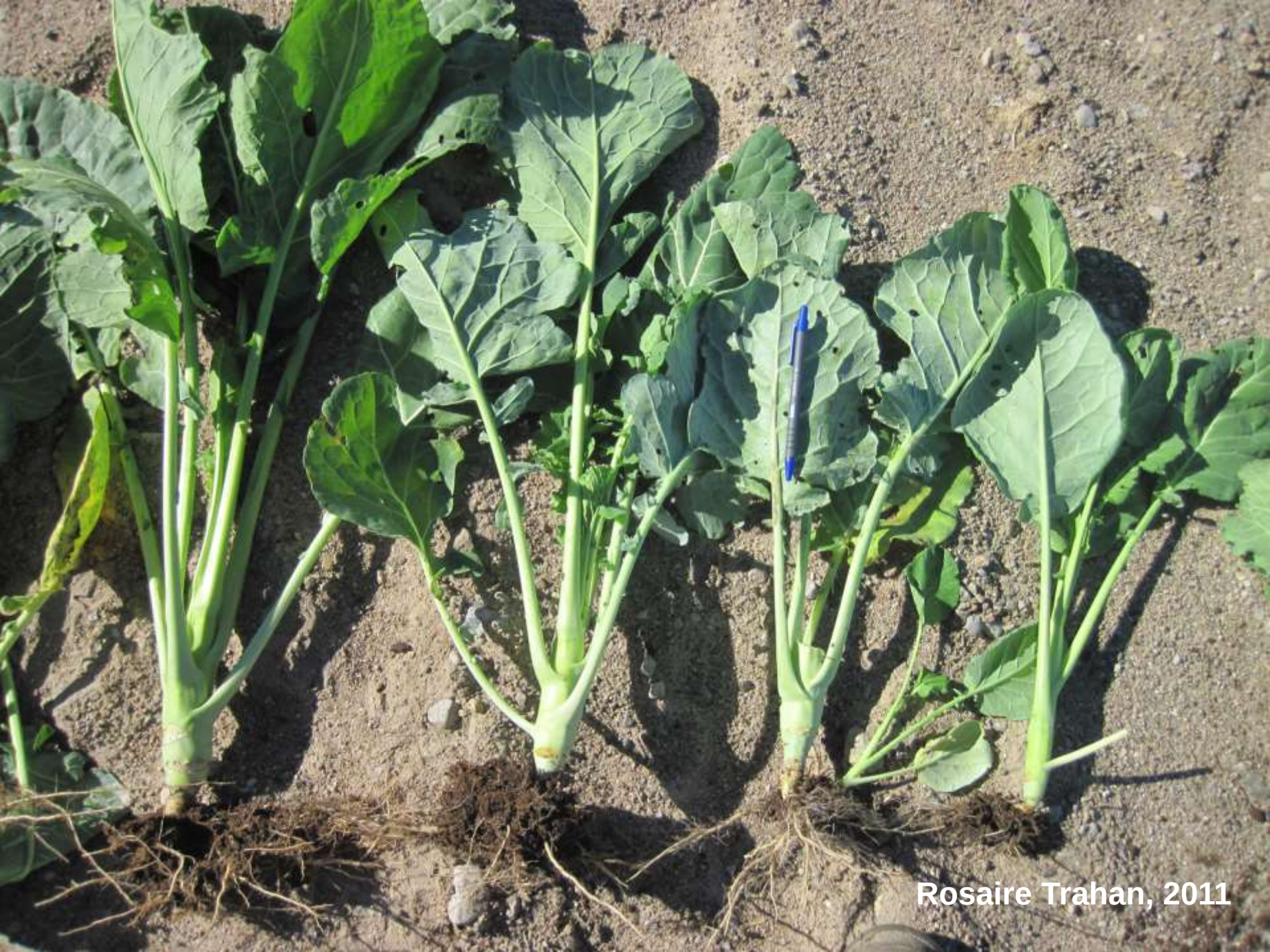
- Well drained soil, clay
- Seeds: 9 $/kg (200 $/50 lbs)
- Seeding rate: 5 kg/ha
- Perennial control necessary
- Little box of the seeder + roller
- Expected yields : 5 t dry /ha
- Fertilization required
- Lime
- Strip grazed on frozen soil
- Max 30% of the ration, watch for greedy cows

# SUMMER SEEDING: FORAGE KALE

**Partial budget forage kale per hectare**

- Seeds : 5 kg/ha = 45 $/ha
- Herbicide(???): 32 $/ha
- Lime : 3 t/ha = 24 $/ha (amortize 5 years)
- Plowing : 35 $/ha
- Cultivator (disc and harrow)  : 14 $/ha
- Seeder : 16 $/ha
- Fertilizer: 120 $/ha
- **Total: 286 $/ha**
- **57 $/ ton**


