Development of a simple model for the control of gastrointestinal strongylosis in cattle herds

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Introduction: context and issues

High prevalence of gastrointestinal strongylosis infection in heifers

Economic impact : clinical signs, weight gain

Control measure often used = anthelmintic treatment at periods based on herd management (turnout, pasture change, stabling …)

Parasitological diagnostic tools for the assessment of the parasitical risk are rarely used (fecal egg count, evaluation of the infection pressure of pasture …)

Drug use may be **often too intensive**

Optimisation of anthelmintic treatments: development of a simple model to evaluate the parasitological risks

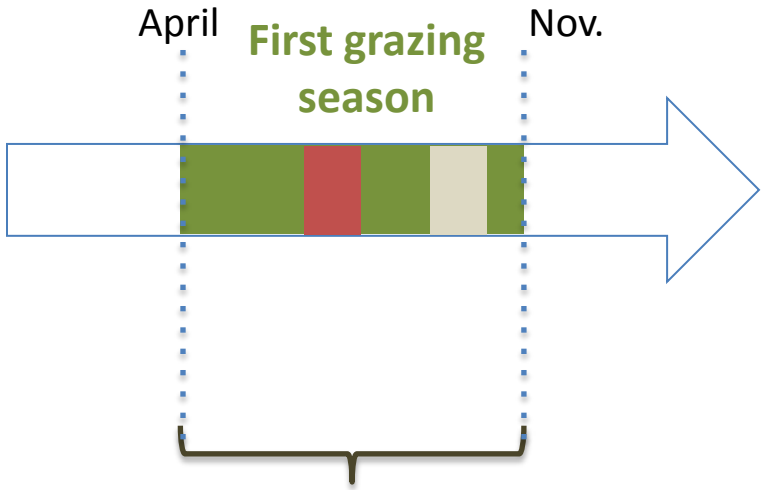
Principles of the model 1/Immunity

Immunity against GIN in bovine

Concomitant immunity
Directed successively against adults, 4 stage larvae and 3 stage larvae (infective larvae)

Complete immunity limits the development of infective larvae

Depends of the magnitude and the duration of contact with infective larvae
At least 4 to 6 months (*Ostertagia*)



=> Time of effective contact with infective larvae : TEC

TEC = 7 months – 2 months
5 months

Threshold of TEC in the model : 8 months

=>Identification of susceptible animals

Drought and high supplementation

Persistent treatment

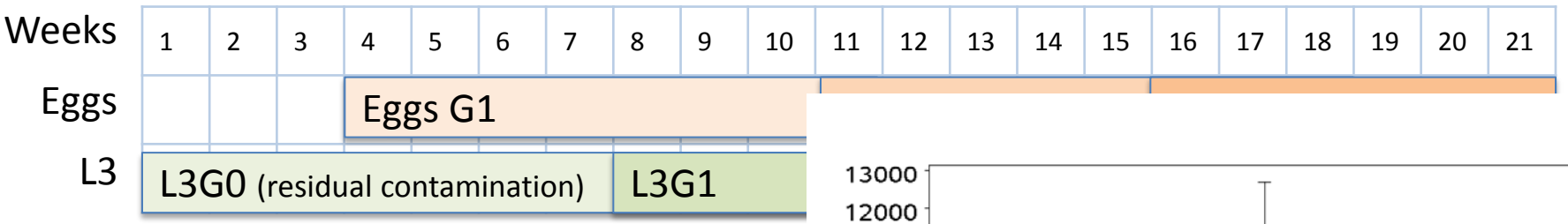
Principles of the model 2/Infection pressure

Infection pressure

Risks if animals are in contact with high amount of worms (and infective larvae)

