

# Greener Agriculture

# 5 core principles of regenerative agriculture:

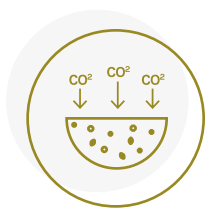


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# What is Regenerative Agriculture?



## Minimising Soil Disturbance

**Tillage loosens and removes any plant matter covering the soil, leaving it bare. Bare soil, especially soil that is deficient in rich organic matter, is more likely to be eroded by wind and water.**

Tilling releases carbon into the atmosphere and displaces and/or kills off the millions of microbes and insects that form healthy soil biology. The long-term use of deep tillage can convert healthy soil into a lifeless growing medium dependent on chemical inputs for productivity.

No-till/minimum tillage, in conjunction with other regenerative practices, enhances soil aggregation, water infiltration and retention, and carbon sequestration.

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## Building Soil Fertility Naturally

**Soil fertility is increased in regenerative systems biologically through application of cover crops, crop rotations, compost, and animal manures, which restore the plant/soil microbiome.**

Artificial and synthetic fertilisers have created imbalances in the structure and function of microbial communities in soils, bypassing the natural biological acquisition of nutrients for the plants, creating a dependent agroecosystem and weaker, less resilient plants.

Also, artificial fertilisers are manufactured from fossil fuels, in an energy intensive way, as well being a major contributor to increased nitrous oxide emissions in agriculture.

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## Enhancing Biodiversity

**Soils contain enormous numbers of diverse living organisms assembled in complex and varied communities. Soil biodiversity reflects the variability among living organisms in the soil - ranging from the myriad of invisible microbes, bacteria and fungi to the more familiar macro-fauna such as earthworms and termites.**

Plant roots can also be considered as soil organisms in view of their symbiotic relationships and interactions with other soil components. These diverse organisms interact with one another and with the various plants and animals in the ecosystem, forming a complex web of biological activity.

Building biological ecosystem diversity begins with inoculation of soils with composts or compost extracts to restore soil microbial community population, structure and functionality restoring soil system energy through full-time planting of multiple crop intercrop plantings, multispecies cover crops, and borders planted for bee habitat and other beneficial insects.

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## Diverse Cropping

Keeping the soil covered with diverse crops is key to regenerating them. Generally, the more plant diversity there is in a field, where the soil is kept covered with as many multiple crop and intercrop plantings, multispecies cover crops, and borders planted for bee habitat and other beneficial insects, the healthier the soil will be. Adding livestock to this rotation in a managed way, can have soil benefits through the use of organic matter and

natural fertiliser.

Diverse crop rotations will add to the diversity of soil microorganisms and create soils that assure crop resilience and optimum yield over time. This practice of incorporating plant diversity diversity, which is key to soil health and regenerative agricultural practices.



## Integrating Livestock

**Well-managed grazing practices stimulate improved plant growth, increased soil carbon deposits, and overall pasture and grazing land productivity while greatly increasing soil fertility, insect and plant biodiversity, and soil carbon sequestration.**



Regenerative grazing is a principle-driven agricultural practice of building soil health by managing livestock on perennial and annual forages, rather than just turning out your animals and letting them graze where they like when they like.

Regenerative grazing is managing where and for how long your animals graze to increase the cover of your grasses, the organic matter in your soil and the amount of photosynthesis per plant. The idea is to mimic nature whose grasslands evolved in a symbiotic relationship. It is not a strict formula or recipe and it relies on observation and adaptive management.



# Herbal leys for grazing

The deep-rooting nature of herbal leys increases drought resistance. The combination of the diverse growth habits of species can help improve soil structure, increase organic matter and improve microbacterial activity.

Diverse herbal ley mixtures produce a sward ideal for grazing or cutting, but the additional benefits to soil structure, nitrogen fixation and mineral and protein content are well documented. Many of the herbs have strong root systems and can help to store carbon as well as naturally helping to break up soil compaction.



# Regenerative Farming Mixtures

## Inter Row Herbal Ley

1.25 kg	AMBA, Cocksfoot
1.50 kg	OAKPARK, Diploid Late Perennial Ryegrass
1.75 kg	DOLINA, Timothy
1.25 kg	LAURA, Meadow Fescue
1.00 kg	PERUN, Festulolium
0.50 kg	AURORA, Alsike Clover
0.50 kg	ROZETA, Red Clover
0.40 kg	Yellow Sweet Clover
0.60 kg	GEA, Lucerne
0.50 kg	RIVENDEL, Small Leafed White Clover
1.80 kg	Sainfoin
0.50 kg	Birdsfoot Trefoil
0.25 kg	SPADONA, Chicory

0.60 kg	Burnet
0.10 kg	Yarrow
0.35 kg	Sheeps Parsley
0.15 kg	RANGER, Ribwort Plantain

13.00 kilos per acre

### — ABOUT

A diverse mixture of grasses, clovers and herbs, formulated to produce a sward ideal for interrow seeding. The diverse species have been selected specifically to not over grow higher than the main crop. This will not only provide quality forage but also with the deep rooting herbs, help to improve soil structure and draw up essential vitamins and minerals for ruminant animals, providing after harvest grazing for livestock.

## Herbal Ley

2.25 kg	ASTON CRUSADER, Tetraploid Hybrid Ryegrass
2.50 kg	NIFTY, Diploid Intermed Intermediate Perennial Ryegrass
1.50 kg	LAURA, Meadow Fescue
2.00 kg	DOLINA, Timothy
0.75 kg	NIVA, Cocksfoot
0.95 kg	ROZETA, Broad Red Clover
0.50 kg	BARBLANCA, Large Leafed White Clover
0.45 kg	AURORA, Alsike Clover
0.20 kg	Birdsfoot Trefoil
0.50 kg	GEA, Lucerne
0.70 kg	Yellow Sweet Clover

0.50 kg	SWORD/SPADONA, Chicory
0.15 kg	RANGER, Ribwort Plantain
0.45 kg	Burnet
0.10 kg	Sheeps Parsley

13.50 kilos per acre

### — ABOUT

A diverse mixture of grasses, clovers and herbs, formulated to produce a sward ideal for grazing or cutting. This will not only provide quality forage but also with the deep rooting herbs help to improve soil structure and draw up essential vitamins and minerals for ruminant animals.

# Regenerative Farming Mixtures

## Post Maize

6.25 kg	Westerwolds Ryegrass
6.25 kg	Tetraploid Italian Ryegrass

12.50 kilos per acre

— ABOUT

This blend of Italian Ryegrass and Westerwold Ryegrass sown immediately after harvesting a maize crop, establishes extremely fast, which will create excellent ground cover. This not only reduces erosion and loss of valuable nutrients through the winter months, but will provide early grazing, zero grazing or silage cuts. Sown in spring, after winter damage, it will show rapid growth and high yields.