Guy Lapointe, fall 2009


Rosaire Trahan, 2011

# SUMMER SEEDING: FALL CEREALS

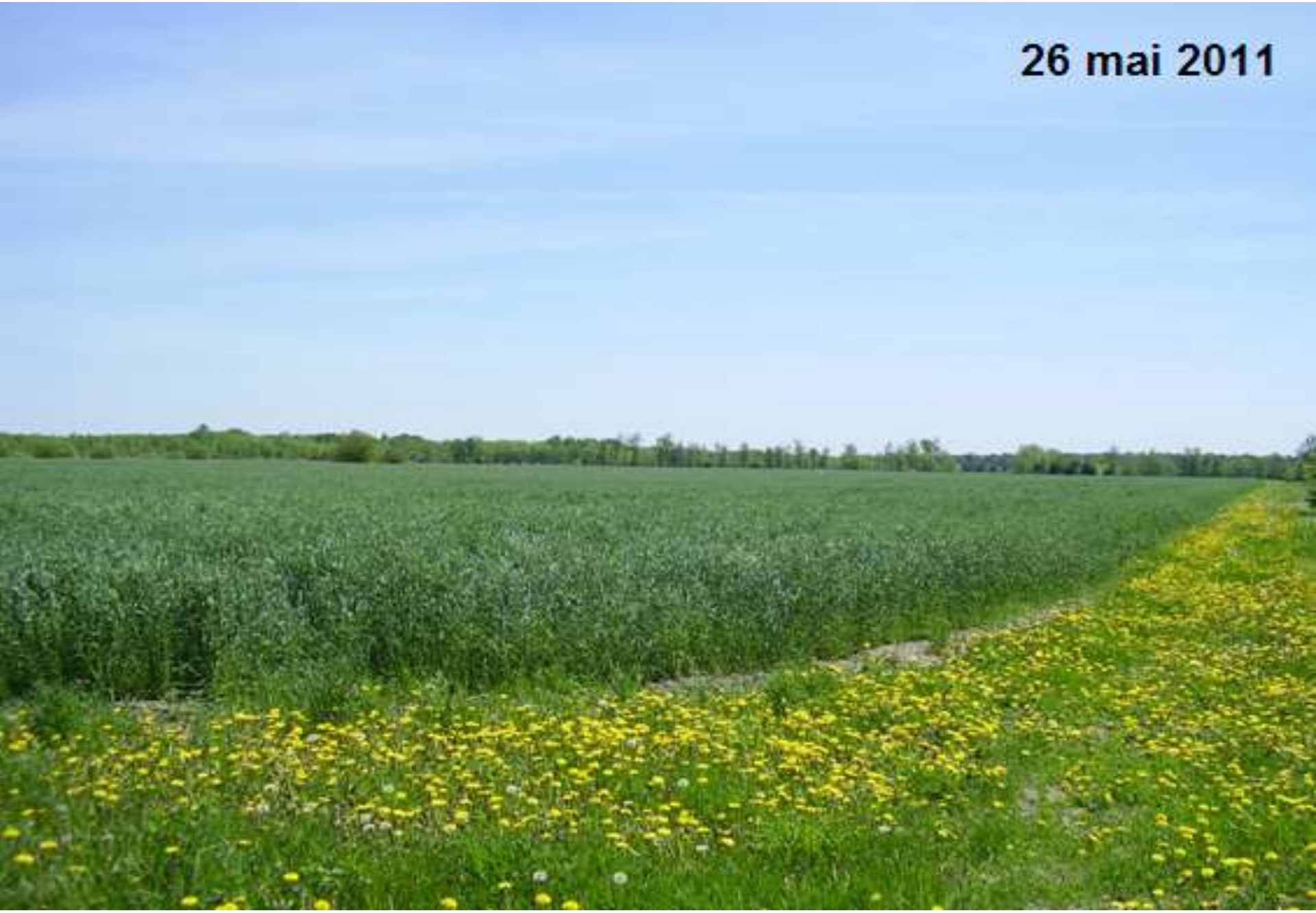
Rye: Lighter soils, well drained (Wheat: tolerate heavier soils, less well drained)

- Fall Rye:
  - Tolerate lower pH
  - Can be seeded up to mid-september
  - Establishes in fall
  - Snow cover, topography, drainage: determine winter survival
  - Quick start in spring
  - Spring pasture / matures rapidly
  - Expected yields : 4 t dry/ha
  - Grain crop possible if not entirely pastured
  - Soybean crop possible

# SUMMER SEEDING: FALL CEREALS

**Partial budget fall cereals per hectare**

- Seeds : 130 kg/ha = 126 $/ha
- Plowing : 35 $/ha
- Cultivator (disc and harrow)  : 14 $/ha
- Seeder : 16 $/ha
- Fertilizer: 100 $/ha
- **Total: 291 $/ha**
- **73 $/ton**


26 mai 2011

# DIVIDE THE RISK IN 2013

Drought tolerant plants :

