February 2024 Newsletter - Spring Cropping

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Welcome to the February 2024 edition of ADAS' quarterly knowledge exchange newsletter.

In preparation for the next Knowledge Exchange Event, which is planned for the end of February, this month's newsletter will focus on establishing and managing spring crops. This is aimed at producers growing spring crops as an arable enterprise or to produce their own feed and straw for another on-farm enterprise.

Spring Cereals

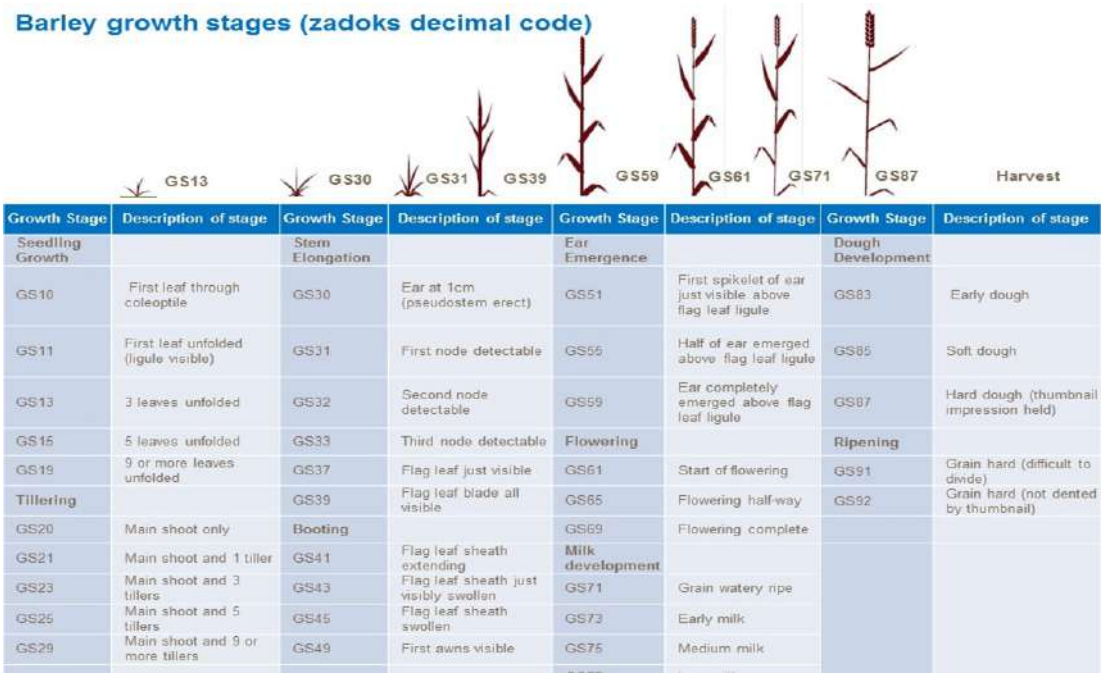
The optimum pH for spring cereals is 6.5 on a mineral soil. The target pH you should be aiming to maintain for grassland only and arable and grass rotations are given below. These levels apply to all fields across all cropping.

Cropping	Target pH on Mineral Soil	Target pH on peat soil
Grassland only	6.0	5.3
Arable and Grass Rotation	6.5	5.8

Spring Barley

Spring barley has flexible sowing dates from mid-March to late April. March is the optimal time to plant the crop if conditions are right. Choosing the correct variety for the intended use and considering the impact of soil type is also important, ensuring that you grow the best variety for your land.

The diagram below from the AHDB Details the growth stages of barley.