## 2-3 Year (No Clover)

2.50 kg	SHAKIRA, Diploid Italian Ryegrass
2.50 kg	TEANNA, Tetraploid Italian Ryegrass
4.00 kg	LOFA, Festulolium
4.00 kg	ASTON CRUSADER, Tetraploid Hybrid Ryegrass

13.0 kilos per

— ABOUT

This is a blend of Diploid and Tetraploid Italian Ryegrasses with the inclusion of a Festulolium. It is suitable for a range of short-term uses, perfect for sowing in late autumn, it will produce a bumper crop in early spring for early grazing or for silage, prior to establishing another maize crop. Alternatively, it can be left for further cropping during the summer and autumn.

## 2-3 Year (Red Clover)

2.25 kg	SHAKIRA, Diploid Italian Ryegrass
2.50 kg	TEANNA, Tetraploid Italian Ryegrass
2.50 kg	LOFA, Festulolium
2.75 kg	ASTON ENERGY, Tetraploid Hybrid Ryegrass
2.50 kg	ROZETA, Red Clover

12.50 kilos per acre

— ABOUT

A grass mixture formulated to provide large cuts of protein rich hay or silage. It can also be grazed if required and is ideal for lamb fattening. When ploughed up, the red clover will leave good quantities of residual nitrogen in the soil for the following crop.



# Regenerative Farming Mixtures

## Sweet Grass

2.00 kg	NIFTY, Diploid Intermediate Perennial Ryegrass
2.75 kg	TODDINGTON, Diploid Late Perennial Ryegrass
3.00 kg	OAKPARK, Diploid Late Perennial Ryegrass
2.00 kg	CANCAN, Diploid Late Perennial Ryegrass
2.00 kg	NASHOTA, Tetraploid Late Perennial Ryegrass
0.30 kg	BARBLANCA, Large Leafed White Clover
0.50 kg	BUDDY, Medium Leafed White Clover
0.45 kg	RIVENDEL, Small Leafed White Clover

13.00 kilos per acre

### — ABOUT

This mixture has been designed to produce high sugar forage. All the varieties have been selected for their digestability and grazing yield, as well as their growth and productivity throughout the grazing season. The inclusion of highly digestible deeper rooted tetraploid, have been shown to be more tolerant of drier conditions. The selected varieties all exhibit good disease resistance.

## Living Mulch White Clover Blend

2.00 kg	RIVENDEL, Small Leafed White Clover
2.00 kg	GRASSLANDS HUIA, Medium Small Leafed White Clover

4.00 kilos per acre

### — ABOUT

This mixture of Leguminous clovers will cover and enhance the following season's planting area it will minimise open space problems, and will provide valuable nitrogen and organic matter into the soil.



# Cover Crop and Green Manure Species Options

Cover crops and green manures are important for building and maintaining soil fertility and structure, they can help with weed control and can be grazed. They're normally incorporated back into the soil, either directly, or after removal and composting.



# Why Use Cover Crops?

There are many reasons for considering cover crops in your farming system. Some of the main reasons are to occupy the land, reduce soil erosion, and to uptake available nutrients to avoid leaching. When choosing a cover crop the main criteria's are for them to be quick to germinate, establish and grow away quickly, thus ensuring rapid ground cover to suppress weed emergence and enabling the rapid uptake of available nutrients.

When choosing a cover crop, it should be considered carefully and viewed as an integral part of the rotation, ensuring it will help protect against potential weed volunteers, disease or pest problems. Cover crops can also assist with the improvement of soil structure, by sowing deeper rooting species which will penetrate deeper into the soil, break up underlying compaction, increase aeration and friability of the soil, which allows the mobility & transportation of nutrients for the forthcoming crops.

Cover or break crops in a rotation can have a significant impact on weed management and control with the main role being that of nutrient management (the uptake of nutrient such as nitrates) from the soil to prevent leaching from the soil. Consequently these nutrients are stored in the plants, and then returned to the soil by the incorporation prior to the planting of the following crop by incorporation as a green manure.

Other potential benefits offered by cover crops are that they are a short break between crops in relation to soil borne diseases, and pests and if the cover crop

is leguminous, it will also contribute nitrogen into the system. Cover crops can be beneficial as trap crops for problem pests such as nematodes.

Some cover crops can exhibit allelopathic properties which can have an inhibiting effect on surrounding plants. For example when grazing Rye has been incorporated into the soil and begins to break down, there is a significant reduction in emerging weed seedlings in the subsequent crop, and in some cases has shown to reduce weed biomass by over 60%.

There are a few disadvantages of using cover crops to be mindful of. They may affect the seed bed preparation for a subsequent crop, and have the potential to be a source of infection to those crops if chosen wrongly. For example, avoid using a forage rye between cereals, as this could act as a bridge for cereal stem-based diseases such as Take-all. The same has been documented when incorporating vetch as a green manure as, when incorporated, it exudates from the roots which can inhibit seed germination for a period of 3 to 4 weeks, therefore this must be considered when sowing a cereal crop straight after incorporation, and sowing should be delayed to allow for this effect to diminish.

Some decomposing cover crops and green manure residues release Allelochemicals that will inhibit the germination and development of crop and weed seeds.

When chosen correctly, Cover crops offer many benefits but please take advice to ensure the correct options are chosen for your specific farm needs.







## Forage Rye

Sown at 60kg/ha

Excellent weed suppression and high biomass. Lifts and holds N & K. Increases organic matter in the soil. Often sown in conjunction with Vetch. Rapid establishment, so it can be sown later.



## Italian Ryegrass

Sown at 40kg/ha

Excellent biomass production above and below ground level. IRG is quick to establish with good weed suppressing attributes. It has long-term soil improvement characteristics which can be grazed or conserved.



## Black Oats

Sow at 40kg/ha

Very quick to establish with good weed suppression and is also disease suppressing. N & K lift and hold. Increases organic matter.



## Brown Mustard

Sow at 5kg/ha

Very strong and early vigour for weed suppression. Produces isothiocyanate for biofumigant effect. Some frost tolerance. Increases organic matter and traps N & K. Can be used for grazing. Can be later sown than other crops.



## Oil Radish

Sow at 12kg/ha

Deep rooted for soil conditioning with good weed suppression. Has high biomass so increases soil organic matter. Has a biofumigant effect with some nematode control. Most Oil Radish are club root resistant.