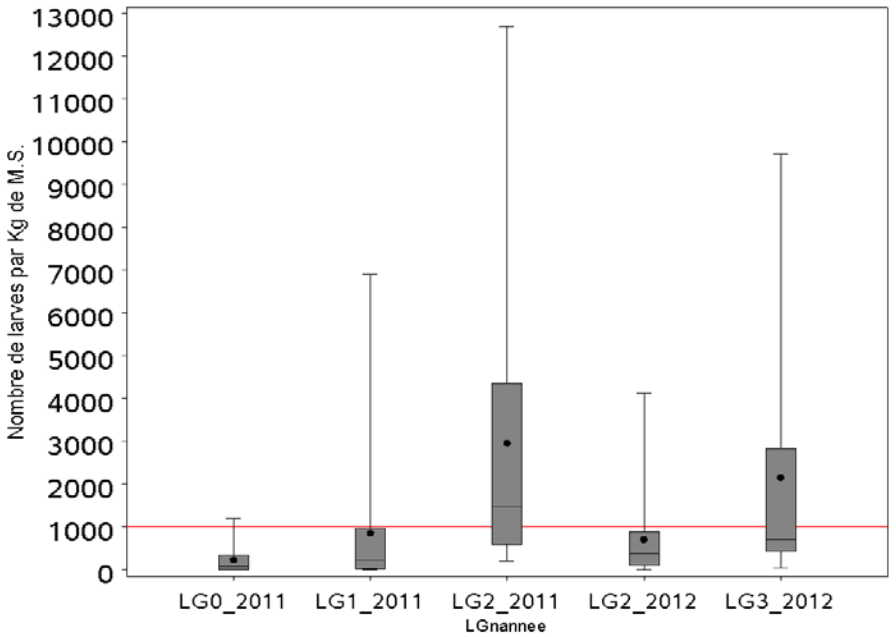
Depends both on the magnitude and duration of the infections

Development of successive generations of infective larvae (L3)



Role of temperature : duration eggs – L3
=> Use of the model of Smith et al (1986)

Impact of grazing management



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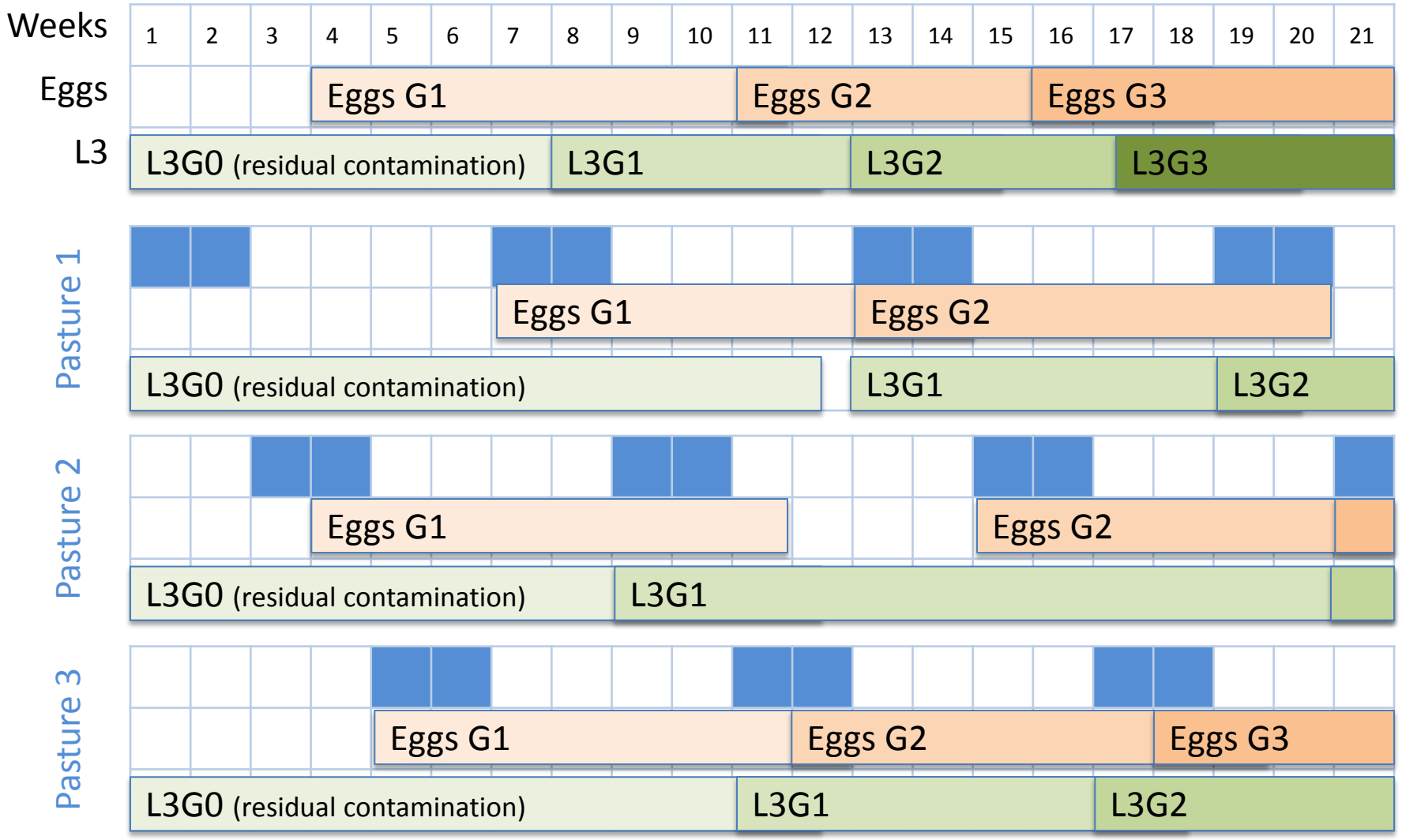