- Sorghum / Sudangrass / Millet

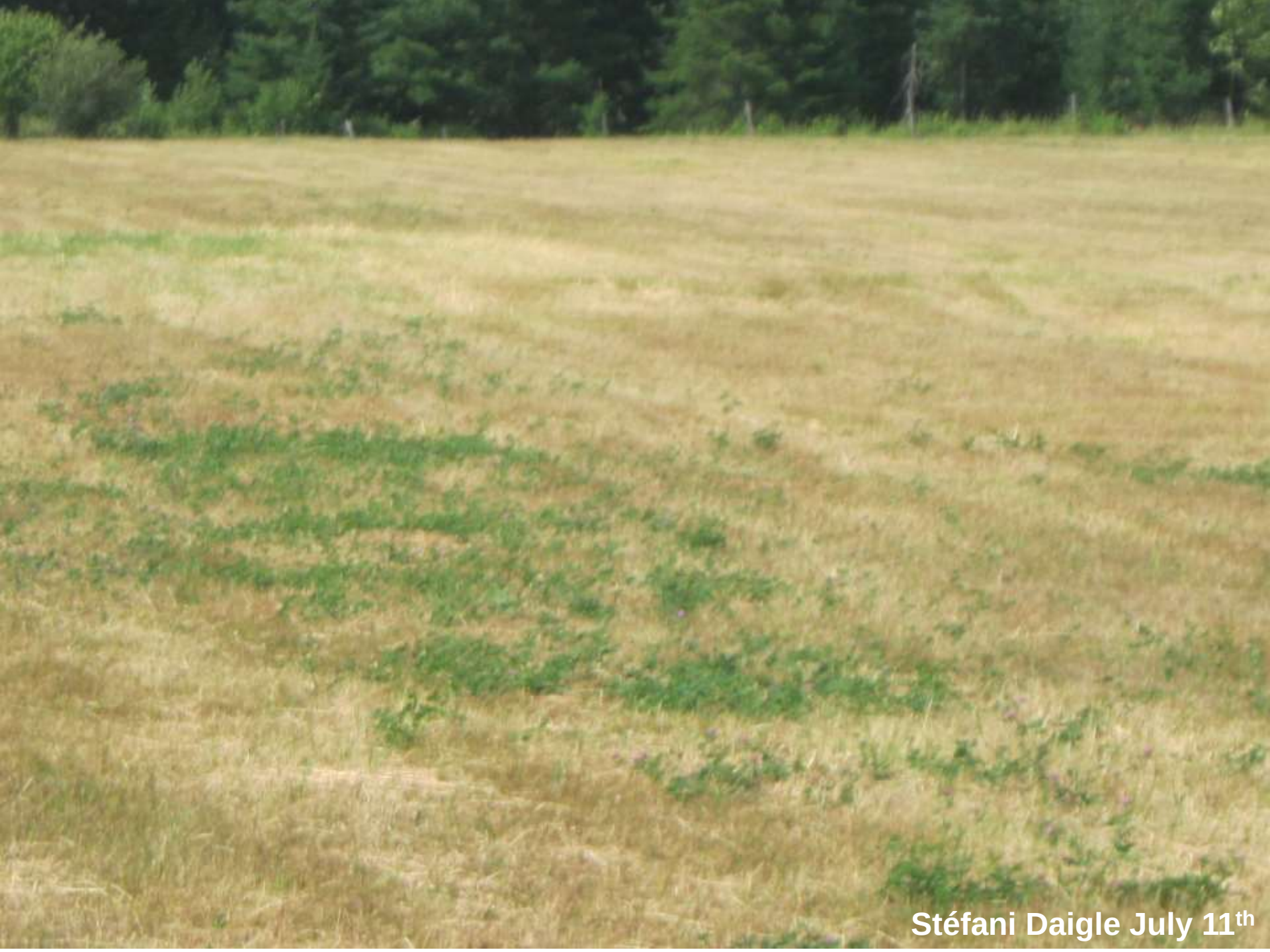
In the pasture

- Birdsfoot trefoil / Orchard grass / Reed canarygrass

Pasturing harvested grain corn, soybean (watch for herbicide)

Intercropping corn (throw some dirt):

- Clover, raygrass


Stéfani Daigle July 11th

# LONG TERM

Organic matter: buffer

- Retain water in lighter soils
- Increase drainage in heavier soils
- Enhance microbial activity and fertility

Lime

- Better investment than fertilizer in 2012?
- Determine nutrient availibility

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*Stéfani Daigle*

- **Method to calculate the amount of hay needed**
- **Optimizing the pasture and forage for 2013**

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## Method to calculate the amount of hay needed

1. Hay in stock

–

2. Herd's needs

=

3. Hay to buy

# Hay in stock

**First step** : Inventory

Numbers of bale X weight of the bale (depending of the size) = Tons of dry mater

Square bale - 4’ x 4’ - 250 kg dry matter

**Ex: 1 000 bales X 250 kg =**

**250 tons available**

# 2. Need of the herd

**Exemple of herd needs for 50 cow-calf**

321 tons needed

# 3. Need in hay and how does it cost?

Hay in stock – herd's needs = Hay to buy

250 t – 321 t = *approx.* 70 tons dry matters to buy (280 bales)

Bale cost : 100$/ tons ex: 4X4 = 25 $ / bale

+

Transport, ex: Load 1 500$ / 16 tons = 93 $ / ton

= 23 $ / bale

= 48 $ / bale

280 bales X 48$ /bale = 13 440$ (172 $ / t including transport)

Message:

Evaluate the right amout you need and your capacity to reimburse

Don't hesitated to consult an agronomist

## Before buying hay

- Evaluate:
  Righ **amount** needed
  Right **type** of hay
- The good **period of the year**
- Check the prices and quality might thing about regroup with someone

- The MAPAQ has a list of available hay in Québec

# Cover your hay

- Save 20-25 % potentiel losses
- Choose your site
- Tarp well tight
- Cover half the first row of bale
- Palet under for spring hay

# Wood pasture

**Cheap option for a few tons of dry matter**

**For 460 m (approximate 1500 foots)**

- 1 roll of wire gage 12 : 80,00 $
- 125 isolators : 13,75 $
- 125 nails : 3,50 $
- 2 handles : 5,00 $
- 14 tightner : 14,00 $
- 3 isolators : 12,00 $
- = 128,25$