## Tillage radish

Sown at 12kh/ha

Long tap root for deeper soil conditioning, also traps N & K. Has biofumigant effect. Significant control of beet cyst eelworm and other nematodes.



## Buckwheat

Sow at 50kg/ha

Raises N & P. Very quick growing with a large biomass. Not frost tolerant.



## Vetch

Sow at 40kh/ha

Excellent nitrogen fixer particularly when sown early, compatible with oats and rye (often sown together).



## Egyptian Clover

Sow at 12kh/ha

An annual legume for nitrogen fixing. Establishes quickly but has variable frost tolerance.



## Crimson Clover

Sow at 12kh/ha

Grows at lower temperatures than most other annual legumes. Quick establishment with an upright growth habit. Good weed suppression. Degrades into the soil very quickly.





## Red Clover

Sow at 12kg/ha

Has historically been used as a nutrient builder. A good nitrogen fixer but must be drilled early to get established. A winter hardy perennial.

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## Red Vetch

Sow at 40kg/ha

A quick growing high biomass producer.

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## Linseed

Sow at 30kg/ha

Easy to establish and is a good nitrogen fixer. A branch tap root aids soil conditioning. It is not as attractive to slugs as other crops.

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## Phacelia

Sow at 6kg/ha

Excellent disease break crop/insect attractant (hover flies eat aphids). Breaks down quickly to release C,P,K and Mg.

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## Kale/mustard hybrid

Sow at 5kg/ha

Very quick establishment giving excellent weed suppression. Traps N,P and K and is frost tolerant. Provides excellent game bird cover over winter.

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## White mustard

Sow at 5kg/ha

Excellent source of biomass and thus increases the organic matter, provides superior weed suppression, traps N & P in the growing crop. Has a biocidal effect against weeds and pests. Has some effects against nematodes.

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# Cover Crop Mixtures

Cover crops are used to improve soil status, composition and to improve soil nutrient levels but is also a basis of environment improvement, in an ever-changing agricultural vision. As custodians of the land on which we produce food, we have to be aware of high input costs ie artificial fertilisers and their impact upon the basic nutrients that we can obtain, and increase their availability with sustainability.

There are many plants that will improve soil conditions and structure. Different species have different attributes to offer. A selection of the correct species must be considered to provide what is required. Here we offer both choice and diversity.

## Buster Cover Mix

A mixture containing species with aggressive, deep roots that will help with difficult compacted soils and producing huge amounts of biomass. During the winter months this mixture can benefit the soil by providing vast quantities of Organic matter, prevent nutrients being lost and penetrate through compacted soils.

35% Buckwheat  
15% Linseed  
15% Daikon Radish  
12% Crimson Clover

12% Fodder Radish  
6% Gold of Pleasure  
5% Phacelia  
100%

Sowing rate 15-20 kilos per ha  
Pack size 25kgs & 500kgs

## N-Liven Cover Mix

The primary role of this seed mix is Nitrogen fixation to boost soil fertility between main crops especially two cereal crops. The mix maintains cover well into late winter and provides a range of rooting depths for enhanced soil aeration and drainage. The mix could also be grazed as a means of removal rather than chemical or cultivation methods.

60% Winter Vetch  
20% Crimson Clover  
10% Linseed  
10% Phacelia  
100%

Sowing rate 15 kilos per ha  
Pack size 25kgs

## N-Trap Cover Mix

A combination of fast-growing species that act as an alternative food source and distraction to pests that prey on brassica crops. The canopy cover has the potential to slow the progress of flea beetle whilst fixing and releasing nitrogen to companion oilseed rape crops. The cover crop will die back over winter for ease of management.

65% Buckwheat  
35% Egyptian Clover  
100%

Sowing rate 10 kilos per ha  
Pack size 25kgs

### N-Rich Cover Mix

The Vetch and Rye components each offer an excellent cover crop mixture for the winter. Vetches are fast growing, and they have a very prolonged growing season, combined with excellent winter hardiness, and have the advantage of being able to fix nitrogen at lower temperatures than other legumes. Forage rye is deep rooting which provides a good underground network for the plant to scavenge most of the nitrogen left by the previous crop.

80% Forage Rye  
20% Winter Vetch  
100%

Sowing rate 50-70 kilos per ha  
Pack size 25kgs & 500kgs

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### N-Retain Cover Mix

A balanced mixture that contains fast growing species which produce large amounts of biomass. The species used in the mixture offer a wide range of rooting depths some having a fibrous root systems and others producing long taproots. Both types of roots help to soak up and retain any residual nutrients which may have left behind by the previous crop.

30% Spring Vetch  
15% Buckwheat  
15% Crimson Clover  
12 % Fodder Radish  
10% Daikon Radish

10% Egyptian Clover  
5% White Mustard  
5% Phacelia  
100%

Sowing rate 15-25 kilos per ha  
Pack size 25kgs & 500kgs

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### N-Scent Cover Mix

Two fast growing species that both can fix Nitrogen and act as a distraction to plant pests and predators. Fenugreek gives off a distinctive aroma that deters flea beetle.

50% Egyptian Clover  
50% Fenugreek  
100%

Sowing rate 10 kilos per ha  
Pack size 25kgs

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### N-Hance Cover Crop

This mixture will benefit the soil using species that absorb the leaching nutrients and has the added advantage of the nitrogen fixing winter vetch. It produces a huge quantity of organic matter and has the benefit of radish's large roots that can utilise nutrients from the deeper layers of soil.

60% Forage Rape  
30% Winter Vetch  
7% Fodder Radish

3% White Mustard  
100%

Sowing rate 30-50 kilos per ha  
Pack size 25kgs & 500kgs

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### Living Mulch

This is based on a small leaved white clover that is sown to act as a living mulch into which, main crop cereals can be sown.

100% Rivendell  
White Clover

Sowing rate 4 kilos per ha  
Pack size 25kgs

## Rescue Mix

This mixture will benefit the soil against winter erosion, whilst providing grazing for livestock in late winter.

75% Forage Rape  
14% White Mustard

11% Fodder Radish  
100%

Sowing rate 12-15 kilos per ha  
Pack size 10kgs

## Marvel

An economically price multi-purpose Brassica mix, Marvel certainly ticks all the boxes in terms of achieving cover crop objectives.

Vetch  
Crimson Clover  
Persian Clover

Black Oats  
Phacelia

Sowing rate 30 kilos per ha  
Pack size 15kgs

## Follower

Providing fast establishment and growth, giving good ground cover.