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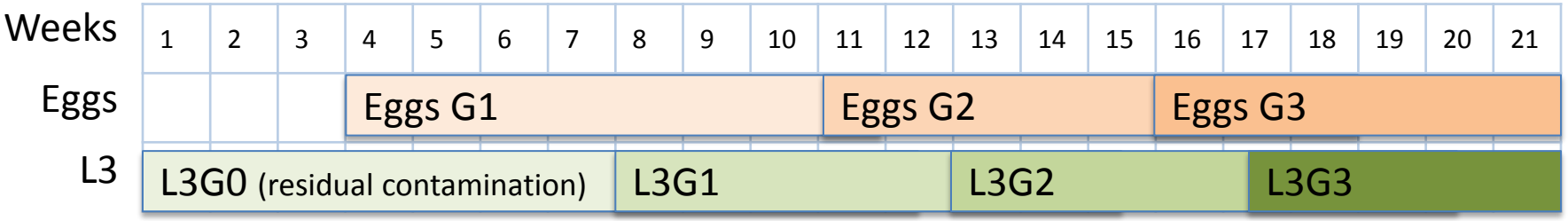

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Impact of grazing management

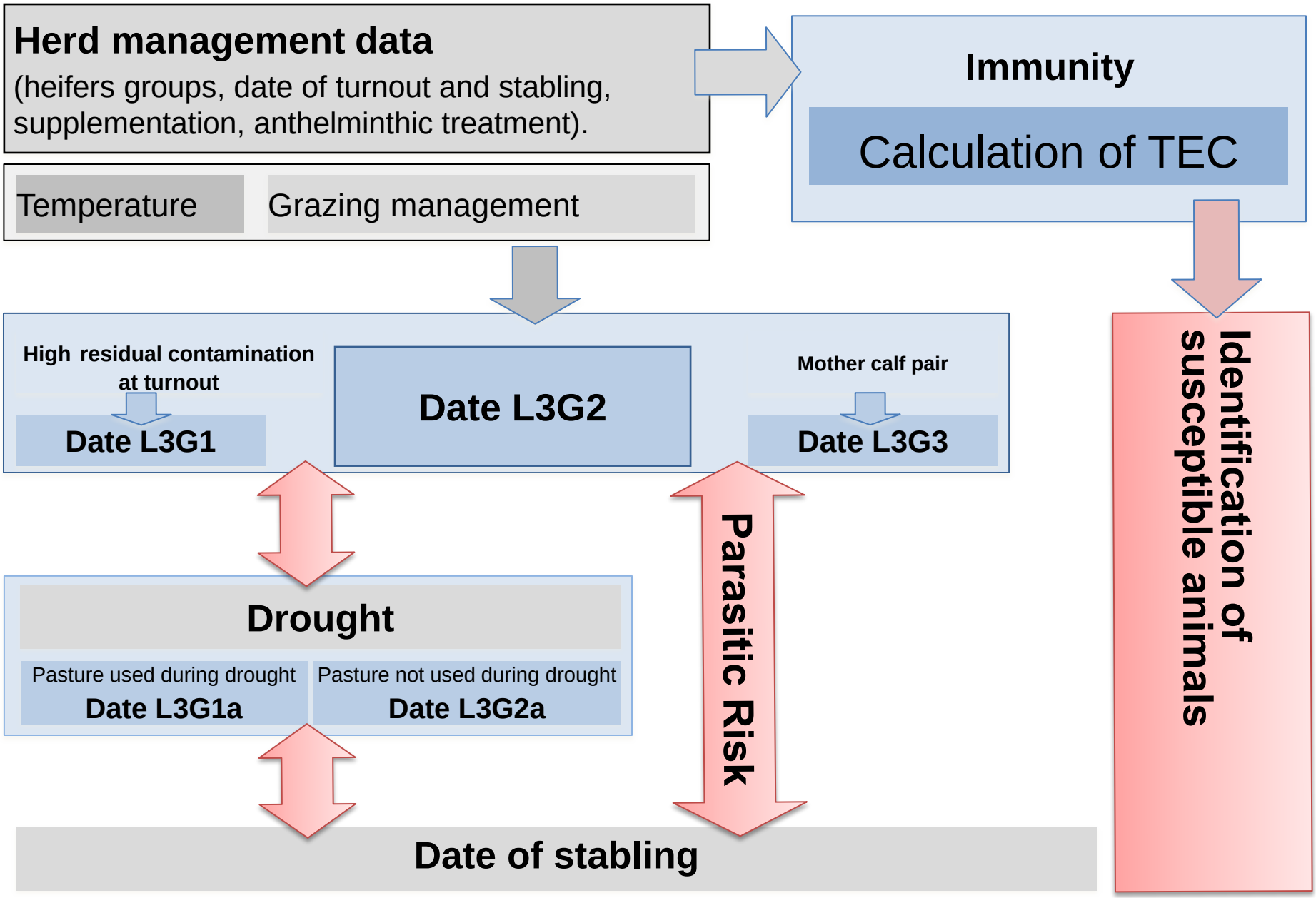
Threshold in the model

Date of LG2

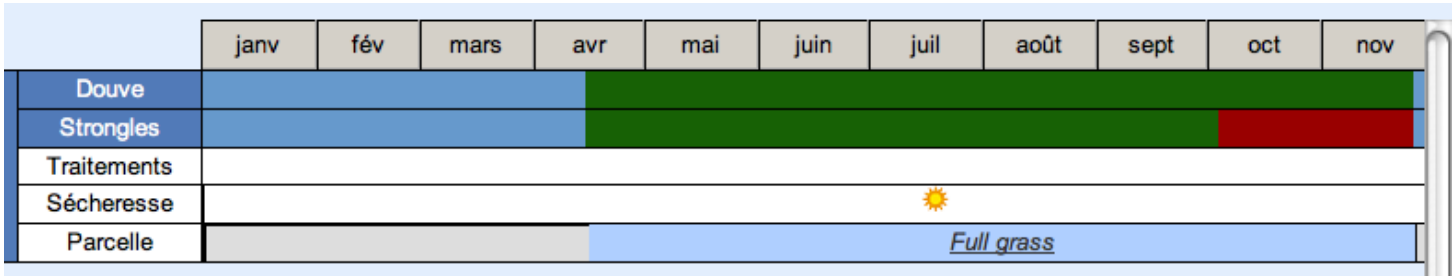
Date of LG1 if high residual contamination (to be careful)