Growth Stage	Description of stage	Growth Stage	Description of stage	Growth Stage	Description of stage	Growth Stage	Description of stage
Seedling Growth		Stem Elongation		Ear Emergence		Dough Development	
GS10	First leaf through coleoptile	GS30	Ear at 1cm (pseudostem erect)	GS51	First spikelet of ear just visible above flag leaf ligule	GS83	Early dough
GS11	First leaf unfolded (ligule visible)	GS31	First node detectable	GS55	Half of ear emerged above flag leaf ligule	GS85	Soft dough
GS13	3 leaves unfolded	GS32	Second node detectable	GS59	Ear completely emerged above flag leaf ligule	GS87	Hard dough (thumbnail impression held)
GS15	5 leaves unfolded	GS33	Third node detectable	Flowering		Ripening	
GS19	9 or more leaves unfolded	GS37	Flag leaf just visible	GS61	Start of flowering	GS91	Grain hard (difficult to divide)
Tillering		GS39	Flag leaf blade all visible	GS65	Flowering half-way	GS92	Grain hard (not dented by thumbnail)
GS20	Main shoot only	Booting		GS69	Flowering complete		
GS21	Main shoot and 1 tiller	GS41	Flag leaf sheath extending	Milk development			
GS23	Main shoot and 3 tillers	GS43	Flag leaf sheath just visibly swollen	GS71	Grain watery ripe		
GS25	Main shoot and 5 tillers	GS45	Flag leaf sheath swollen	GS73	Early milk		
GS29	Main shoot and 9 or more tillers	GS49	First awns visible	GS75	Medium milk		

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Seed Bed and Establishment

For spring barley, the seed bed should be well drained and well worked to ensure good seed to soil contact, for maximum germination rate. If grass is being ploughed out for a spring barley crop, apply lime and manure/ fertiliser before cultivating and sowing. The seed bed should be consolidated, to reduce the likelihood of pests such as slugs and wireworm appearing, and to avoid manganese deficiency developing. The seed rate will vary dependent on the conditions at the time of planting.

For early sowing, it is recommended that 275-300 grains/m^2 are sown. If sown between early-April and mid-April 300-350 grains/m^2 should be sown, and if sown at the end of April, sow 350-375 grains/m^2.

Application of Fertiliser

Please refer to RB209 Section 4: Arable Crops to work out your SNS Index before determining any Nitrogen applications. https://ahdb.org.uk/knowledge-library/rb209-section-4-arable-crops

Spring Barley has varying nutrient demands at different growth stages; nitrogen is required in the seed bed to help kick start growth. Phosphate helps the development of the roots in young plants so it is also important within the seed bed.

The aim is to apply all the fertiliser in the seedbed or at least by the time the crop has three leaves. Please see below the nitrogen, phosphate, and potash recommendations from RB209. These are based on crop requirement and can be supplied from organic manures and/or inorganic fertilisers.

Barley, spring-sown – nitrogen

Table 4.22 Nitrogen for spring-sown barley

	Soil category	N recommendation (kg N/ha)						
		SNS Index						
		0	1	2	3	4	5	6
Feed	All soils[a]	160	140	110	70	30	0	0
Malting barley (1.8% grain N)	All soils[ab]	130	110	80	40	0	0	0

a. It is essential to calculate SNS for organic and peaty soils.

b. For grain N less than 1.8%, reduce nitrogen by 30 kg N/ha for each 0.1% reduction in grain N%.

The figures for phosphate and potash applications in Table 4.13 take into account straw being ploughed back into the ground, while Table 4.14 shows the phosphate and potash applications required if the straw is being removed.

Table 4.13 Phosphate and potash recommendations for cereals – straw ploughed in/incorporated

Crop	Nutrient (kg/ha)	Soil P or K index			
		0	1	2	3 and higher
Winter wheat (8 t/ha)	Phosphate (P_2O_5)	110	80	50	0
	Potash (K_2O)	105	75	45 (2-) 20 (2+)	0
Winter triticale (8 t/ha)	Phosphate (P_2O_5)	125	95	65	0
	Potash (K_2O)	105	75	45 (2-) 20 (2+)	0
Winter barley (6.5 t/ha)	Phosphate (P_2O_5)	110	80	50	0
	Potash (K_2O)	95	65	35 (2-) 0 (2+)	0
Spring barley (5.5 t/ha)[a]	Phosphate (P_2O_5)	105	75	45	0
	Potash (K_2O)	90	60	30 (2-) 0 (2+)	0
Spring wheat/ spring triticale/rye/ oats (6 t/ha)	Phosphate (P_2O_5)	110	80	50	0
	Potash (K_2O)	95	65	35 (2-) 0 (2+)	0

a. Recommendations for N in spring barley is based on an expected yield of 7 t/ha. If necessary, this can be adjusted to 5.5 t/ha to align with current P and K recommendations.

