



# North Wyke Farm Platform

## Livestock Data



## User Guide



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# The North Wyke Farm Platform: Livestock Data

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**Description:** The North Wyke Farm Platform (NWFP) was established in 2010 to study and improve grassland livestock production at the farm-scale. The NWFP uses a combination of environmental sensors, routine field and lab-based measurements, and detailed management records to monitor livestock and crop production, emissions to water, emissions to air, soil health, and biodiversity. The rich NWFP datasets help researchers to evaluate the effectiveness of different grassland (and arable) farming systems, which in turn, contributes to the development of sustainable, resilient and net zero land management strategies. This document serves as a user guide to the collection and management of livestock data and is associated with other dedicated user guides that detail the design, establishment and development of the NWFP, and field events.

**Site:** North Wyke, Okehampton, Devon, UK. Geographic location: 50.76944, -3.90138; 50°46'10" N, 3°54'05" W.

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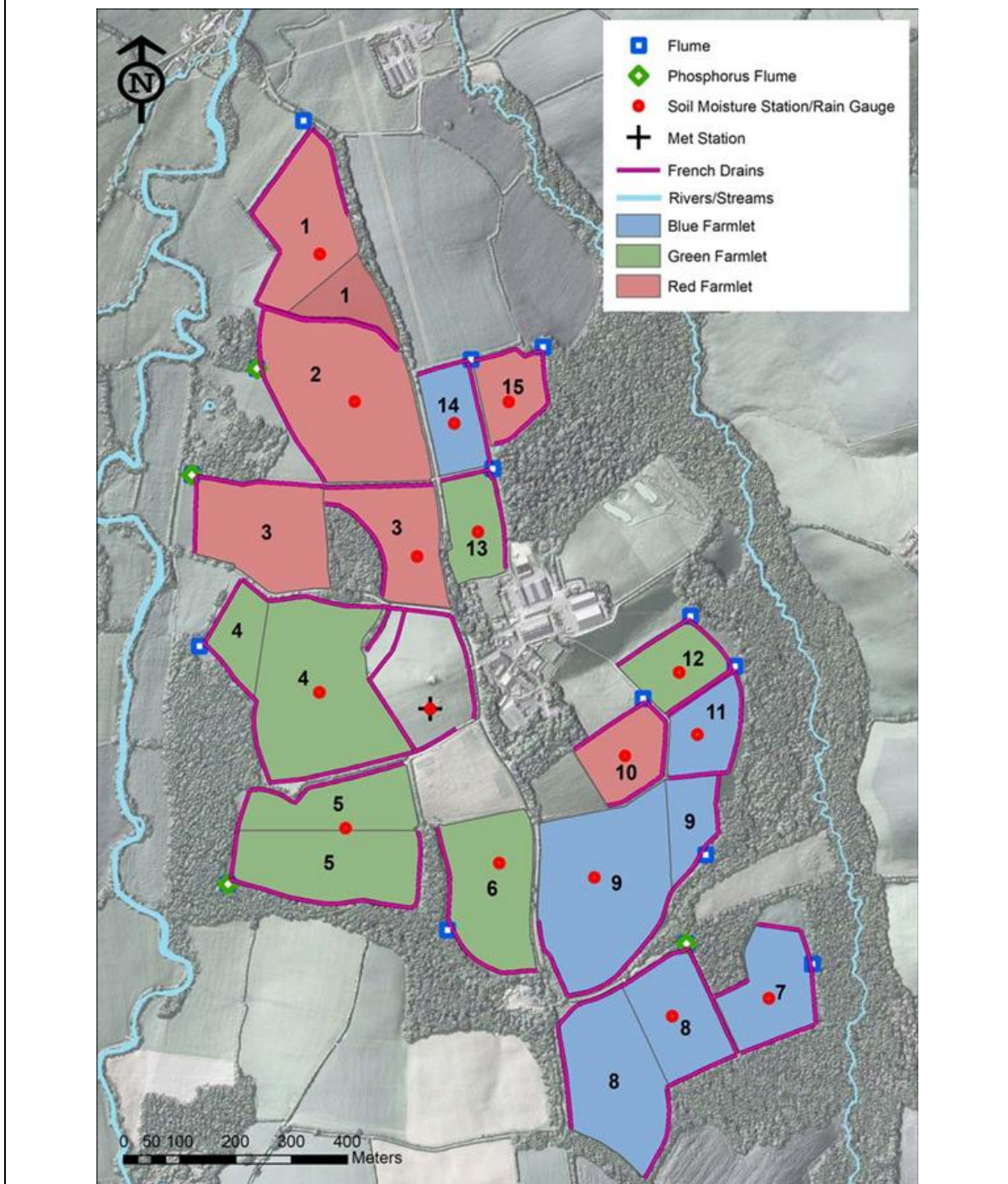
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# 1. Introduction

This document provides a guide to the livestock data produced on the NWFP (Figure 1). Information on the site characteristics and design and development of the NWFP can be found in the User Guide entitled 'NWFP\_UG\_Design\_Develop.pdf' available on the NWFP website.