Date of LG3 if mother-calf pairs (Ravinet 2010)

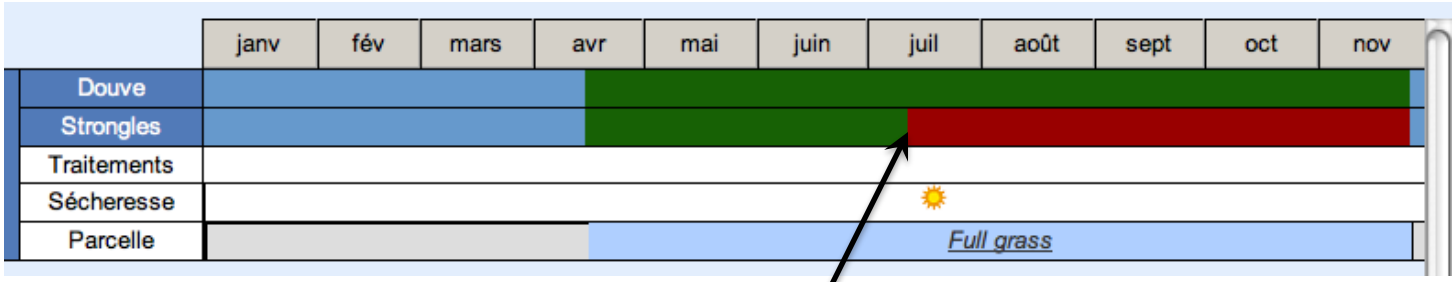
Diagram of the the model



Issue of the model Parasit'info