50% Buckwheat  
15% Fodder Radish  
15% White Mustard

10% Gold of Pleasure  
10% Brassica Carinata  
100%

Sowing rate 12 kilos per ha  
Pack size 10kgs

## Kwik Mix

Fast growing because of their quick establishment there is good weed suppression, with excellent Nitrogen scavenging.

80% Fodder Radish  
20% White Mustard  
100%

Sowing rate 12-15 kilos per ha  
Pack size 10kgs

## Late Cover Mix

This mixture will benefit the soil against winter erosion, whilst providing grazing for livestock in late winter.

75% Forage Rape  
14% White Mustard

11% Fodder Radish  
100%

Sowing rate 12-15 kilos per ha  
Pack size 10kgs

## Booster

A non-brassicacae mix providing rapid cover, Nitrogen fixation and soil organic matter enhancement.

Vetch  
Phacelia  
Berseem Clover

Black Oats  
Persian Clover

Sowing rate 30 kilos per ha  
Pack size 15kgs

### Boost Mix

Provides good soil structure improvement and provides large amounts of organic matter.

70% Brassica Carinata  
10% Hybrid Brassica

10% Fodder Radish  
10% Brown Mustard

Sowing rate 6 kilos per ha  
Pack size 10kgs

### Panbuster 1

Designed to improve sub surface drainage via deep root penetration, plus increase residual soil Nitrogen levels.

Tillage Radish  
Berseem Clover or Crimson Clover

Sowing rate 10 kilos per ha  
Pack size 8 kilos

### Panbuster 2

Alternative option to combine deep root penetration whilst boosting soil organic matter and soil Nitrogen levels.

Tillage Radish  
Oil Radish  
Berseem Clover or Crimson Clover

Sowing rate 11.25 kilos per ha  
Pack size 9 kilos

### Decoy

Rapid cover provided with nematode multi resistant components, plus impressive soil structure improvement, (Option also with Nematode resistant Brown Mustard).

Oil Radish  
Mustard

Phacelia  
Berseem Clover

Sowing rate 20 kilos per ha  
Pack size 10kgs

### FLYER

A low cost Brassicae mixture, giving extremely quick growth and ground cover. Superb root development helps to maximise biomass, in the short term. Excellent results in terms of sizeable Dry matter contribution with potential livestock utilisation (great for drying out heavy/wet soil types).

Interval (Kale x Rape)  
Mustard

Sowing rate 10 kilos per ha  
Pack size 4 kilos

### Companion

A specialist blackgrass control mixture for sowing into Winter Rape. Traps key nutrients (including Nitrogen), improves soil porosity and friability. Evidence of reduced slug & Fleabeetle activity by using this mixture, plus reduction of grass weed populations.

Vetch  
Berseem Clover

Sowing rate 15 kilos per ha  
Pack size 12 kilos

Cope Seeds are able to mix special combinations to suit your requirements or indeed supply straights if required.



# Wheat Blends

Many UK farmers are exploring cereal blends as a way of tackling disease and reducing inputs in favour of a regenerative approach to farming, we have therefore launched a pre-mixed range of organic and conventional blends with buy back opportunities, to meet growing interest in this method. earthworms and termites.



## Conventional

### TRISTAR

#### Conventional Feed Wheat Blend

The Tristar blend has been specifically formulated to include three varieties from three different breeding stables and therefore genetics. This variation in genetics will help the blend fulfil its purpose in protecting the other lines, should one's resistance start to falter.

Tristar will offer early maturity and high untreated yield potential and its high untreated yield potential comes from strong disease resistances between the varieties including the highest resistances to Septoria Tritici. The quality of the grain is also of the highest merit, and has the ability to produce a bold sample.

### TRIPLE X

#### Conventional Feed Wheat Blend

Our Triple X blend is made from a range of soft wheat varieties that offer early to medium maturity, with strong resistance to rust and high grain quality. This blend

has been created to ensure it meets soft wheat market requirements while offering the blend benefits of reduced disease and high untreated yield potential. Buy Back Contracts are available.

## Organic

### SUMMIT

#### Organic Milling Soft Wheat Blend

This season, we are offering a two-way soft wheat blend with a milling buy back. The blend will be a later maturing crop with high yield potential and tall straw, perfect for weed suppression. The varieties within the blend are

proven organically and together offer some protection against Orange Wheat Blossom Midge.

A buy back for Summit with a premium over organic feed wheat is available.

### APEX

#### Organic Dual Purpose Wheat Blend

Apex combines two of the best wheat varieties for untreated yield potential, Septoria tritici resistance & early maturity. Not only is Apex strong agronomically, the grain quality of this blend is superb with high specific

weights, high habergs and potentially levels of protein suitable for milling. This blend is suitable both for feed and could potentially make milling specification. A buy back for Apex is available for either feed or milling.

## Cope Seeds Preferred Winter Wheat Varieties

Cope Seeds have always taken into consideration how varieties perform under either organic or low input regimes when making our recommendations on which varieties to grow. Here listed below are varieties which we think should be considered for growing under these regimes.



Variety	Group	Treated Yield (Tonnes/ha)	Untreated Yield (Tonnes/ha)	Height w/o PGR (cm)	Specific Weight (kg/hl)	Maturity	Resistance to lodging w/o PGR	Yellow Rust	Brown Rust	Mildew	Septoria tritici	Fusarium	OWBM Resistant
Nelson	Milling	For private trials data, please see previous page											
KWS Extase	2	10.9	10.0	90	78.5	-1	7	8	7	7	7.8	6	No
KWS Palladium	2	10.8	9.7	84	76.9	-1	7	9	5	8	7.4	6	No
Mayflower	2	10.5	9.7	89	78.5	0	6	9	6	8	8.4	6	No
LG Astronomer	3	10.8	9.3	83	77.4	+1	7	8	8	4	6.8	6	Yes
RGT Saki	4S	11.1	9.2	88	75.6	+3	6	8	7	5	5.9	6	Yes
RGT Bairstow	4S	11.1	9.2	91	75.9	+2	6	7	6	6	6.4	6	Yes
Champion	4H	11.4	9.7	88	74.8	0	6	8	5	7	7.7	6	Yes
KWS Dawsum	4H	11.2	9.9	84	79.4	+1	7	9	7	8	6.3	6	No
Graham	4H	11.0	9.5	88	76.9	-1	7	7	5	7	6.7	7	No
LG Typhoon	4H	11.0	9.6	88	76.3	+2	7	9	6	7	7.2	6	Yes

# Wheat for Low Input Systems

## Winter Wheat

### NELSON

Nelson is a variety that's suited to both organic and conventional systems, due to its high resistance to disease, tall, stiff straw and large flagleaf, perfect for smothering out the competition. It's a variety gaining interest in low input conventional systems.

