DSV United Kingdom

DSV United Kingdom is a wholly owned subsidiary of Deutsche Saatveredelung AG (DSV). It is one of Europe’s leading plant breeding companies, having been founded in 1923.

DSV develops and distributes oilseed rape seed, wheat, barley, maize, a range of forage and amenity grasses, clover and various catch crops.

DSV UK operates from two bases in the UK; Wardington (Oxfordshire) and Downham Market (Norfolk). The Wardington breeding station, near Banbury, comprises c.50ha of land used to test winter oilseed rape; to breed winter wheat and forage; for National List trials of wheat and grass and AHDB Recommended List Trials of oilseed rape, winter wheat and grass.

The site at Downham Market, Norfolk, is responsible for the marketing and sales of the DSV portfolio. Over recent years DSV has been very successful with Incentive 45, Dariot, Sparrow 45 and spring oilseed rape varieties Mirakel and Lumen.

This year DSV has one new hybrid variety up for recommendation, Temptation, which carries the genuine genetic gene for Turnip Yellow Virus (TuYV) resistance as well as being high yielding with an excellent oil content.

### Key to Oilseed Rape Variety Traits

We have developed a series of simple icons to help growers identify, at a glance, the different key characteristics of our winter oilseed rape varieties. These are listed below with a brief explanation. Some traits are shared by almost every variety we list, for example, their Superior Primary Response and early vigour shown over the first 45 days – as in Incentive 45. Others are unique to different varieties and result from the skilled hybrid breeding for which DSV is renowned, for example, the varieties in our expanding Clearfield portfolio and the latest PNN Triple Layered variety. However, for full details and performance data you should refer to the detailed product descriptions and data tables.

- **A PNN Variety**
  - Bred to include specific growth characteristics that deliver reliable establishment and consistent high performance year after year.

- **A Triple Layered PNN Variety**
  - Unique three-way disease resistance and yield protection against Phoma Stem Canker, Light Leaf Spot, Turnip Yellow Virus and Pod Shatter providing new levels of security in OSR production.

- **Turnip Yellow Virus Resistance**
  - Resistance to the growing threat of TuYV now endemic across the UK and potentially reducing oil content and yields by up to 20%.

- **Verticillium Wilt Tolerance**
  - Protection against yield loss from this Europe-wide disease that is difficult to identify, has no effective agronomic option and causes premature plant death.

- **Clubroot Resistance**
  - Effective resistance to all common forms of clubroot, safeguarding yield in affected areas.

- **RLM7+ Disease Resistance**
  - Multi-gene resistance to phoma stem canker plus light leaf spot – the most common diseases of oilseed rape in the UK.

- **Superior Primary Response**
  - Outstanding vigour in the first 45 days combined with deep tap root development to provide the best foundation for yield and protection against pest and disease threat.

- **A Clearfield® Variety**
  - Resistant to Imazamox-based herbicides allowing you to safely control the majority of broadleaf weeds and volunteer cereals commonly found in UK crops.

- **Pod Shatter Resistance**
  - Minimises seed shed and loss in later stages of growth and at harvesting making it particularly useful when weather conditions are poor or in late seasons.

- **Suitable for Min-till or No-till**
  - Optimised for strong establishment, exceptional performance and consistent gross output delivery in reduced cultivation systems.

Hybrid breeding to improve resistance and control costs

DSV leads the way in developing OSR varieties that offer increased disease resistance and agronomic performance.
The PNN Difference

Based on DSV’s proven hybrid genetics that have produced such established names as Compass, Incentive and Dariot, all PNN varieties have a set of four core characteristics designed to ensure optimum vigour, high efficiency photosynthesis, unique plant architecture and consistent yield performance.

1. Superior Primary Response
2. Enhanced Solar Capture
3. Proven Performance Stability
4. Optimum Pod Presentation

Essential to the PNN concept is a reduction in the need for complex and costly agronomic interventions throughout the growing cycle so all PNN varieties have layered disease control features to achieve this. These layers are often unique to the variety in question but all are based on the latest hybrid breeding techniques and understanding of disease resistance management.

With DSV’s PNN concept underpinning all the varieties to ensure the best establishment, growth, yield achievement and oil content, you can now in addition pick exactly the right disease resistance and agronomic package to suit your precise growing needs.