Table 4.14 Phosphate and potash recommendations for all cereals – straw removed

Crop	Nutrient (kg/ha)	Soil P or K index			
		0	1	2	3 and higher
Winter wheat (8 t/ha)	Phosphate (P_2O_5)	115	85	55	0
	Potash (K_2O)	145	115	85 (2-) 55 (2+)	0
Winter triticale (8 t/ha)	Phosphate (P_2O_5)	130	100	70	0
	Potash (K_2O)	145	115	85 (2-) 55 (2+)	0
Winter barley (6.5 t/ha)	Phosphate (P_2O_5)	115	85	55	0
	Potash (K_2O)	130	100	70 (2-) 40 (2+)	0
Spring barley (5.5 t/ha)[a]	Phosphate (P_2O_5)	105	75	45	0
	Potash (K_2O)	125	95	65 (2-) 35 (2+)	0
Spring wheat (6 t/ha)	Phosphate (P_2O_5)	110	80	50	0
	Potash (K_2O)	130	100	70 (2-) 40 (2+)	0
Spring triticale/ rye (6 t/ha)	Phosphate (P_2O_5)	110	80	50	0
	Potash (K_2O)	125	95	65 (2-) 35 (2+)	0
Oats (6 t/ha)	Phosphate (P_2O_5)	115	85	55	0
	Potash (K_2O)	160	130	100 (2-) 70 (2+)	0

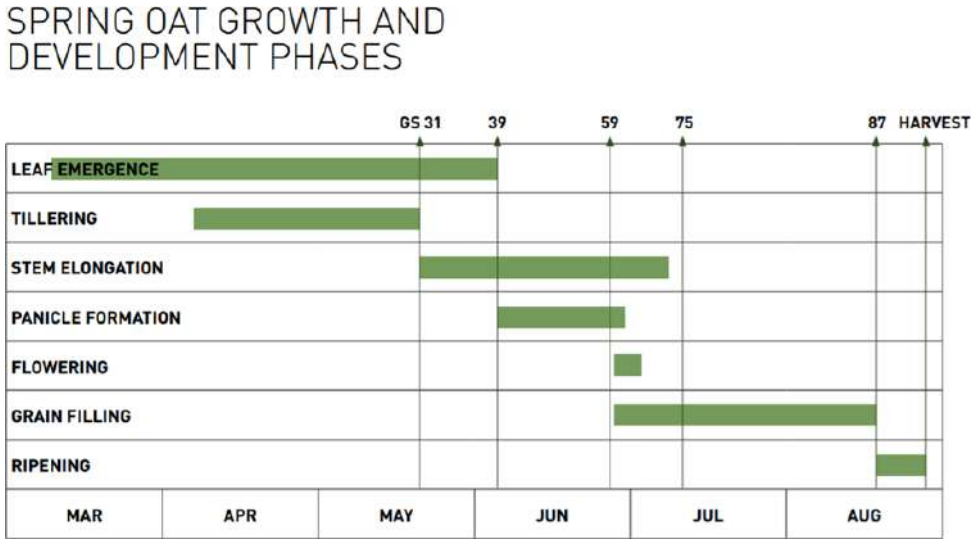
a. Recommendations for N in spring barley is based on an expected yield of 7 t/ha. If necessary, this can be adjusted to 5.5 t/ha to align with current P and K recommendations.

Leaf Emergence

With spring barley, the plant will emerge quickly after drilling in the correct conditions. Temperature is the main factor impacting leaf emergence. Leaf emergence appears from the stem and before the reproductive areas of the plants develop, determined by thermal time. Each leaf will emerge a set number of days after the last one, in line with temperature increases. This process continues until the final (flag) leaf emerges. Predicting leaf emergence for fungicide utilization will help keep disease low within the crop. Spring barley will produce fewer leaves than winter barley due to the shorter growing window.

Spring Oats

Spring oats are best sown between the end of February and mid-March, they can however be planted up until April. Spring oats require more time for rooting when compared to spring barley, so an early sowing date is beneficial. Well-drained and well-structured soil helps this crop.



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Seed Bed and Establishment

A good seed bed is required for maximum soil to seed contact, which will maximise the germination rate of each seed. Soil moisture is important for the seed bed, however waterlogged soils can create anaerobic conditions, meaning that oxygen is limited. This can reduce germination, so sowing timings are crucial. The seed rates vary between 300-350 seeds/m^2 sown which will result in a plant population of 250 plants per/m^2.