Figure 1. Map of NWFP showing systems as of 2015-2019 (first system change period <sup>1</sup>).



<sup>1</sup> Green farmlet = permanent pasture, Blue farmlet = high sugar grass/clover; Red farmlet = high sugar grass, and later converted to arable in autumn 2019 (start of second system change period). In November 2017, phosphorus was measured at catchment or flume 3 in addition to flumes 2, 5, & 8. From autumn 2023 onwards phosphorus will be measured on all catchments. Numbers represent catchment number. Note some catchments consist of multiple fields.

# 1 Cattle Management

A spring-calving suckler herd belonging to North Wyke is run as a separate enterprise grazing away from the NWFP. Until 2016, a Hereford x Friesian herd provided predominantly Continental x calves ([Figure 2](#)).

Calves graze with their mothers until weaning in autumn when the calves come onto the NWFP. They are housed and fed silage, and in addition, a small amount of concentrates may be fed for a short period before and after weaning to facilitate the change in their diet. In the first winter, concentrates (by-products only) are fed to maintain growth rates of  $0.75 \text{ kg day}^{-1}$  if nutritional needs are not met by silage alone.

Figure 2. Continental cross cattle.



In 2016, the decision was made to begin replacing the Hereford x Friesian dams and sires with pedigree Stabilisers™.

Figure 3. Stabiliser cattle.



The Stabiliser breed is a blend of British and Continental inputs including Hereford, Red Angus, Simmental and Gelbvieh. The first dams and sires were purchased in 2016 with their progeny first grazing the farm platform in 2017 ([Figure 3](#)).

In 2019, the Red farmlet was converted to arable cropping and the cattle that would have been associated with that farmlet are from

here on permanently housed from weaning to slaughter. This represents a fourth system (Brown farmlet) for evaluation of indoor intensive finishing.

Full details of the breeds and numbers of cattle grazing each year are given in [Appendix A](#).

## 2 Sheep Management

The North Wyke farm spring-lambing flock of Suffolk x Mule ewes provide the ewes and their twin lambs (Figure 4) to graze the farmlets. The breed of ram used varied during the early years of the NWFP (Texel, Charollais, Lleyn for first-time lambers), but since 2014 only Charollais rams are used.

Figure 4. A Suffolk x Mule ewe and her twin lambs grazing on the NWFP.



Lambs are weaned in early July each year then moved to other fields on their respective farmlet which have typically been cut for silage in late May / early June. Until 2022, the numbers of animals grazing were balanced between the three farmlets but post 2019, following conversion of the Red farmlet to arable cropping, grazing only occurs on the Blue and Green farmlets. Prior to 2019, when the pregnant NWFP ewes were housed for lambing, they re-joined a larger flock of approx. 360 ewes and were fed the same silage each year made from permanent pasture plus additional concentrates fed according to predicted litter size. In 2019, the Orr Small Ruminant Facility (SRF) building was completed which allows both the housing of the sheep during the winter period in their different farmlet groups as well as subgroups based on their predicted litter size. Full details of the breeds and numbers of sheep grazing each year are given in [Appendix B](#).

### 3 Livestock Data

This section gives details of the cattle and sheep data that are available for download from the Data Portal. If in the 'Animal Location File', the location is stated as a number (without NW field designation), it means that the animal was grazing the entire catchment. In this case, the number is the catchment number. The codes used to denote the breeds of cattle and sheep in the Data Portal are given in [Appendix C](#) and [Appendix D](#), respectively.

#### 3.1 Cattle Data

- Cattle Basic Data: Official Tag, Management Tag, Breed, Sex, Date of Birth, Sire/Birth Dam/Rearing Dam tags, Farmlet, Grazing year.
- Cattle Location Data: for each animal – the date it moved into a new field and the identifier of the field moved to. Animal Location Counts for each catchment can be generated from these data.
- Cattle Weight Data: Official Tag, weights for each date that animals have been weighed and/or assessed for body condition score [[Edmonson et al., 1989](#)].
- Cattle Sales Data: Official Tag, Date Sold, where Sold To, Final Live Weight and the date it was measured, Cold Carcase Weight, Conformation and Fat Class Score [[English Beef and Lamb Executive, 2012a](#)] and the Price received per kg of carcase.