German E winter wheats offering high gluten, high quality and strong disease resistance are seeing rising demand in the UK. Nelson is one of the best choices for growers whether it's for milling or feed.

Oxfordshire-based independent agronomist, Geoffrey Hawes, thinks the benefits of Nelson need to be more widely understood. "Since Nelson was introduced into commercial trials in the UK in 2014 it's been the cleanest variety I've dealt with and inputs can be reduced by up to half on this variety".

"We are committed to using the maximum amount of homegrown wheat wherever possible however for some of our flour we require wheat with specific characteristics or functionality that we cannot achieve with traditional grains. We have identified that Nelson grown to 14% protein brings us quality and functionality that will displace imported wheat. Through baking, we found Nelson showed a white crumb, no evidence of weakness and produced loaves of good volume. By offering a buy-back contract that incentivises growers, the combination of an additional quality premium and the benefits of the variety on-farm, we are finding the variety very popular".

George Mason, Heygates millers

## Agrii Harvest 2019

	Untreated	Untreated	Treated	Untreated	Treated	Untreated	Treated	Treated	Treated
	Yello Rust (1-9)	Crop Heights (cm)	Crop Heights (cm)	Yield % Controls	Yield % Controls	Specific Weight (kg/hl)	Specific Weight (kg/hl)	Protein Content (%)	Hagberg (s)
<b>Skyfall</b>	5	73	73.3	89.2	104.1	69	76.7	12.8	247
<b>Crusoe</b>	1	75	76.7	105.7	102	75.6	78.6	13.3	294
<b>Nelson</b>	1	82	88.3	112.8	98.3	76.4	78.3	13	355

## Agrii Harvest 2018

	Maturity	Untreated Crop Height	Treated Crop Height	Untreated Yield %	Treated Yield (t/ha)	Unit Specific Weight (Kg/hl)	Treated Specific Weight (Kg/hl)	Treated Protein (%)	Treated Hagberg (S)	N Offtake
<b>Skyfall</b>	6	80	74	115	8.67	70	80.7	13.8	365	217
<b>Crusoe</b>	6	80	73	70.3	9.18	65	81	13.7	348	212
<b>Nelson</b>	8	93	88	117.8	8.42	76.5	83.5	14.2	378	201

## Green Leaf Retention

	Green Leaf Retention (30/6)
<b>Nelson</b>	55%
<b>Skyfall</b>	33.80%
<b>Crusoe</b>	36.30%

Buy-back contracts at £15 over milling wheat price are available. Please get in touch with Tom Desborough at Cope Seeds for more information, by emailing [tom.desborough@copeseeds.co.uk](mailto:tom.desborough@copeseeds.co.uk)

## Cope Seeds Preferred Winter Barley Varieties

Cope Seeds have always taken into consideration how varieties perform under either organic or low input regimes when making our recommendations on which varieties to grow. Here listed below are varieties which we think should be considered for growing under these regimes.

Variety	Malt/Feed	Treated Yield (Tonnes/ha)	Untreated Yield (Tonnes/ha)	Height w/o PGR (cm)	Specific Weight (kg/hl)	Maturity	Resistance to lodging w/o PGR	Brackling	Rhynchosporium	Brown Rust	Mildew	Mildew	BYDV Resistant
Electrum	M	9.4	7.6	97	70.0	-1	7	12%	6	7	6	5	Yes
KWS Tardis	F	10.3	8.3	95	70.2	0	8	7%	7	6	5	5	Yes
Surge	F	9.9	8.5	87	70.1	0	7	8%	7	7	6	5	Yes
Valerie	F	9.6	8.0	94	70.9	-1	7	6%	6	5	6	6	Yes
KWS Ferris **	F	10.1	8.2	102	69.5	0	8	9%	6	5	4	6	Yes

**\*\*KWS Ferris is a six row barley and has a specific recommendation on the AHDB list for tolerance to BYDV**

## Cope Seeds Preferred Spring Barley Varieties

### EVELINA

Bred by Edelhoff in Austria, Evelina is an early maturing, feed barley with plenty of straw. We have produced and sold Evelina in the organic and conventional markets for feed and is included as a useful component within our arable silage mixtures. Evelina is extremely clean, with a high disease resistance profile. It produces a bold grain with a high protein and produces high yields of straw. In our opinion, Evelina is the perfect variety for the livestock farmer who wants an easy to manage variety, bold feed with plenty of straw.

### SKYWAY

Skyway has the 2nd highest untreated yield of varieties on the AHDB Recommended List with the highest specific weight of any variety. Skyway is a medium height variety with good resistance to lodging and average maturity. We also supply organic farmers with Skyway who have seen positive results. Currently being assessed for malting, Skyway should be considered for feed and as a potential brewing variety.

### LAUREATE

A variety which has been on the Recommended List since 2016, Laureate has positioned itself as a firm favourite in both organic and conventional varieties due to its positive agronomic characteristics and broad marketability with full IBD approval for both brewing and distilling. Laureate is the shorter varieties of those we recommend however we are confident in this variety being grown successfully in a low input scenario.



"Overall it's an easy to grow and a tidy feed variety to go into ration mixes. It combines well and produces a good-looking grain with a decent specific weight as well as a good straw crop."

Richard Monk, Hampshire Evelina grower



# Oats

## Cope Seeds Preferred Winter Oat Varieties

Cope Seeds have always taken into consideration how varieties perform under either organic or low input regimes when making our recommendations on which varieties to grow. Here listed below are varieties which we think should be considered for growing under these regimes.

Variety	Treated Yield (Tonnes/ha)	Kernel Content (%)	Height w/o PGR (cm)	Specific Weight (kg/hl)	Screenings % through 2mm	Resistance to lodging w/o PGR	Maturity	Mildew	Crown Rust
Mascani	8.5	76.4	122	53.3	1.7	6	0	6	5

Mascani is still the UK's number 1 variety, 1st being launched in 2004. With over 70% of winter oats grown being Mascani, the UK mills appreciate the consistency of quality this variety offers. Mascani is grown successfully organically, giving confidence to conventional farmers willing to reduce inputs.

## Cope Seeds Preferred Spring Oat Varieties

Variety	Treated Yield (t/ha)	Untreated Yield (t/ha)	Height	Spec Weight (kg/hl)	Screenings % through 2mm	Resistance to lodging w/o PGR	Maturity	Mildew	Crown Rust
Merlin	105	99	105	51.1	1.6	7	-1	8	3
Delfin	106	102	111	50.6	2.7	7	0	8	4

If you are wanting to grow for the milling market we strongly advise considering Merlin as it perfectly balances high yields while consistently achieving the specification required for milling.