Pre-planting weed control is advised to reduce the likelihood of the crop becoming overrun with grass weeds, especially if grassland is being ploughed out for the crop.

Application of Fertiliser

Please refer to RB209 Section 4: Arable Crops to work out your SNS Index before determining any Nitrogen applications.

Spring oats require nitrogen (N), phosphate (P), and sulphur (S) in the seed bed to assist with quick, early establishment. Potash (K) becomes more important as the crop develops, alongside another application of nitrogen. The soil analysis results will determine the nutrients required.

The aim is to apply the fertiliser in the seedbed or at least before the crop has 3 leaves.

Tables 4.13 and Table 4.14 shows the phosphate and potash applications required for oats if straw is being ploughed in or baled.

Please see below the nitrogen recommendations spring oats in Table 4.21 from RB209:

Table 4.24 Nitrogen for spring-sown oats

Expected yield (t/ha)	N recommendation (kg N/ha)						
	SNS Index						
	0	1	2	3	4	5	6
Up to 7.5 t/ha	140	110	70	40	0–30	0	0
Over 7.5 t/ha	170	140	100	70	50	0–30	0

This table can also be used for spring-sown rye and triticale up to 7.5 t/ha expected yield for these crops.

Leaf Emergence

Leaves will start to emerge 3 – 4 weeks after planting, dependent on soil and weather conditions, temperature is the main factor impacting leaf emergence. This appears from the stem and is determined by thermal time. Each leaf will emerge a set number of days after the last in line as temperature increases. This process continues until the final (flag) leaf emerges. Predicting leaf emergence for disease and weed control utilization will help keep yields high by minimizing risk of crop loss to pests.

Tillering

Tillers begin emerging once the third leaf has emerged. This is the production of shoots as well as the main stem. Applying nitrogen before stem extension can increase tiller numbers, this will impact the overall crop yield. The production of shoots is normally complete before ear emergence. Nitrogen is important for the grain. Ensuring this crop has sufficient nutrients is vital for good yields.

Further Reading

https://www.syngenta.co.uk/news/spring-barley/spring-barley-establishment

https://www.hutton.ac.uk/sites/default/files/files/publications/Oat-Growth-Guide.pdf

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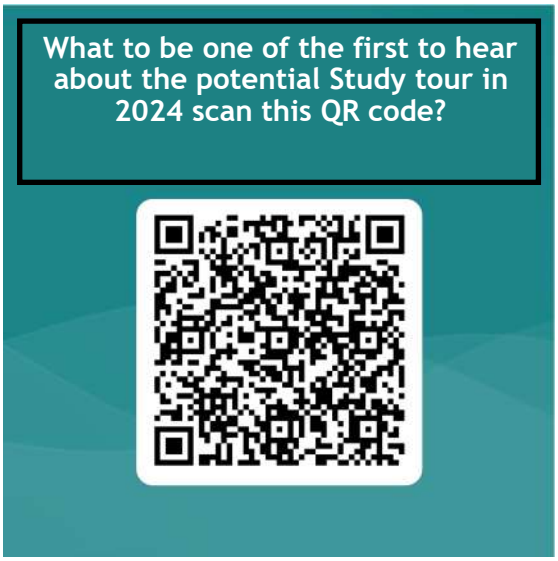
January Knowledge Exchange Event

We would like to thank the Victory Café for hosting our most recent Knowledge Exchange Event on Thursday 25th January. We invited farmers to come and talk about Key Performance Indicators and the benefits of benchmarking.

We would also like to thank the Next Generation Study Tour group who presented what they learnt from the Study Tour to the UK last November. The presentation showcased the different farm businesses they visited as well as the people they met and the ideas they gathered. They gained a lot of knowledge from the trip and we hope to organise further Study Tours in the future.

If you would like to be one of the first people to hear about future Study Tours please scan the QR code below.



Next event

Thursday 29th February (daytime) – Establishment and management of spring cropping for the arable producer and for the mixed farmer.

Could you benefit from a 1:1 meeting with an ADAS representative?

We would be pleased to organise a meeting with you to discuss your chosen topic. This meeting will be kept confidential. Fill out the form HERE or e-mail manxfarming@adas.co.uk