#### 3.2 Sheep Data

- Breeding Sheep Basic Data: Official Tag, Management Tag, Breed, Sex, Birth Year, Date of Birth, Sire/Birth Dam tags, Farmlet, Birth Litter Size.
- Breeding Sheep Location Data: for each animal – the date it moved into a new field and the identifier of the field moved to. From this can be generated Animal Location Counts for each catchment.
- Breeding Sheep Weight Data: Official Tag, weights for each date that animals have been weighed and/or assessed for body condition score.
- Lamb Basic Data: Official Tag, Management Tag, Breed, Sex, Date of Birth, Sire/Birth/Rearing Dam tags, Birth Litter Size, Rearing Litter Size, Farmlet, Grazing Year.
- Lamb Location Data: for each animal – the date it moved into a new field and the identifier of the field moved to. Animal Location Counts for each catchment can be generated from these data.
- Lamb Weight Data: Official Tag, weights for each date that any animals have been weighed.
- Lamb Sales Data: Official Tag, Date Sold, where Sold To, Final Live Weight and the date it was measured, Cold Carcase Weight, Conformation and Fat Class Score [[English Beef and Lamb Executive, 2012b](#)] and the Price received per kg of carcase.

## 4 Grazing and Cutting Management

From 2011 onwards the NWFP fields are continuously stocked [Allen, 2011] and any herbage which is not required for grazing is conserved as silage for winter feed for the cattle and sheep (Figure 5). The calves are allocated to the Green, Blue or Red farmlets (only up until 2018 due to grassland to arable conversion) at turnout each year. During winter housing the cattle and sheep are fed silage, but whilst the quantities harvested from each farmlet are measured (see Data Portal, Field Surveys) the material is combined and ensiled in the same clamps. The forage harvested in 2014, after the reseeding programme had commenced, was ensiled in separate dedicated Green, Blue and Red farmlet clamps and this is the case from then onwards. When there are additional cuts later in the season, these are made into big-bales which are labelled as belonging to the Green, Blue or Red farmlets. In 2020, AgBags were used for the first and only time instead of round bales.

Figure 5. Forage harvesting, ensiling in clamps, round bales, Agbags, and feeding of silage.





## 5 Data Portal

The NWFP Data Portal (<https://nwfp.rothamsted.ac.uk/>) allows accessibility to the core NWFP datasets to not only Rothamsted Research but also the wider research community. The data are open access and free to download but users are required to register their interest.

For information on the latest version of the 15-minute datasets and the changes since the last version, please refer to the User Guide entitled 'NWFP\_UG\_QC.pdf' available on the NWFP website:

<http://resources.rothamsted.ac.uk/farm-platform-national-capability/data-portal-guides-and-information>.

In addition, the website offers a wealth of online, and regularly updated information to complement the data.

## 6 Citing the Data

If you choose to use any of datasets provided by the NWFP in a publication, please cite:

- Orr, R. J., Murray, P. J., Eyles, C. J., Blackwell, M. S. A., Cardenas, L. M., Collins, A. L., Dungait, J. A. J., Goulding, K. W. T., Griffith, B. A., Gurr, S. J., Harris, P., Hawkins, J. M. B., Misselbrook, T. H., Rawlings, C., Shepherd, A., Sint, H., Takahashi, T., Tozer, K. N., Whitmore, A. P., Wu, L. and Lee, M. R. F. (2016). *The North Wyke Farm Platform: effect of temperate grassland farming systems on soil moisture contents, runoff and associated water quality dynamics*. *European Journal of Soil Science*, 67, 4, 374-385. ([doi:10.1111/ejss.12350](https://doi.org/10.1111/ejss.12350)).