How PNN Layering works

### PNN Disease Resistance Layering

<table>
<thead>
<tr>
<th>Layer</th>
<th>Description</th>
<th>Layer 1</th>
<th>Layer 2</th>
<th>Layer 3</th>
<th>Layer 4</th>
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</thead>
<tbody>
<tr>
<td>Single Layer PNN</td>
<td>Multi-gene oil leaf spot resistance and phoma stem canker resistance (RLM7 where appropriate)</td>
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<td>☑️</td>
<td>☑️</td>
<td>☑️</td>
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<tr>
<td>Triple Layer PNN</td>
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<td>☑️</td>
<td>☑️</td>
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<td>Quadruple Layer PNN</td>
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<td>☑️</td>
<td>☑️</td>
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</table>

Although the specific characteristics may change between varieties, the more layers there are the greater the number of agronomic benefits and disease resistance features there are. The higher the number of layers, the less agronomic interventions required and the greater your peace of mind.

### Triple Layered OSR explained

Triple-layered oilseed rape varieties from DSV provide growers with new levels of crop security by combining optimum levels of disease resistance and agronomic characteristics to produce consistent high outputs without the need for costly inputs.

Developed as a direct result of the Neonicotinoid ban and the need to move towards less intensive and more environmentally friendly production methods, DSV triple-layered oilseed rape takes as much of the guesswork out of growing the crop as possible.

Every triple-layered variety has unique three-way disease resistance and yield protection built in making them a genuine industry first.

**Layer 1: RLM7+ Disease Resistance**

Multi-gene resistance to phoma stem canker and light leaf spot – the most common diseases of oilseed rape in the UK.

**Layer 2: Turnip Yellow Virus Resistance**

Resistance to the growing threat of TuYV now endemic across the UK and potentially reducing oil content and yields by up to 20%.

**Layer 3: Pod Shatter Resistance**

Minimises seed shed and loss in later stages of growth and at harvesting making it particularly useful when weather conditions are poor or in late seasons.

Furthermore, our new triple-layered varieties are built on DSV’s long established genetic foundation of exceptional early vigour to drive establishment and allow crops to grow through disease and pest threat, a deep taproot to lay the foundation for high yields and optimum plant architecture to capture as much light as possible.

They are the most ‘self-contained’ oilseed rape varieties available and the closest you’ll get to a ‘drill and forget’ production system for this uniquely valuable crop.

**Data Source: National List Trials**

<table>
<thead>
<tr>
<th>Gross Output</th>
<th>Oil Content</th>
<th>Lodging</th>
<th>Stem Stiffness</th>
<th>Flowering</th>
<th>Maturity</th>
<th>Stem Canker</th>
<th>Light Leaf Spot</th>
</tr>
</thead>
<tbody>
<tr>
<td>106%</td>
<td>45.9</td>
<td>9</td>
<td>7</td>
<td>6</td>
<td>5</td>
<td>8</td>
<td>6</td>
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</tbody>
</table>

Raising the bar for plant health

PNN Triple Layer varieties are as close as you can get to a ‘drill and forget’ production system for OSR.

**DSV27 (Darling)**

DSV27 (provisionally named Darling) is a new variety from DSV with a great opportunity of making it on to the AHDB Recommended List in 2019. One of its standout features is its outstanding autumn vigour as well as having Turnip Yellow Virus (TuYV) gene resistance, pod shatter resistance, and the RLM7 gene for multi-gene resistance to phoma stem canker. This unique stacking of traits is one of the contributing factors which allows the consistent and reliable delivery of high financial returns.

DSV27 (Darling) in UK trials has shown that it can deliver high gross output (106%) and high oil content (45.9%), which is comparable with other varieties currently on the AHDB Recommended List. It also has good agronomic features with an upright canopy that demonstrates no weakness to lodging (9) and a strong stem stiffness score (7) from a medium – tall variety, standing at 162cm.
Turnip Yellow Virus (TuYV) has been a well-known threat to Oilseed Rape for over 30 years throughout Europe. This disease can cause a considerable loss of yield. Due to this, DSV have been breeding varieties with resistance to TuYV for over 10 years. It has become more of a concern throughout Europe, including the UK, due to the reduction and restrictions in the use of key plant protection products.

Temptation is the first variety from DSV in the UK that carries the genuine TuYV resistance gene. Coupled with the resistance, it also has excellent seed yield and oil content (45.9%), making it the variety to have in a high risk situation.

It is also very versatile with its early autumn vigour and good standing ability. It can be planted in most soil types and in a medium to late sowing window with no problems and still be able to achieve stable yields.

It has good field disease resistance, shown to be robust in UK conditions, with a light leaf spot score of 6 and a phoma stem canker score of 5. A high performance variety with low input management!