# Wood pasture, cheapest option

For 100 acres (40 ha) : 3 000 m

**Cost: 836,40 $**

Yield: 2 t / ha **= 80 t** 80 t / 836,40 t= **10,45$ /** t

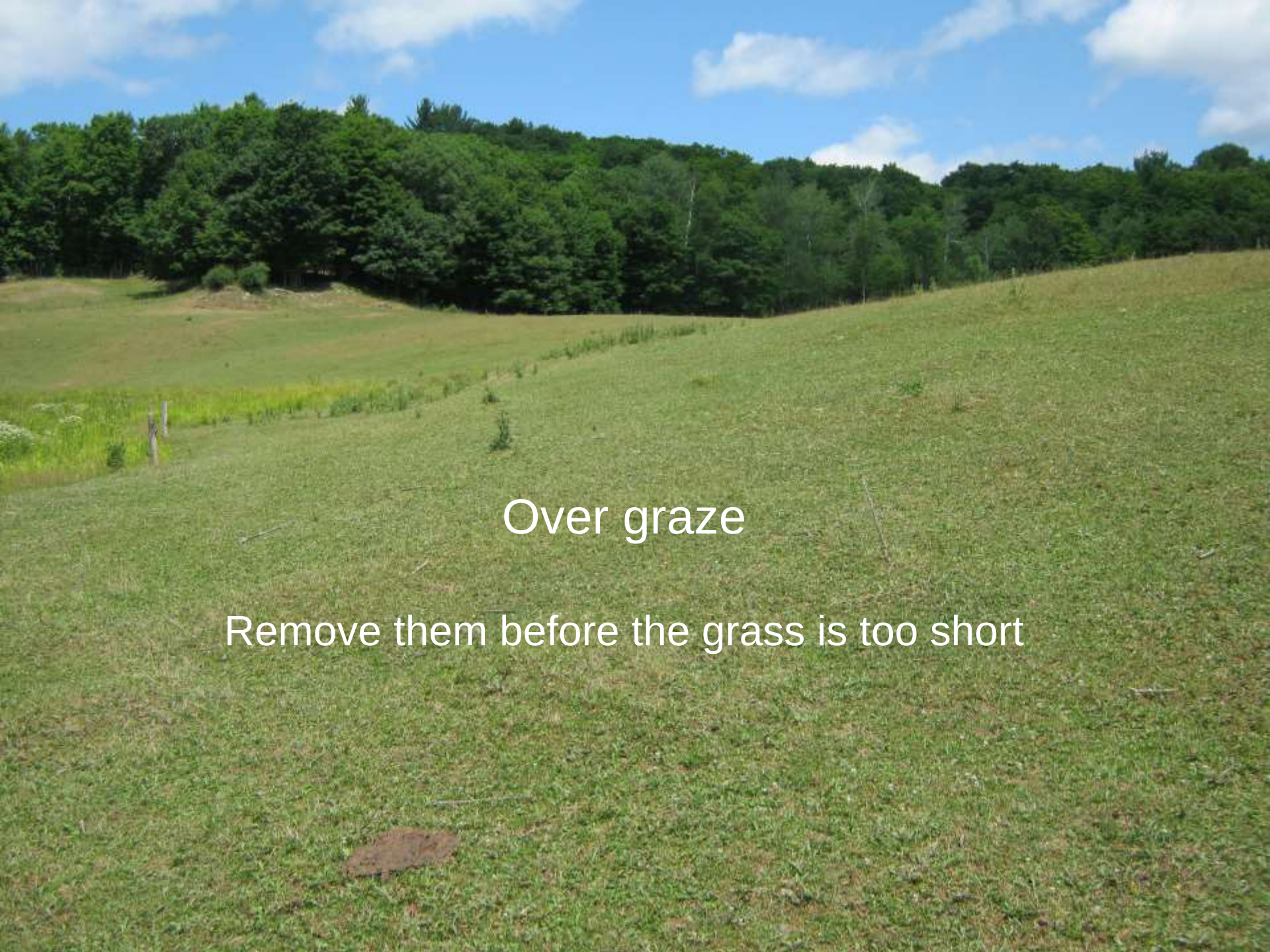
To consider

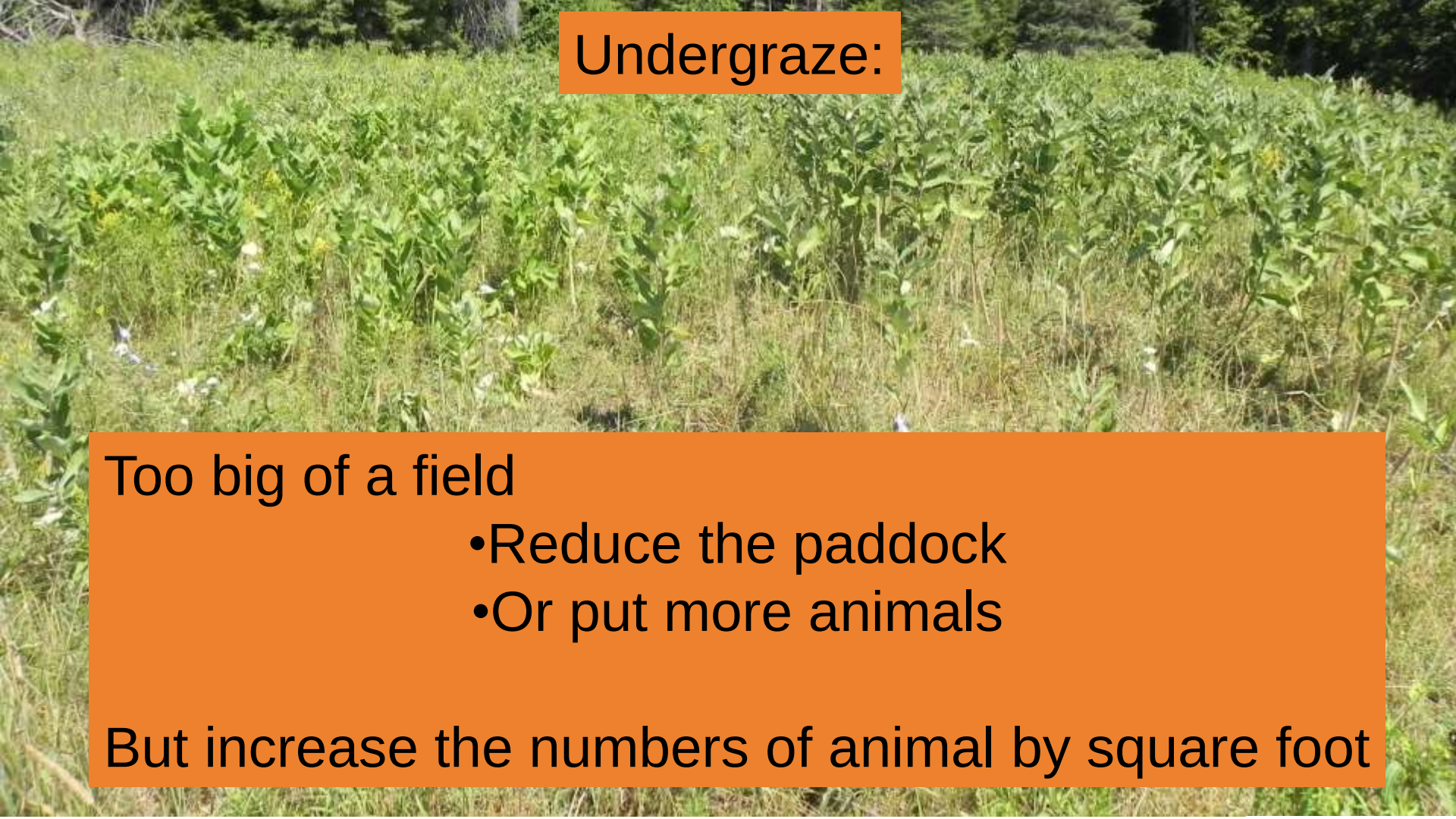
- Takes time to fence
- Water for the cows
- Accès to electric power
- You could save up to 80 t * 172/ t = 13 440 $ for a few days of work and it is there to stay if another drough comes
- Be aware that regrowth may be affected