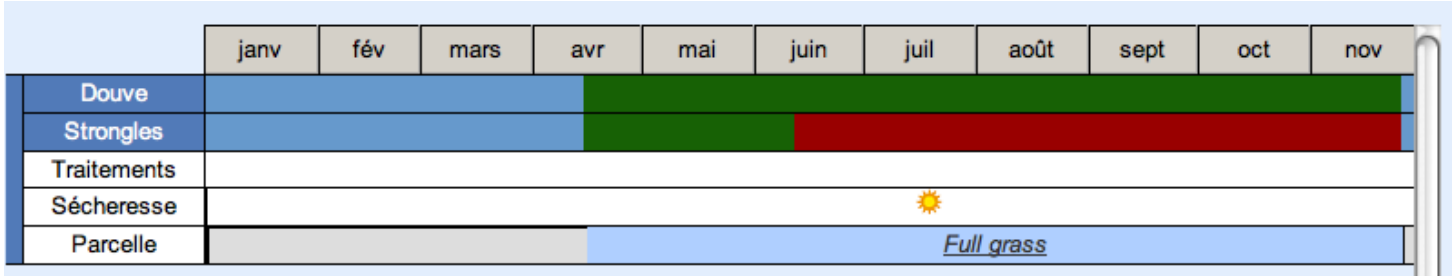


Cold pasture season



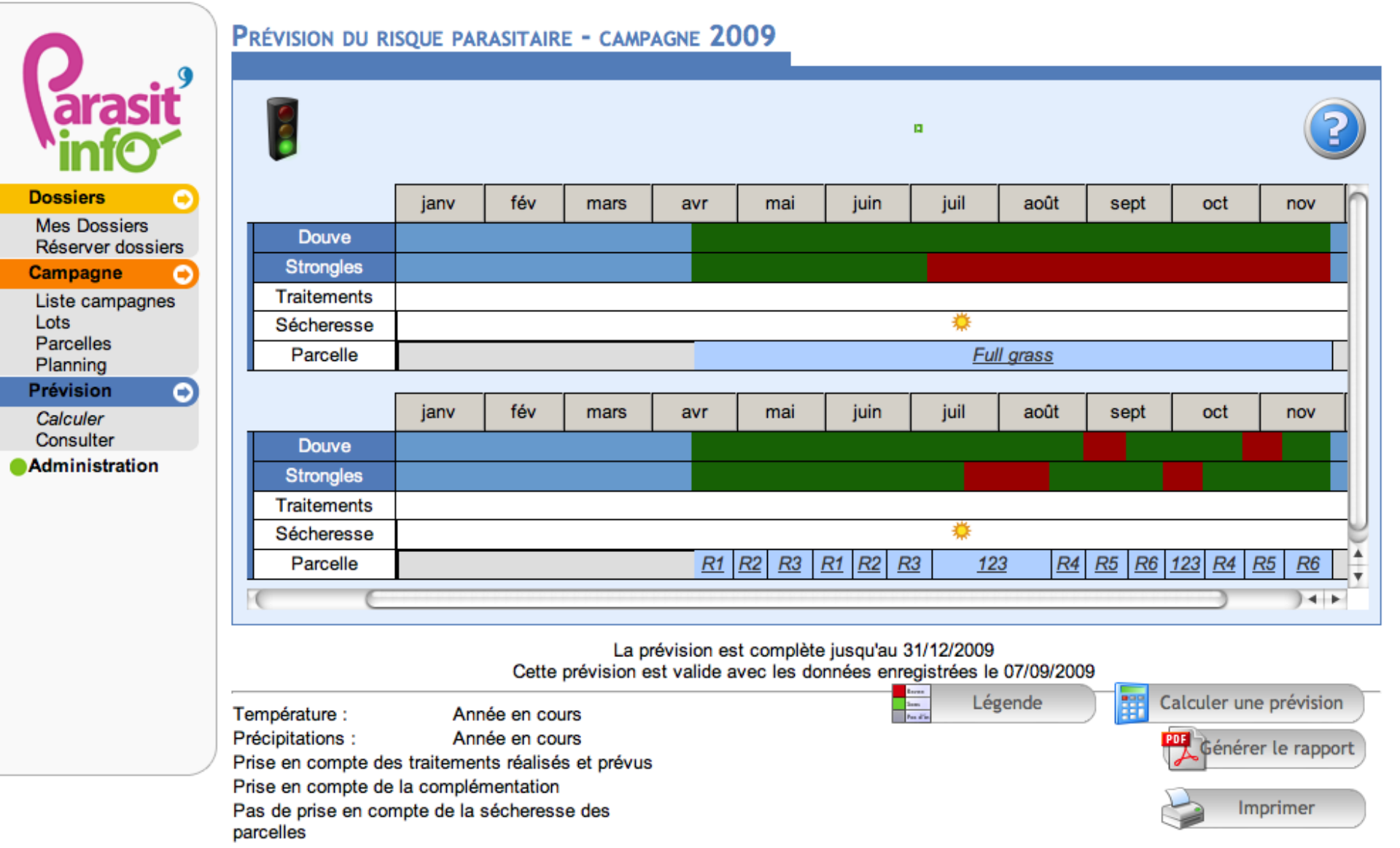
Mean temperature

Date of L3G2