Delfin is an extremely reliable oat but best considered for home use or local feed markets.





# Spelt

## Winter Spelt

### CONVOITISE

Spelt is an ancient grain which has been around for 7,000 years and harvested for food for over 2,500 years. Its profile has changed very little over this time. The crop is enjoying a revival in popularity in artisan food and is increasingly employed as a component in livestock rations. There is a growing demand for organic and conventional spelt, as it finds a new market as a health food, gaining widespread popularity as a wheat substitute for making artisan breads, pasta and cereals.

We're excited to be introducing our new winter spelt variety Convoitise, bred by French breeder Lemaire. After trialling Convoitise for the first-time last year, we were initially impressed by its standing ability. Once the sample had been analysed, we found that Convoitise naturally dehulled to a greater extent than Zollernspelz. Through comparing the trials result as seen below to Zollernspelz we believed and still do that Convoitise will be the spelt variety of choice.

→ Due to the tillering capacity of Convoitise it's advised that 110-120 plants per m2 is aimed for



- Winter spelt should be treated the same as winter wheat in terms of seedbed preparation
- Ideal drilling period October-November
- Convoitise originates from Schwabenkorn x Schwabenspelz
- The variety suits all soil types regardless of fertility, but we do advise spelt is best placed on your less fertile ground due to its height
- Convoitise has a good all-round disease resistance package along with superior grain quality

	Yield (t/ha)	Powdery mildew (1-9)	Specific weight (kg/hl)	Height (cm)
Convoitise	3.57	5	48.4	130
Zollernspelz	3	4	44.8	128

Convoitise trials data

## Spring Spelt

### WIRTAS

The scientists behind Wirtas confirm that spring spelt, like spring wheat, has better quality than the commonly cultivated winter spelt and contains more gluten, protein and minerals such as iron, zinc and copper. The 2019 harvest results from the Organic Research Centre are promising where the crop was relatively disease free and mirrored similar results from previous Agrii trials. Like winter spelt, Wirtas is best grown on less fertile land to prevent possible lodging.

### Key Wirtas attributes

- Exceptional milling quality
- High protein content, hagberg and specific weight
- Higher nutritional benefit vs winter varieties
- Good all-round disease resistance
- Excellent characteristics gives farmers more flexibility



Premium buy back contracts are available, so if you are interested please get in touch.

	Average (t/ha)	% Cont.
Mulika	4.82	100
Wirtas	4.32	89.6

Agrii 2017/2018 Average Yield Results

# Rye & Triticale



"Elego is doing a great job this season of smothering out weeds. Again, we grazed the crop quite hard with sheep and it bounced back well. Again, this rye went to both a local miller and a local dairy farmer who is still seeing the benefits of feeding rye".

Mike Stringer, Yorkshire

## Winter Rye

### ELEGO

Rye grows well in much poorer soils than those necessary for most cereal grains and it's an especially valuable crop in regions where the soil has sand or peat. Rye plants also withstand cold better than other small grains do. It can be drilled across a wide window while still being early to mature. It is particularly good at tillering and drilling can begin from early September through to the end of autumn. It's recommended that seed rates are increased when drilling after the middle of October. It has a vigorous growth habit, out-competing weeds from the start. Like triticale it is an excellent crop for drought prone, light land, where its long rooting system is ideal for scavenging for water and nutrients.

Elego is an early to medium maturing dual-purpose rye with a high untreated yield potential and an excellent disease resistance profile. The variety is tolerant of poor harvest conditions and its stable hagerberg make it ideal for milling. Elego is a tall variety and its ability to outcompete weeds also makes it highly suited as a cover crop, either sown on its own or as a mixture with vetches. Elego also makes an ideal forage crop with the ability to be grazed later in the Autumn and earlier in the spring than most grass leys.

## Cope Seeds Preferred Winter Rye Varieties for Grain

Cope Seeds have always taken into consideration how varieties perform under either organic or low input regimes when making our recommendations on which varieties to grow. Here listed below are varieties which we think should be considered for growing under these regimes.

Variety	Grain Yield t/ha	Spec Weight Kg/hl	Hagerberg	Protein Content %	Lodging (%)	Straw Length	Brown Rust Resistance
KWS Tayo	10.6	76.6	259	9.6	3	128	7
KWS Serafino	10.4	76.7	258	9.5	4	130	7
Poseidon	9.9	75.9	177	10.2	6	130	4
SU Elrond	10.1	78.9	231	9.6	17	133	5
SU Performer	10.2	77.4	244	9.5	13	128	4

## Cope Seeds Preferred Winter Rye Varieties for Biogas

Cope Seeds have always taken into consideration how varieties perform under either organic or low input regimes when making our recommendations on which varieties to grow. Here listed below are varieties which we think should be considered for growing under these regimes.

Variety	Biomass Yield (32% DM) t/ha	Gas Yield M3 per hectare	Straw Length cm	Spec Weight kg/hl	Lodging (%)	Brown Rust Resistance
SU Arvid	26	3800	134	76.7	28	4
SU Performer	25	3700	128	77.4	13	4

## Cope Seeds Preferred Winter Triticale Varieties

Cope Seeds have always taken into consideration how varieties perform under either organic or low input regimes when making our recommendations on which varieties to grow. Here listed below are varieties which we think should be considered for growing under these regimes.

Variety	Treated Yield (tonnes/ha)	Specific Weight (kg/hl)	Protein Content (%)	Straw Length (cm)	Lodging (%)	Resistance to Yellow Rust	Maturity
Kasyno	10.8	73.1	11.9	101	0	8	+1
KWS Fido	10.6	75.5	11.5	110	0	6	0

# Bi-cropping

## Bi-cropping Contracts

We have two new and exciting bi-cropping contracts.

- Bean and wheat (Winter & Spring)
- Pea and oat (Spring)

Our bi-cropping opportunities for growers, offer mutually beneficial outcomes for both legumes and cereals, suppressing weeds naturally, increasing cereal quality content and fixing nitrogen simultaneously. Bi crops help to increase biodiversity, improve soil health & structure and reduce reliance on inputs. Crops can be harvested and stored together and are



cleaned and separated by the buyer, meaning farmers won't have to worry about separating the beans and grain themselves.

**Buy-back contracts are available for both, so please get in touch with Cope Seeds on [sales@copeseeds.co.uk](mailto:sales@copeseeds.co.uk) or +44 (0) 1529 421081**

# Pulses

The benefits of including pulse crops in the rotation are well known. Including pulses in the rotation is shown to increase soil available nitrogen (N) as well as improve overall soil health by improving soil moisture reserves, enhance soil microbiology and increase yield of the following cereal crop.