In addition, if using data from the baseline period please cite:

- Takahashi, T., Harris, P., Blackwell, M. S. A., Cardenas, L. M., Collins, A. L., Dungait, J. A. J., Hawkins, J. M. B., Misselbrook, T. H., McAuliffe, G. A., McFadzean, J. N., Murray, P. J., Orr, R. J., Rivero, M. J., Wu, L. and Lee, M. R. F. (2018). *Roles of instrumented farm-scale trials in trade-off assessments of pasture-based ruminant production systems*. *Animal*, 12, 8, 1766-1776. ([doi:10.1017/S1751731118000502](https://doi.org/10.1017/S1751731118000502)).
- Orr, R. J., Griffith, B. A., Rivero, M. J. and Lee, M. R. F. (2019). *Livestock Performance for Sheep and Cattle Grazing Lowland Permanent Pasture: Benchmarking Potential of Forage-Based Systems*. 9, 2, 101-118. ([doi:10.3390/agronomy9020101](https://doi.org/10.3390/agronomy9020101)).

For the datasets used, please cite the latest version of the relevant User Guide PDF document(s), listed in the table below, that describe the establishment and development of the NWFP, and the various datasets produced in detail. The link to these can be downloaded from the NWFP website. Note that the User Guide entitled 'NWFP\_UG\_Design\_Develop.pdf' should be cited irrespective of the dataset used.

Data used	Main title of User Guide PDF document
All datasets	NWFP_UG_Design_Develop.pdf
15-minute time-series datasets (water, soil moisture, meteorology)	NWFP_UG_Hydrology&WaterQuality_Data.pdf NWFP_UG_SMS_Data.pdf NWFP_UG_MET_Data.pdf
Greenhouse gases	NWFP_UG_EC_GHG_Data.pdf NWFP_UG_GreenFeed_Data.pdf
Field surveys	NWFP_UG_FieldSurvey_Data.pdf
Livestock	NWFP_UG_Livestock_Data.pdf
Field events	NWFP_UG_FieldEvents_Data.pdf

Also, please include the following sentences in the acknowledgments section:

*“The North Wyke Farm Platform is a UK National Capability supported by the Biotechnology and Biological Sciences Research Council (BBS/E/RH/23NB0008).”*

*“We acknowledge the interests of the Ecological Continuity Trust (ECT), whose national network of LTEs includes the experiment on which this research was conducted.”*

## 7 References

Allen VG, Batello C, Berretta EJ, Hodgson J, Kothmann M, Li X, Mclvor J, Milne J, Morris C, Peeters A and Sanderson M (2011). An international terminology for grazing lands and grazing animals. *Grass and Forage Science* 66, 2-28.

Edmonson A.J., Lean I.J., Weaver L.D., Farver T. and Webster G. (1989). A Body Condition Score for Holstein Dairy Cows. *J Dairy Sci.* **72**, 68-78.)

English Beef and Lamb Executive (2012a). Marketing prime beef cattle for better returns, EBLEX Beef manual 2, Stoneleigh Park, Kenilworth UK.

English Beef and Lamb Executive (2012b). Marketing prime lamb for better returns, EBLEX Sheep manual 1, Stoneleigh Park, Kenilworth UK.

## 8 Appendix

Appendix A. Details of cattle breeds and grazing numbers per year.

Year	Cattle/farmlet	Total	Homebred	Notes
2011	25	75		
2012	~27	96	27 Continental X	+5 purchased Continental X (b. Aug 2011)
2013	30	90	20 Continental X weaned calves 5 Continental X cattle (b. Aug 2011)	+5 purchased Hereford X
2014	30	90	17 Charolais X 5 Hereford X	+8 purchased Belgian Blue X Friesian
2015	30	90	24 Charolais X 6 Hereford X	
2016	30	90	61 Charolais X 11 Hereford X	+18 purchased Limousin X. 1 animal put back on Blue farmlet from the previous year as it didn't finish during the winter 2015/2016 period
2017	~30	90	6 Stabiliser 72 Charolais X	+12 purchased Limousin X
2018	~30	90	24 Stabiliser 42 Stabiliser X 24 Charolais X	
2019	30	90	30 Stabiliser, 60 Stabiliser X	None on Red farmlet from hereon due to arable conversion. 30 animals now in Brown treatment
2020	30	90	48 Stabiliser 42 Stabiliser X	63% steers, 37% heifers
2021	30	90	70 Stabilizer 20 Stabiliser X	73% steers, 27% heifers
2022	30	90	72 Stabilizer 18 Stabilizer X	67% steers, 43% heifers

Appendix B. Details of sheep breeds and grazing numbers per year.