# Pasture and hay for next year

Overgraze and undergraze

Cut hay at the right development stage


Over graze
Remove them before the grass is too short



# Undergraze:

Too big of a field

- Reduce the paddock
- Or put more animals

But increase the numbers of animal by square foot

Stéfani Daigle, 2012

Milk weed

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*Guy Lapointe*

- **Feeding  (nitrate and corn silage)**
- **Early weaning**
- **Reduce or move the herd**

# ANIMAL MANAGEMENT

Nitrate poisoning

Corn silage quality

Early weaning

Economic calculation

Customs feeding

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# Nitrate poisoning

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# Nitrate poisoning

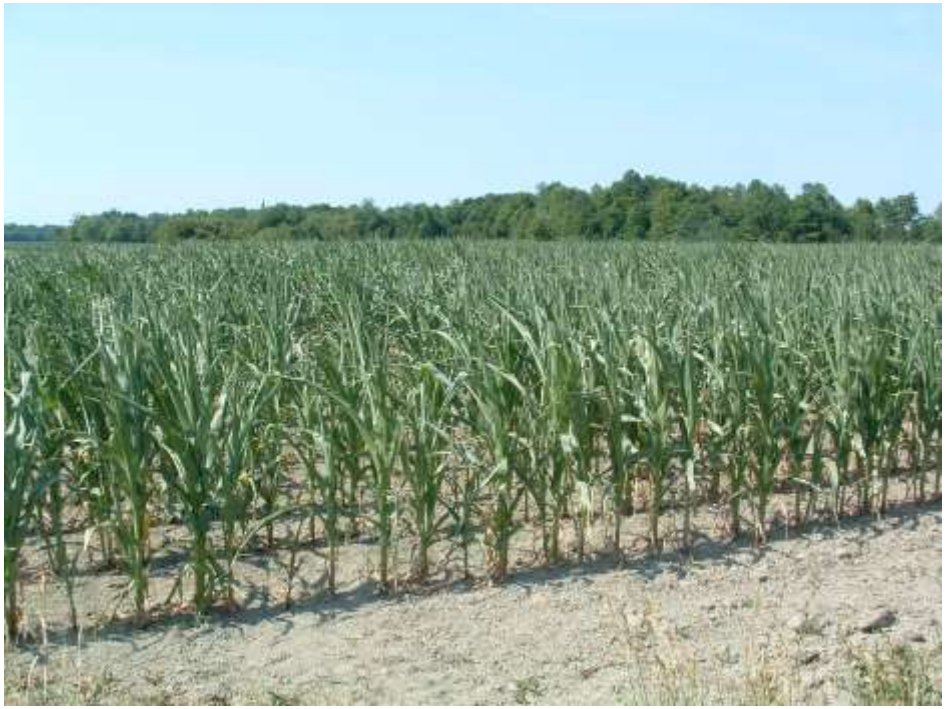
When crop is in stress condition it may cause nitrate accumulation, delay harvest of the crop until conditions improve to permit nitrate to drop to a safe level

Well balanced feed ration

- minimum de 66,000 I.U. of vitamin A / kg body weight

## Accumulators of nitrates, ranked from highest to lowest

- Corn
- Sorghum
- Sudangrass
- Cereal grain
- Forage grasses



# Where to test forage for nitrates?

Most labs offer nitrate test

Wait 3 weeks to be sure ensiling process is completed

Analysis costs

- Chemical analysis: $35,75 / sample

+

- Nitrate analysis: $21,50 / sample

# Guidelines for using feeds with known nitrate level

| Unit of measurement (D.S basis) | | | |
|---|---|---|---|
| % $NO_3$-N | ppm $NO_3$-N | % $NO_3$ | Comment |
| < 0.1 | < 1000 | < 0.44 | Safe |
| 0.1-0.2 | 1000-2000 | 0.44-0.88 | Generally safe. Limit to 50% of dietary dry matters for pregnant animals |
| 0.2-0.34 | 2000-3400 | 0.88-1.5 | Limit to 50% of dietary dry matters for non pregnant animals and do not feed to pregnant animals. Be sure water us low in nitrates and ration is well fortified with energy, mineral and vitamin A. |
| 0.34-0.4 | 3400-4000 | 1.5-1.8 | Limit to 25% of dietary dry matters for non pregnant animals and do not feed to pregnant animals. Be sure water us low in nitrates and ration is well fortified with energy, mineral and vitamin A. |
| 70.4 | >4000 | >1.8 | Potentially toxic. DO NOT FEED. |

Vitamin A : 6 000 IU./Kg of body weight

# Guidelines for use of water with known nitrate content

| ppm $NO_3$-N | Comment |
|---|---|
| < 10 | Generally regarded as safe for all animals an humans. |
| 10 to 20 | Questionable or risky for humans, especially young children and pregnant women. Safe for unless feed also has high levels. |
| 20 to 40 | Considered unsafe for humans. Might cause problems for livestock, especially swine and poultry. |
| 40 to 101 | Unsafe for humans and risky for livestock. Be sure feed is low in nitrates and be sure a well balanced ration is fed. Fortify ration with extra vitamin A. |
| 101 to 202 | Dangerous and should not be used. General or nonspecific symptoms such as poor appetite are likely to develop. Water apt to be contaminated with other foreign substances. When allowed free-choice to cows on a good ration, acute toxicity not likely. |
| > 202 | Don't use. Acute toxicity and some death losses might occur in swine. Probably too much total intake for ruminants on usual feeds. |

# Nitrates might be a problem and feeding green chopped corn plant is not recommended

- Nitrates accumulate in the base part of the stalk
- Silage fermentation can greatly reduce nitrate concentration (40 to 60 %)

# Feeding management

Forage with high nitrate level should not be:

- Pastured
- Green fed
- Dry harvested

Allow livestock time to adapt to increased nitrate in the diet

# Nitrate toxicity

Clinical signs of nitrate poisoning are related to the lack of oxygen in the blood. Acute poisoning occurs between a half our to four hours after consuming toxic levels of nitrate. Onset of symptoms are rapid and include