The PGRO Recommended List is getting increasingly long and therefore it is important to understand which varieties are useful in low input regimes whilst offering the quality to meet end user requirements.

## Winter Beans

Vespa has become one of the leading UK winter beans and is successfully grown in the Organic sector. It has a high yield with good protein content. Newcomer Vincent is now taking interest by the animal feed compounders due to its high protein content whilst also offering a high yield. It does have a high TSW which does mean high seed rates, so may impact on the price of seed.

	Yield as %	Maturity	Straw Length (cms)	Standing at Harvest (1-9)	TSW (g) @ 15% moisture	Resistance to Yellow Rust	Protein Content (% dry matter)
Vespa	108	5	122	8	682	26.2	+1
Vincent	106	5	123	8	804	27.5	0

## Spring Beans

Lynx is a favourite not only in the UK but across Europe for its consistency in yield and quality. Lynx also provides the 2nd highest downy mildew score only behind Yukon which sits at the bottom of the pack for yield.

Victus is a low vicine, low convicine bean. Vicine and convicine are anti-nutritional compounds that accumulate in the cotyledons of faba beans. When humans consume beans with high levels of these compounds, it can cause a condition called favism in individuals harbouring a deficiency in the activity of their glucose-6-phosphate dehydrogenase. When faba beans are used in animal feeds, there can be effects on performance. However, when low vicine and convicine beans are used instead, they allow for a higher usage of faba bean in the diet and a reduction of soya meal. This is of course a good thing for the environment, ensuring less Soya is grown and imported into the UK.

	Yield as %	Maturity	Straw Length (cms)	Standing at Harvest (1-9)	Downy Mildew	Rust	TSW (g) @ 15% moisture	Protein Content (% dry matter)
Lynx	106	6	114	8	7	4	550	27.4
Victus	103	7	109	8	5	4	569	27.4

## Seed Treatments

# Choosing the Right Seed Treatment for Organic and Regenerative Farming

There are many farm practices and products aimed at protecting or maintaining yield but if the crop does not establish then it is game over before you even start.

Seeds are incredible units of energy and genetic information but the environment in which they are sown might not be completely beneficial; so what strategies do we have for increasing their survival? First of all; variety choice will give the greatest genetic potential for success so make sure that you choose the best variety for your farm conditions. There are then a few management decisions such as adjusting seed rate to drill date, pest pressure and soil conditions that will set the crop up for a healthy stand, avoiding lodging and diseases and finally, you can treat your seeds to give them that edge to increase the chances of establishment.

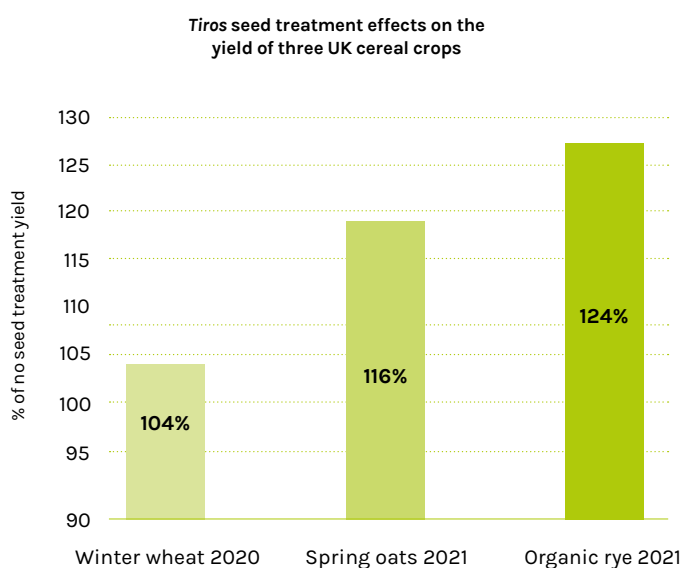
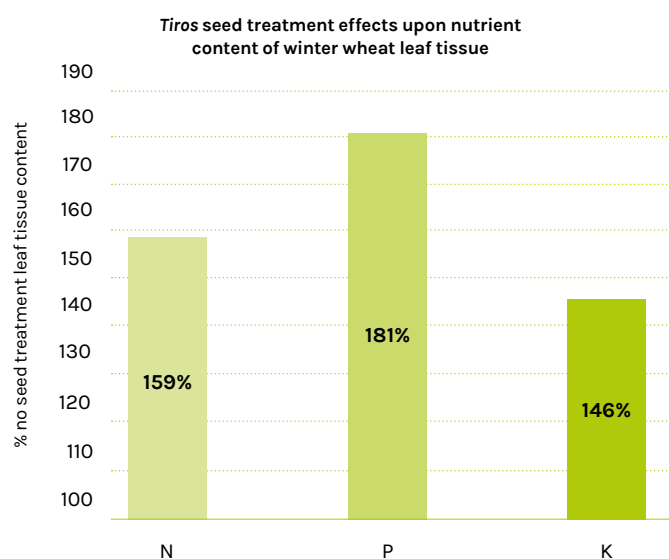
Seed treatments are an effective way of using low doses of active ingredient right on target, reducing negative impacts on the environment. Conventionally, the active ingredients are pesticides that protect the seed by killing off pests and pathogens but, in recent years, the emphasis has been shifting towards enhancing seed development and / or promoting healthy seed-soil interaction for resilient growth

– a more pro-active and positive strategy that fits with organic and regenerative farming.

There are two main approaches to these “regenerative” type seed treatments:

- Biological – using micro-organisms to enhance the development of seedlings
- Biostimulant – using chemistry such as amino acids, trace elements & seaweed extracts

Biological seed treatments include Tiros from Unium Bioscience which uses a blend of endophytes (beneficial micro-organisms that live in the plants tissues and grow with the crop). These endophytes fix nitrogen and sequester phosphorus, potassium and zinc and make the crop more tolerant of stress.

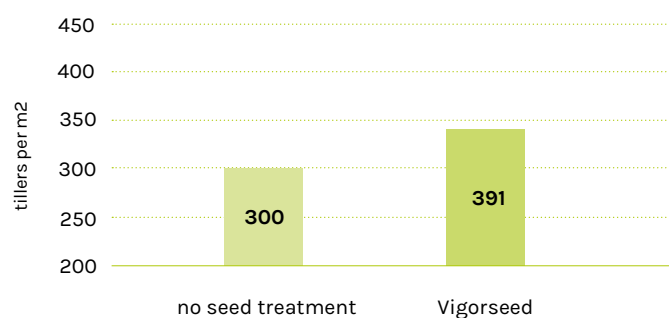




# Seed Treatments



VigorSeed seed treatment effect on tillering of Emmer wheat



VigorSeed by Stoller is a biostimulant seed treatment containing seaweed extracts and trace elements formulated to boost germination, promote root development, tillering and early plant development. This was seen in Terrafarmer's organic Emmer wheat trials in Cornwall this spring.