Hot pasture season

Issue of the model Parasit'info



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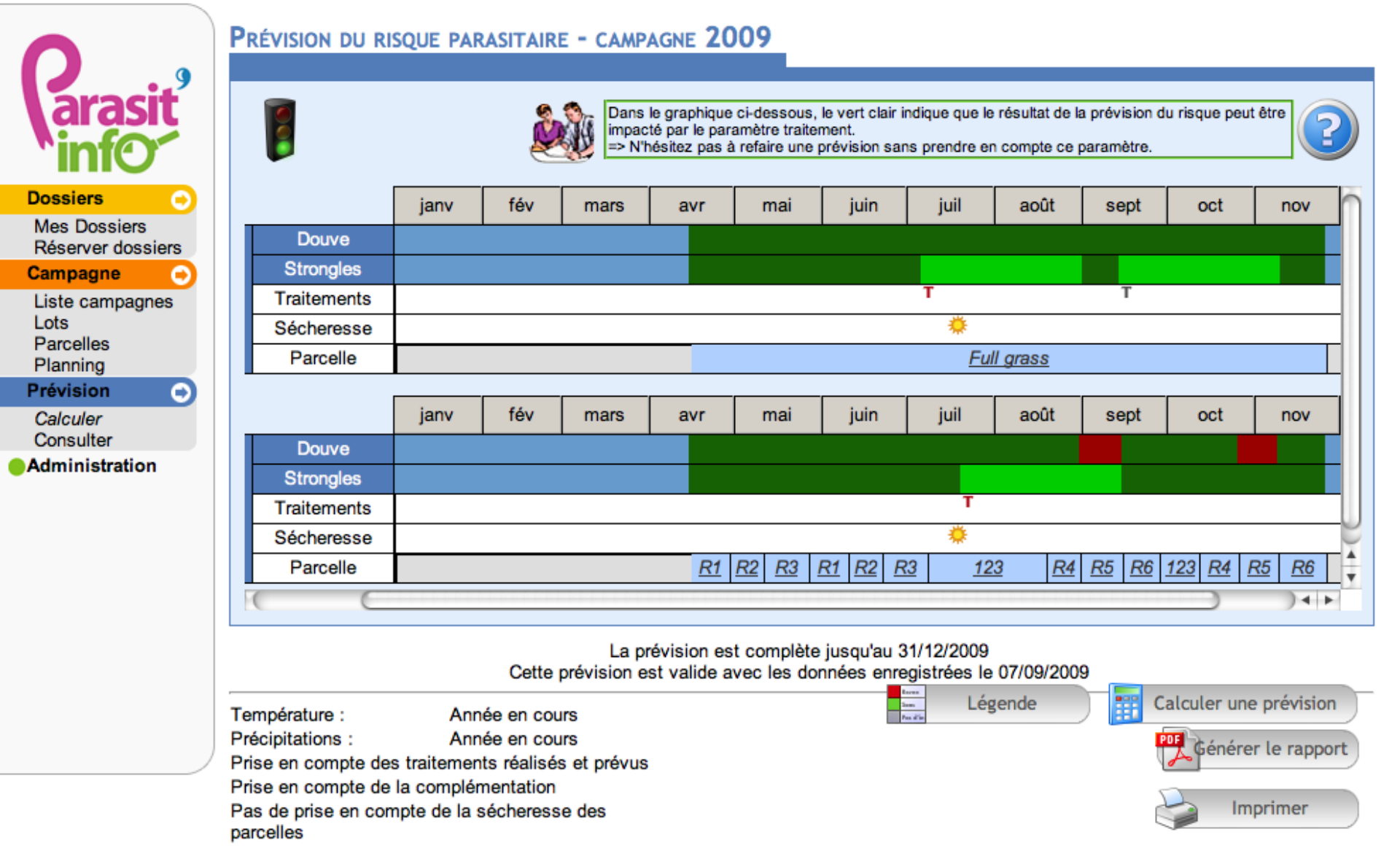