Year	Ewes/farmlet	Lambs/farmlet	Notes
2011	50	100	Suffolk x Mule dam TEX, CHA, or LLE sire ~50 additional ewes added post weaning
	50		
2012	50	100	Suffolk x Mule dam TEX, CHA, or LLE Sire ~50 additional ewes added post weaning
	50		
2013	10	10	10 ewes with singles, 40 ewes with twins per farmlet, sired by TEX, CHA or LLE rams. Additional store lambs purchased and added to each weaned lamb flock in July 2013. Up to 60 additional ewes per farmlet (number accurately recorded) were added after weaning. Ewes grazed till 2 January 2014 when they were housed
	40	80	
	~60		
2014	10	10	Sired by CHA rams. Additional 25 ewes added post weaning. Ewes grazed till 7 January 2015 when they were housed.
	40	80	
	25		
2015	15	15	Ewes now allocated to a farmlet at lambing 2015 for the remainder of their life. 75 ewes per farmlet. Older ewes culled August 2015 and replaced by 15 shearlings in each farmlet. Thus, each flock maintained at 75 ewes which went to the ram in October 2015 for lambing in 2016. Ewes grazed till 30 December 2015 when they were housed.
	60	120	
	15		
2016	75	Varying	Number of lambs grazing the NWFP in 2016 and 2017 varied between farmlets due to differences in conception rates. Where possible fostering occurred at lambing time within the farmlet, but excess lambs (triplets that could not be fostered to a ewe with a single lamb) were removed from the NWFP. Ewes not in lamb were also removed for sale. Culls and older ewes removed each Autumn of 2016-2018 and shearling ewes so that 75 ewes were present on each farmlet to go to the ram (CHA). The numbers of shearling ewes added varied between farmlets due to differences in death rates, culling rates, and the number of ewes not in lamb: 2016 - Green 24, Blue 18, Red 21; 2017 - Green 28, Blue 22, Red 26; 2018 - Green 16, Blue 29, Red 20 The number of lambs grazing each farmlet varied both between years and between farmlets, as dependant on ewe conception and lamb survival rates. Lambs weighed and selected for slaughter ~ fortnightly post weaning with the aim of producing carcasses that met abattoir specifications (weight 16-21 kg, conformation E, U or R, fat class 2 or 3L).
2017	75		
2018	75	Varying	
2019	75	Varying	The number of lambs grazing varied between farmlets, as dependant on ewe conception rates and lamb survival rates. Lambs were weighed on 3 occasions pre-weaning and were selected for slaughter approximately fortnightly post weaning, with the aim of producing carcasses that met abattoir specifications (weight 16-21 kg, conformation E, U or R, fat class 2 or 3L). All sheep (ewes and lambs) were removed from the Red farmlet in August 2019, to transition the farmlet into arable. Culls and older ewes were removed from the Blue and Green farmlets post weaning and shearling ewes (Green 22, Blue 18) were added in October, in order that 75 ewes were present on each farmlet to go to the ram (CHA).
2020	75	Varying	Following the conversion of the red farmlet from pasture to arable in autumn 2019 the number of farm platform flocks was reduced from 3 to 2 (Green and Blue). The number of lambs grazing the NWFP varied between farmlets, as dependant on ewe conception and lamb survival rates. Lambs weighed on 3 occasions pre-weaning and were selected for slaughter approximately fortnightly post weaning, with the aim of producing carcasses that met abattoir specifications as defined above. Culls and older ewes were removed from the Blue and Green farmlets post weaning and shearling ewes (Green 21, Blue 25) were added in October, in order that 75 ewes were present on each farmlet to go to the ram (Charollais). 2020 also marked the first use of the Orr Small Ruminant Facility, allowing the blue and green farmlet flocks to be winter housed for lambing and fed separately on silage produced from the system for the first time.
2021	75	Varying	The number of lambs grazing varied between farmlets, as dependant on ewe conception rates and lamb survival rates.
2022	75	Varying	The number of lambs grazing varied between farmlets, as dependant on ewe conception rates and lamb survival rates.

*Appendix C. Cattle breeds and the official codes used to denote them in the data portal.*

<b>Cattle Breed</b>	<b>Abbreviation<sup>‡</sup></b>
Charolais cross	CHX
Hereford cross	HEX
Belgian Blue x Friesian	BBX
Limousin cross	LIMX
Stabiliser	ST
Stabiliser cross	STX

*Appendix D. Sheep breeds and the codes used to denote them in the data portal.*

<b>Sheep Breed</b>	<b>Abbreviation</b>
Charollais	CHA
Texel	TEX
Lleyn	LLE

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<sup>‡</sup> <https://www.gov.uk/guidance/official-cattle-breeds-and-codes>