In addition, Temptation has good spring vigour, allowing it to grow away from any pest issues, which could result in a reduction of pesticide treatments to the crop. It is also medium flowering (4) and medium maturity (6) with fast pod filling, making it a farmer friendly variety!

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**Data Source: AHDB Candidates List**

<table>
<thead>
<tr>
<th>Gross Output East and West</th>
<th>Gross Output North</th>
<th>Oil Content</th>
<th>Lodging</th>
<th>Stem Stiffness</th>
<th>Flowering</th>
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</thead>
<tbody>
<tr>
<td>101%</td>
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<td>45.9</td>
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</table>

**DSV15 (Crocodile CR)**

DSV15 (Provisionally named Crocodile CR) is DSV’s new clubroot resistant variety, with rapid establishment in the first 45 days – like Incentive 45 – making it well suited to all areas.

DSV15 (Crocodile CR) is currently in the second year of National List trials. DSV15 (Crocodile CR) is the first variety from the DSV stable to deliver clubroot resistance. Clubroot is becoming more and more of a concern not only in Scotland and the North but further South in England where tight brassica rotations are becoming more common. DSV15 (Crocodile CR) is one of the highest gross output varieties in National List one trials and the highest gross output clubroot variety across all trial series producing yields never seen before from a clubroot variety. Not only is DSV15 (Crocodile CR) closing the yield gap between the high yielding varieties, it is out yielding them in many cases (Higher yielding than all controls in 2017).

DSV15 (Crocodile CR) boasts the best disease package in the clubroot market with a 7 for light leaf spot and a 6 for resistance to phoma stem canker! DSV15 (Crocodile CR) demonstrates rapid development in the autumn which has been demonstrated in Frontier trials. It is also quick to get going in the spring and rapidly develops flower buds. The variety has a score of 5 for flowering and a 5 for maturity ensuring it fits into the main flowering spray and harvesting window.

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**Data Source: National List Trials**

<table>
<thead>
<tr>
<th>Gross Output East and West</th>
<th>Gross Output North</th>
<th>Oil Content</th>
<th>Lodging</th>
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<tbody>
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</table>

**DSV – Innovation for your growth**

Our aim is to provide UK growers with varieties bred to offer superior disease resistance which helps to reduce the need for costly agronomic intervention.

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**Temptation**

**Data Source: AHDB Recommended List Trials**

<table>
<thead>
<tr>
<th>Gross Output</th>
<th>Oil Content</th>
<th>Lodging</th>
<th>Stem Stiffness</th>
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<tbody>
<tr>
<td>105%</td>
<td>45.7</td>
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</table>

**DSV15 (Crocodile CR)**

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<tr>
<th>Gross Output East and West</th>
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**Sparrow 45**

Sparrow 45 shares the same genetic base as the highly successful Incentive 45 – so named because of its rapid establishment in the critical first 45 days after drilling – it also has the prostrate growth habit which quickly produces considerable weed-inhibiting ground cover.

In addition to the core PNN genetic characteristics, Sparrow 45 is a double-layered variety with regard to agronomic features with very good light leaf spot (6) and phoma stem canker (5) resistance.

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</table>

**Dariot**

With outstanding gross output, class leading agronomic properties and exceptional versatility, Dariot sets a new standard for consistent, high performance with low input management.

Dariot marks a step forward in DSV’s production of reliable, simple to grow, high output oilseed rape varieties especially developed for the current economic and environmental climate.

DSV’s first variety to feature multi-gene resistance to phoma stem canker (9), Dariot also has a high resistance to light leaf spot (6) making it an agronomist-friendly variety well suited to integrated crop management systems. In addition to stand-out disease resistance characteristics, Dariot also holds its own in gross output comparisons with a score of 105% and an oil content of 45.7% in Recommended List Trials.

A lodging score of 8 and good stem stiffness ensures Dariot remains standing beyond the all-important flowering period before leaning into an easily combinable ‘mat’ of canopy for ease of harvest. Dariot – a new generation of hybrid oilseed rape for the way we grow today.

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**Data Source: AHDB Recommended List Trials**

<table>
<thead>
<tr>
<th>Gross Output East and West</th>
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</table>

Suitable for all regions, Sparrow 45 has a gross output of 104% in the East and West and 101% in the North. It also delivers a high oil content at 45.7%. Ideally drilled in the optimum autumn window, Sparrow 45’s high vigour means it can be later drilled if necessary. In the spring, it is one of the first varieties to get going when ground conditions warm up. This good spring vigour combined with quick flowering and excellent straw characteristics, mean spring inputs can be tailored to the main diseases.