Tiros and VigorSeed have very different modes of action but are similar in having a lot of robust trial and research data backing up their claims. This is essential when trying to decide upon products with proven efficacy.

## So how should you choose the right product for a regenerative or organic situation?

First of all: do you need anything? You know your soils and the history of crop establishment better than anyone else – are there areas on farm where a boost to establishment would be beneficial? Are changing weather patterns making it more difficult to predict drilling windows and crop emergence?

If you do have some issues with establishment, where do they spring from? Moisture, nutrients, soil condition or all of the above plus a few other factors? If, as is becoming more frequent, rainfall after drilling is not adequate; rapid germination and root development is key to establishing a crop. In this case VigorSeed will give a significant benefit

"VigorSeed has a really good combination of Manganese and Zinc, essential for early root development, seedling vigour and the production of Auxins. Combined with Stollers patented seaweed extract technology to improve nutrient use efficiency, this is a great option for seed dressing. Compatible with a wide range of seed dressings, VigorSeed gives your crops the tools to make best use of available nutrients."

Anthony Ellis, Farmer & Agronomist, Cornwall

in this vulnerable period. If moisture is not so much of an issue but nutrient availability is limiting crop development then the enhanced nutrient mobilisation and uptake of the endophyte micro-organisms in Tiros are most likely to be the difference between a healthy start and poorer establishment. When issues arise through soil structure then either of these products might be appropriate depending upon how problems are manifested after drilling.

The nature of the seed treatment should also be considered when choosing products: Biological types contain living organisms so shelf life is very important (at least 24 months for Tiros) as is the viability on-seed once applied. You should also consider whether using fungicides will affect the micro-organisms in any biological seed treatment. Biostimulant types may contain active ingredients in very low concentrations so formulation, rates and ease of application must be considered – VigorSeed is an easily-flowing liquid applied at 1 litre per tonne of cereal seed.

Regenerative agriculture is opening up many new and developing technologies that are moving away from conventional pesticide-based strategies. Both biological and biostimulant seed treatments can be useful tools for establishing healthy, resilient crops but careful consideration and a small amount of experimentation on-farm is required to get their full benefits.



# SOIL HEALTH SPECIALISTS



**OFFERING A HOLISTIC APPROACH TO ASSESSMENT, PLANNING AND INPUTS,  
FROM A REGENERATIVE AND BIOLOGICAL PERSPECTIVE.**

From state of the art, in-depth soil sampling and carbon assessment, to full scale reporting, planning and advice for farmers - our aim is always to help farmers create more sustainable and profitable farm businesses.

***"BY MAKING THE COMPLEX NATURE OF REGENERATIVE FARMING SIMPLE AND APPROACHABLE. "***

We want to help farmers be ready to face the future and leave a legacy for the next generation, by providing our services through our specialised team of farmers, agronomists, carbon and soil fertility experts.



## SOIL SAMPLING

Full-farm EM scanning including macro & micronutrients, delivering detailed maps and an annual, active carbon & soil structure assessment.



## ON-FARM ADVICE & SUPPORT

We work with you to determine support plans, according to the farm's individual needs. Offering long-term solutions, increasing outputs, decreasing inputs and improving your bottom line.

# Buy Back Contracts

The world is changing and nearly on a daily basis. News stories continue to move the market and create uncertainty. However, people wanting to know where their food has come from and how it has been produced is moving up the priority ladder. Millers are interested in carbon neutral crops with the idea that in a short period of time a premium could be paid for producing carbon negative crops. We are not there yet, but it will continue to gain momentum over the coming years as we see big swings in our climate and how crops are reacting to extreme temperatures both hot and cold.

Regenerative farming means diversification on farms, no longer is it acceptable to grow wheat, OSR, wheat continuously, other crops need to be incorporated on farm. Therefore, we felt it essential, in a bid to encourage and aid farmers on the regenerative path to offer a range of unique contracts that offer confidence in varieties being grown under low input regimes, paired with certainty of market.

Here is a list of some of our low input contracts we hope are of interest to you:

Contract	
Nelson Milling Wheat	Milling wheat will continue to have good demand (after all we love our toast) if you're a milling wheat grower then we recommend our Nelson Wheat contract. Nelson is a German E wheat, with high Nitrogen Use Efficiency and very good disease profile. When compared to other milling wheats its cost of production is lower due to its fantastic disease profile and its uptake of Nitrogen being so efficient. We have a buy back available that will pay £15 over the full spec group 1.
Merlin Milling Oats/ Gluten Free Oats	Oats are a great crop to grow on farm, cost of production is very low and they offer a break from cereals. Merlin is the highest yielding variety both treated and untreated on the recommended list that is readily accepted by millers. A buy back is available related to futures, with all movement periods currently available.
Naked Oats	Readily used in pet food and birdfeed, naked oats are high in oil and offer a premium over wheat. Whilst naked oats offer the same agronomic benefits on farm as husked oats, they are more difficult to handle and yield less, hence the premium over wheat.
Marrowfat Peas	Marrowfat peas fix nitrogen on farm helping lower the cost of production for the following crop. Peas add another crop into the rotation expanding the overall rotation. Buy backs available with all movement periods are currently available.
Flamingo Pink Pea	Flamingo is our unique pink pea which can be grown straight or with another species. Currently we are seeing benefits and interest from growing Flamingo and Naked Oats together, both premium crops, which we then separate on farm or at a 3rd party store.
Bi Cropping	Bi cropping is a fantastic way to get diversification onto farm. We offer contract with naked oats and husked oats to be grown with peas, this can be our Flamingo pink pea or a marrowfat pea. We will accommodate this and work with you to make sure the crops are cleaned by an approved third party if it can't be done on farm.

For more information our Buy back contracts, please call Tom or Gemma and we look forward to working with you in the future.

"We grow 60 hectares of Nelson, which has proven to be a strong second wheat and we supply Heygates Miller with grain, which gets a premium at 14% protein, and which isn't difficult to achieve. It costs less to grow, and its vigorous with a strong root mass, which means it's a good natural weed suppressant. It's suitable for direct drilling and is more tolerant to stress than most varieties, and has proven to be very consistent".

Gordon Treharne, Northamptonshire







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