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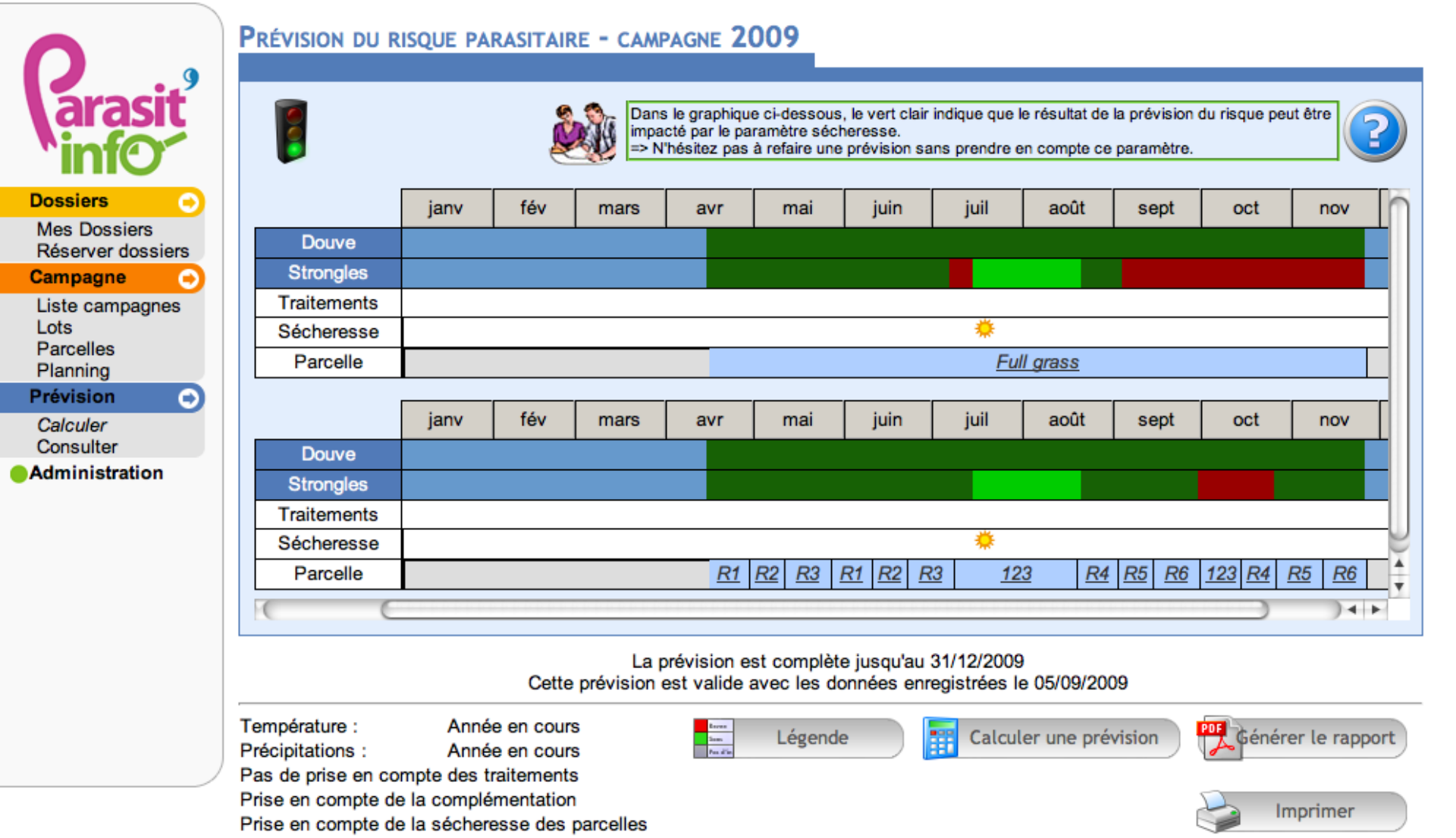

Conclusion

- **A tool to evaluate the period of GIN parasitic risk on heifers**
- **Based on the analysis of herd management**
- **Optimization of treatment**
  - **Simulation taking into account the herd management**
  - **Less number of treatment**

    Preliminary study in Bretagne on 44 farms : - 50 %

- **Further development**
  - System to carefull
  - ++ Risk after drouhgt

Thank you for your attention

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  - ✓ **GDS**
  - ✓ ***CIFRE – French livestock institute***
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