Modelling lucerne growth and development under dryland conditions

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2021-08-28

Contents

Chapter 1

What is this book for?

This book is a supplementary material for my master studying on the Agricultural Production Systems sIMulator next generation (APSIMX).

- Why a book?

1. I want to document the rational about the critical decision I made along the way. At least in a code format so that I may recall in the future.

2. Looks nice and easy to share with others.

3. Github is free to host it.

- About the masters project

The project aims to understand Lucerne or Alfalfa performance under water deficit conditions in New Zealand and seek alternative ways for parameterising the APSIMx-Lucerne model.

- About me

I'm a Data Scientist work in a reseach insititute called Plant and Food Research in New Zealand. I am also doing my master thesis at Lincoln University as a part-time student. The research topic I proposed covers three different subjects: plant, soil and data science. After graduated from an agricultural degree, I picked up data science skills through the working experience and grow my passion in the applications of data science on investigating the interaction between plants and environments. This blog was created as a documentation site for the master study. Contents may range from tips and tricks in programming tools like R and Python to errors and solutions for specific modelling framework such as APSIM Next Generation. Some random thoughts might also come along every now and then.

Chapter 2

Introduction

You can label chapter and section titles using `{#label}` after them, e.g., we can reference Chapter 2. If you do not manually label them, there will be automatic labels anyway, e.g., Chapter 4.

Figures and tables with captions will be placed in `figure` and `table` environments, respectively.

```
knitr::include_graphics(path = "pictures/NZYIELDMAP.png" )
```

Reference a figure by its code chunk label with the `fig:` prefix, e.g., see Figure 2.1. Similarly, you can reference tables generated from `knitr::kable()`, e.g., see Table 2.1.

```
knitr::kable(
  head(iris, 20), caption = 'Here is a nice table!',
  booktabs = TRUE
)
```

You can write citations, too. For example, we are using the **bookdown** package (Xie, 2021) in this sample book, which was built on top of R Markdown and **knitr** (Xie, 2015).
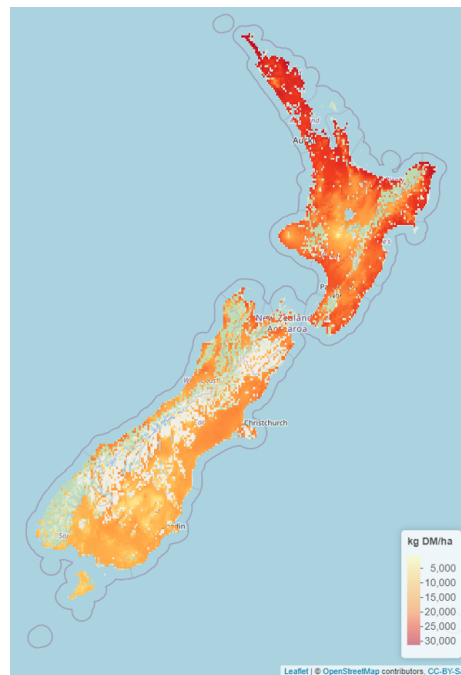
Figure 2.1: A demonstration yield map generated by robust Lucerne model.

Table 2.1: Here is a nice table!

Sepal.Length	Sepal.Width	Petal.Length	Petal.Width	Species
5.1	3.5	1.4	0.2	setosa
4.9	3.0	1.4	0.2	setosa
4.7	3.2	1.3	0.2	setosa
4.6	3.1	1.5	0.2	setosa
5.0	3.6	1.4	0.2	setosa
5.4	3.9	1.7	0.4	setosa
4.6	3.4	1.4	0.3	setosa
5.0	3.4	1.5	0.2	setosa
4.4	2.9	1.4	0.2	setosa
4.9	3.1	1.5	0.1	setosa
5.4	3.7	1.5	0.2	setosa
4.8	3.4	1.6	0.2	setosa
4.8	3.0	1.4	0.1	setosa
4.3	3.0	1.1	0.1	setosa
5.8	4.0	1.2	0.2	setosa
5.7	4.4	1.5	0.4	setosa
5.4	3.9	1.3	0.4	setosa
5.1	3.5	1.4	0.3	setosa
5.7	3.8	1.7	0.3	setosa
5.1	3.8	1.5	0.3	setosa

Chapter 3

Literature

Here is a review of existing methods.

Chapter 4

Methods

We describe our methods in this chapter.

Chapter 5

Applications

Some *significant* applications are demonstrated in this chapter.

5.1   Example one

5.2   Example two

Chapter 6

Final Words

We have finished a nice book.

Bibliography

Xie, Y. (2015). *Dynamic Documents with R and knitr*. Chapman and Hall/CRC, Boca Raton, Florida, 2nd edition. ISBN 978-1498716963.

Xie, Y. (2021). *bookdown: Authoring Books and Technical Documents with R Markdown*. R package version 0.22.