- Blush/chocolate brown mucous membranes
- Rapid/difficult and noisy breathing
- Rapid pulse (150+/min)
- Salivation, bloat, tremors, staging
- Weakness, coma, death
- Dark “chocolate-coloured” blood

Pregnant females that survives to nitrate poisoning may abort due to lack of oxygen to the foetus. Abortion generally occurs approximately 10-14 days following exposure to nitrate

Nitrate poisoning

Corn silage quality

# Drought-stressed corn for silage

Chop at the correct dry matter

- 30 to 38% D.M
- If -30% = Poor fermentation
- If +38% = Limited fermentation => mold and spoil during storage and feed out

Drought-stressed corn is often much wetter then normal corn because normal corn has more kernels

- Kernels are drier then the vegetative part of the plant

Before chopping, cut some stalks and evaluate dry matter

Objective : Do a good forage

# Nutrient value of drought-stressed corn silage

Can be fairly high

- 10 to 12% of crude protein
- 10 to 20% of (ADF) acid detergent fibre
- 15 to 25% less starch
- 90 to 95% of corn silage energy

Drought-stressed corn will be more variable than normal corn silage

# Estimate the value of the corn in the field

We don’t know if the silage processing will go well

The corn can have a high nitrate level

- Critical situation

The corn can have more fibre and less energy value

# ANIMAL MANAGEMENT

Nitrate poisoning

Corn silage quality

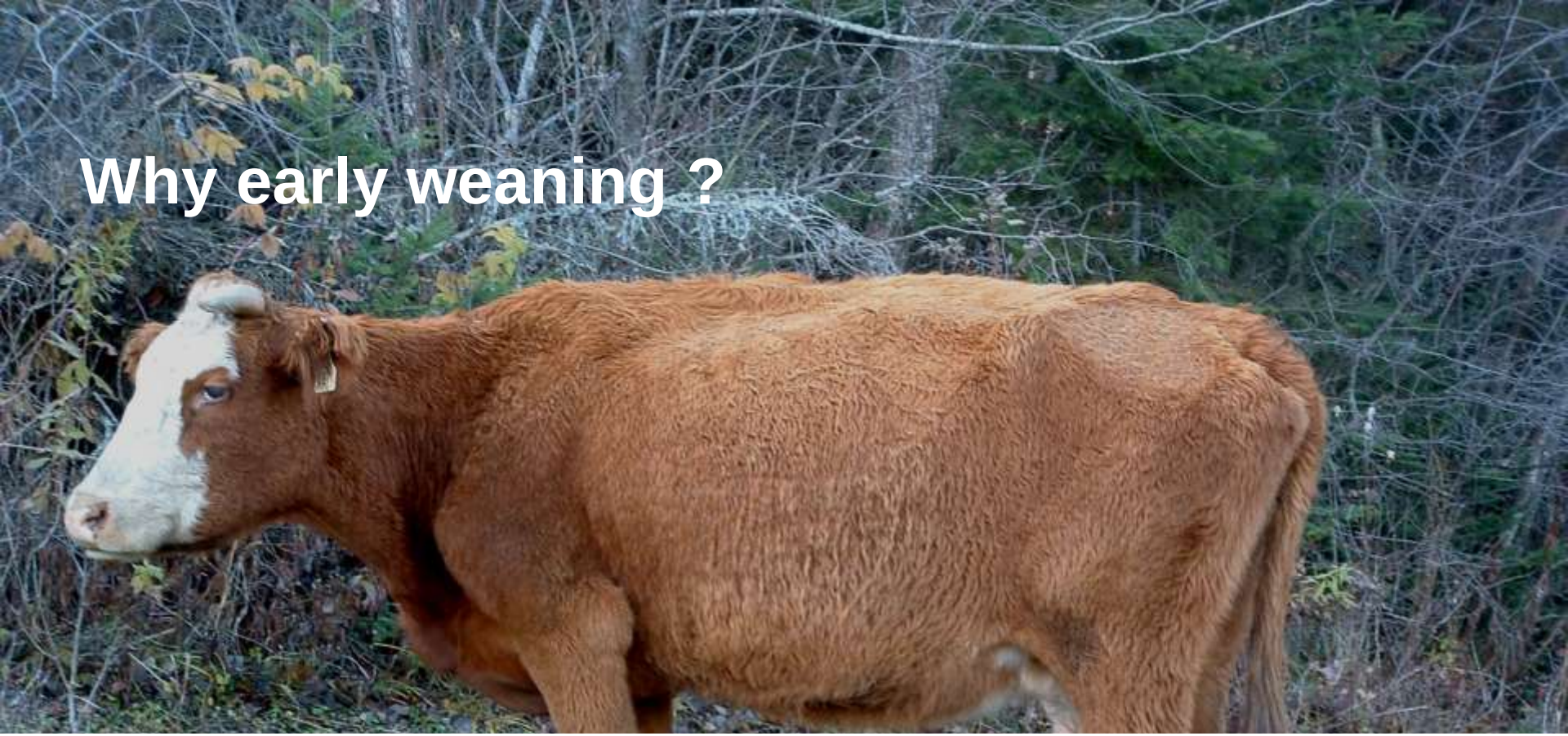
Early weaning

## Cow-calf Stabilization Program
## Calf feeder
## June 4th 2012

| | | | | | |
|---|---|---|---|---|---|
| **Weight sale lbs** | **425** | **450** | | | |
| **Market price ($/lb) (auction Ontario July 25)** | **1,60 $** | **1,53 $** | | | |
| **Calf value $** | ***680,00 $*** | ***688,50 $*** | | | |
| **ASRA Compensation (75 %)** | | | | | |
| **$/lb** | **0,00 $** | **0,56 $** | | | |
| **$/head** | ***0,00 $*** | ***252,00 $*** | | | |
| **ASRA Compensation(25 %)** | | | | | |
| **$/veau** | ***0,00 $*** | ***126,98 $*** | | | |
| **ASRA Contribution** | | | | | |
| **$/lb** | ***0,00 $*** | ***0,26 $*** | | | |
| **$/head** | ***0,00 $*** | ***57,39 $*** | | | |
| **Total $** | ***0,00 $*** | ***172,14 $*** | | | |
| **Net revenue/calf** | **680,00 $** | **895,34 $** | | | |
| **Difference** | | **213.34 $** | | | |
| **Additional $/lbs** | | | | | |

## Cow-calf Stabilization Program
## Calf feeder
## June 4 2012

| Weight sale lbs | 425 | 450 | 550 | 650 | 750 |
|---|---|---|---|---|---|
| Market price ($/lb) (auction Ontario July 25) | 1,60 $ | 1,53 $ | 1,40 $ | 1,36 $ | 1,34 $ |
| Calf value $ | *680,00 $* | *688,50 $* | *770,00 $* | *884,00 $* | *1005,00 $* |
| ASRA Compensation (75 %) | | | | | |
| $/lb | 0,00 $ | 0,56 $ | 0,56 $ | 0,56 $ | 0,56 $ |
| $/head | *0,00 $* | *252,00 $* | *308,00 $* | *364,00 $* | *420,00 $* |
| ASRA Compensation(25 %) | | | | | |
| $/veau | *0,00 $* | *126,98 $* | *126,98 $* | *126,98 $* | *126,98 $* |
| ASRA Contribution | | | | | |
| $/lb | *0,00 $* | *0,26 $* | *0,26 $* | *0,26 $* | *0,26 $* |
| $/head | *0,00 $* | *57,39 $* | *57,39 $* | *57,39 $* | *57,39 $* |
| Total $ | *0,00 $* | *172,14 $* | *197,64 $* | *223,14 $* | *248,64 $* |
| Net revenue/calf | 680,00 $ | 895,34 $ | 1007,34 $ | 1151,84 $ | 1303,34 $ |
| Difference | | | 112,00 $ | 256,50 $ | 408,00 $ |
| Additional $/lbs | | | 1,12 $ | 1,28 $ | 1,36 $ |



# Why early weaning ?

Dry cows will consume at least 20-25% less feed than a lactating cows
The cows will start the winter with a better body condition
It is easier to directly feed the calves instead of feeding the cow to feed the calf

Feed conversion rate is better for calves than cow

- 3 to 5 kg of feed per kg of gain

We must aggressively manage expenses if we want an opportunity to make a profit

# Disadvantages of early weaning

Need an extra pasture or dry lot with good fence to wean cattle

Easy access to water and feed bunk

More intensive management

We need commercial feeds and good hay

- Increases feed cost

Consult your veterinarian

Need a feeding program and should calculate for the net returns

# Early weaning success

Les veaux de 300-400 livres ont besoin de 2 à 3 kg de concentré commercial par tête/jour

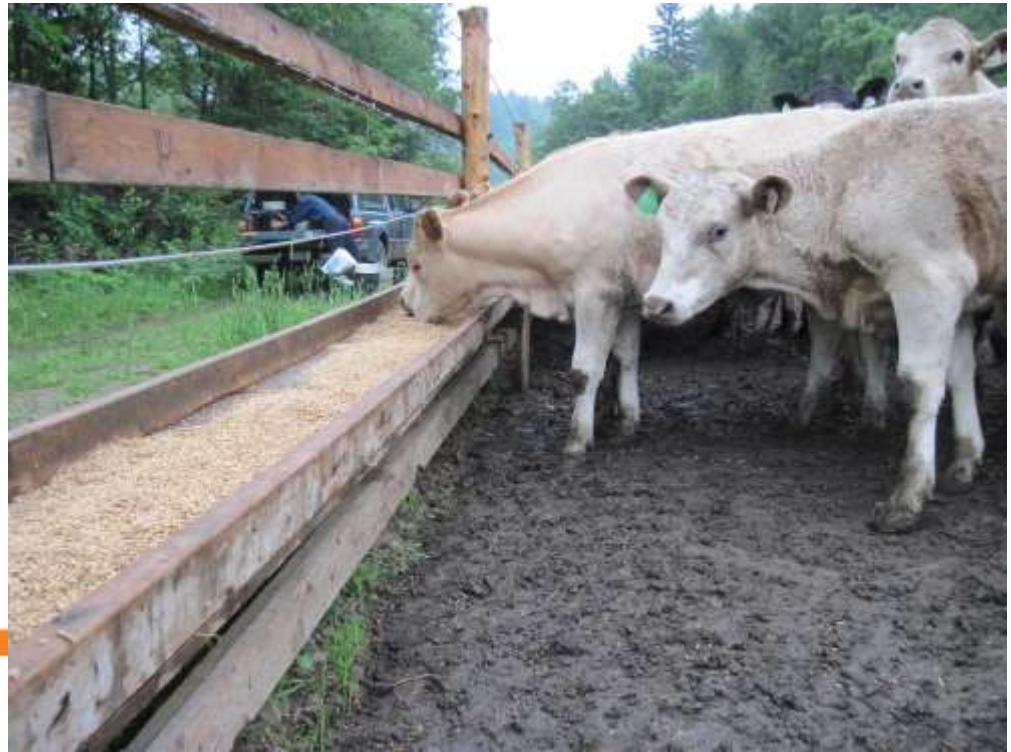
On donne de 1.0 à 1.5 kg de foin par jour

Après 550 lb, ce sont les rations plus traditionnelles selon les aliments disponibles et/ou la vente des veaux

# Success of early weaning

Minimum of stress for the calves

- Use electric fences for weaning
- Anti sucking-tag



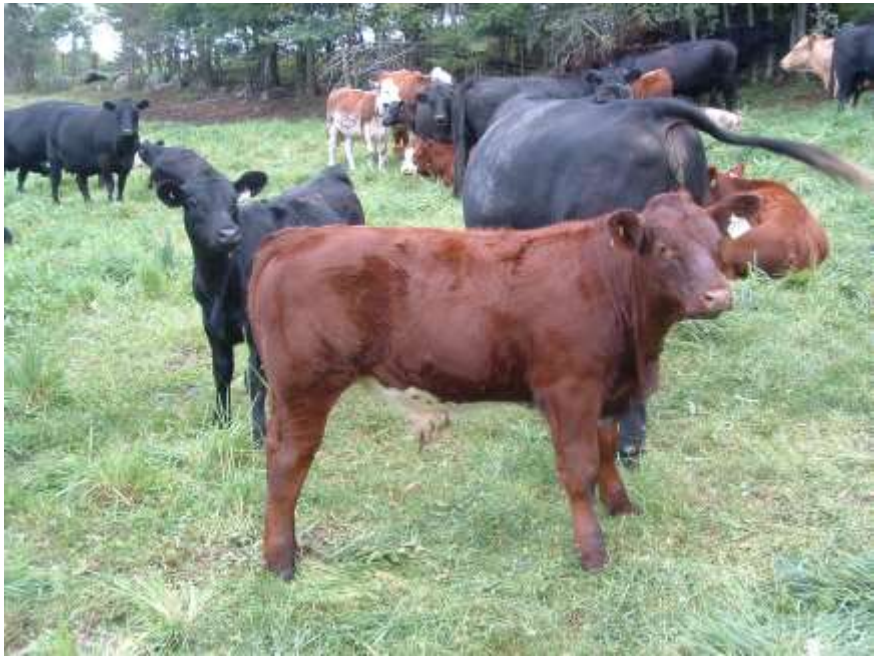
# Feeding ration
## calf (300lb à 550lb)

Commercial supplement:

3 kg/j

Very good hay:

2 kg/j



## Cost per calve (100 days)
### 300lb to 550lb of gain at 2,25lb/j

| | kg/j | Total kg | Total $ |
|---|---|---|---|
| Supplement (365 $/T) | 3 | 300 | 109,50 $ |
| Fourrage (175 $/T) | 2 | 200 | 35 $ |
| | | Total | 144,50 $ |

**cost $/lb of gain = 0,58 $**

## Cow-calf Stabilization Program
## Calf feeder
## June 4 2012

| Weight sale lbs | 425 | 450 | 550 | 650 | 750 |
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| $/lb | 0,00 $ | 0,56 $ | 0,56 $ | 0,56 $ | 0,56 $ |
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| ASRA Compensation(25 %) | | | | | |
| $/veau | *0,00 $* | *126,98 $* | *126,98 $* | *126,98 $* | *126,98 $* |
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| $/head | *0,00 $* | *57,39 $* | *57,39 $* | *57,39 $* | *57,39 $* |
| Total $ | *0,00 $* | *172,14 $* | *197,64 $* | *223,14 $* | *248,64 $* |
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# ANIMAL MANAGEMENT

Nitrate poisoning

Corn silage quality

Early weaning

Economics calculation

# Economic Calculation

Evaluate thoroughly financial impact

- If new loan to buy hay, what's the impact?

Many possible rations or by-products

- Always evaluate to find the best solution

Consult your co-workers and the consultants

Ask around for different opinions

Maybe sell cows now to buy some next year

- Fiscal impact

## Ratio 650 kg Cow
## Milk Production 9 kg/day

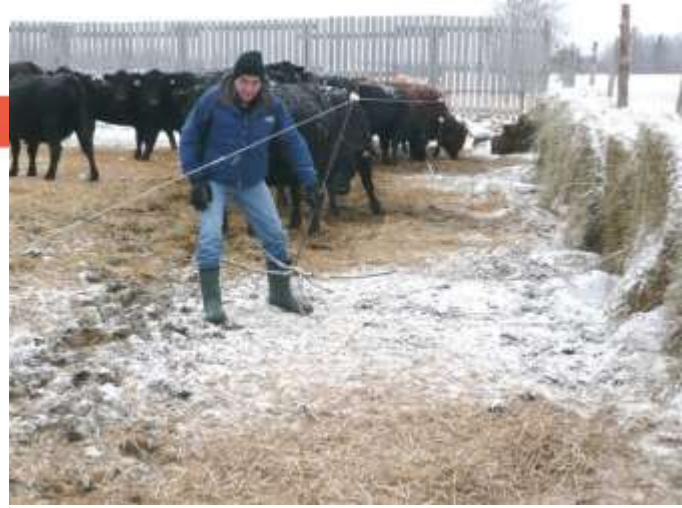
| | | |
|---|---|---|
| Hay grass (kg/d) $200/ton | 16,7 | 6,7 |
| Barley (kg/day) $275/ton | 0 | 7 |
| Minerals (gain/day) | 51 | 51 |
| Cost ($/day) | 3,41 | 3,33 |

## Ration 650 kg Cow
## Milk Production 0 kg/day

| | | |
|---|---|---|
| Hay grass (kg/day) $200/ton | 12 | 5,6 |
| Barley (kg/day) 275$/ton | 0 | 4 |
| Minerals (gain/day) | 51 | 51 |
| Cost ($/day) | 2,74 | 2,28 |
| Ingestion index (%) | 90 | 60 |

N.B. : No loss calculated at the feeder

# You must be careful



Make sure cows don’t eat too much concentrate

- Many servings a day
- Need many feeders
    - Cereals
    - Forage

Feed along electric fence

May chop hay and make a windrow

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# Limited forage feeding

Excellent livestock management

Need much more groups

- Adult cow in a good state of flesh
- Lean adult cow
- First calving cow
- Bull (1 or more pens)

# ANIMAL MANAGEMENT

Nitrate poisoning

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Economics calculation

Customs feeding

# Custom feeding

To reduce stress caused by lack of feed

Send dried cows to farms with the required installations

In a truck:

- 16 tons of hay => 5 dried cows for 200 days
- You may place 40 cows
    - They can eat 120 tons of forage

# Custom feeding

For dried cows
Up to 7 months gestation

- Bring them back to the farm for calving

# Custom Feeding

The Owner and the Feeder must have an agreement stating who shall be responsible for

- Feeding
- Bedding
- Vet fees
- Vaccination
- Payment rate
- Death
    - Minimum rate
- Regular visits
- ATQ Registration
- Quarantine

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# QUESTION ?

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# Conclusion

Best advice we can give to you

**THINK - PLAN - CALCULATE**

**A feeding strategy**

Advisers

Contact the Réseau Agriconseils

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Thank you for your participation

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