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“Sparrow 45 has been a pleasure to walk this spring, it is looking very promising with good spring vigour and disease-free from an inexpensive programme. Due to Sparrow 45 being a shorter variety, I have decided to save costs by not applying a PGR this spring. Sparrow 45 also came into flower at the correct time therefore, pollen beetle became beneficial to the crop. I liked the look of the yield data for Sparrow 45 and I am hoping we could improve our oil content with this variety.”

Tim Haywood — Southawley Farm, South Oxfordshire
Spring Hybrid Oilseed Rape

Why choose a hybrid for the spring? Hybrids offer consistency of performance and reliability over conventional varieties. The vigour associated with hybrids allows plants to establish quickly and be more resilient especially in difficult growing seasons. This vigour allows increased flexibility with sowing dates.

Lumen
New from DSV, Lumen is the top performing variety on the new Descriptive List. It features the highest gross output 105% ensuring maximum return for growers. Lumen was grown commercially for the first time in 2017, producing some impressive performances.

Lumen has the highest seed yield of all spring rape varieties at 105% and a high oil content of 44.8% but its strongest asset is its early vigour in the spring, quickly establishing a strong rooting system and early leaf set helping to ensure maximum plant survival against potential flea beetle attack.

Doktrin
Doktrin is a high oil content (44.2%) spring oilseed rape variety from DSV which has been on the AHDB Descriptive List for the last four years. It has a good all-round agronomic package with moderate height, together with mid-early flowering and maturity.

Mental CR
Mental CR is a very high yielding hybrid and DSV's first spring rape which offers the added benefit of clubroot resistance. Mental CR is resistant to the most common strains of clubroot, it allows spring rape to be grown in areas previously unable to grow the crop. Not only does Mental CR yield well but it also has very good oil content.

Mental CR is recommended for land which has been infected with the common strains of clubroot. Mental CR may, in some circumstances (in common with all clubroot resistant varieties), be infected by some strains and infections.

Makro
Makro is a popular spring oilseed rape variety currently on the market. It has a gross output of 101% and a seed yield of 101%. It is a variety that delivers consistently year after year. With excellent oil content of 45.3% and strong vigour, it is a farm favourite!

Dualis
Dualis is from the DSV France portfolio and has become a popular variety in the ‘flea beetle corridor’ of the UK. Dualis offers robust polygenic phoma stem canker resistance. Having excellent quantitative resistance, it is unlikely to breakdown as quickly as single gene resistance types – so for those growers who have been using RLM 7 varieties in close rotations it offers an excellent resistance management option.

In addition to its phoma stem canker resistance Dualis has very good resistance to light leaf spot (6); strong autumn development which is on par with the DSV benchmark variety – Incentive 45 – and hybrid spring vigour.

Dualis is a variety which delivers above average yields and excellent oil content (45.7%). It also has good resistance to lodging with a strong network of roots. It is a relatively short variety at 150cm.

Data Source: DSV trials

<table>
<thead>
<tr>
<th>Gross Output</th>
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</tbody>
</table>

Incentive 45
Incentive 45 offers a robust package of grain yield stability, oil content, standing power, disease resistance and ability to withstand pest attack. Incentive 45 achieves a gross output of 106% and an oil content of 45.8%. It has a remarkable grain yield consistency across a range of different growing and climatic conditions.

Incentive 45 was the first oilseed rape variety bred specifically to make maximum use of the first 45 days of growth after drilling, where it lays foundations for future yield. Incentive 45 has a strong root network which allows it to establish quickly so the plant can obtain essential nutrients effectively to promote early top growth. Plants with strong roots give it protection against subsequent lodging. Incentive 45 has top scores for resistance to lodging and stem stiffness and has produced some of its highest yields in the worst lodging years, outperforming other varieties. Incentive 45 is a medium height hybrid standing at around 153cm.

DSV recommend planting their hybrids in the optimum drilling window. However, if weather conditions mean drilling is delayed, Incentive 45’s autumn vigour gives flexibility for later sowing. Incentive 45’s early development means that buds form before high populations of pollen beetles have established.

Data Source: AHDB Recommended List Trials

<table>
<thead>
<tr>
<th>Gross Output</th>
<th>Oil Content</th>
<th>Lodging</th>
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<td>7</td>
<td>5</td>
<td>4</td>
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</tr>
</tbody>
</table>

“After losing 24ha of oilseed rape last year from flea beetle pressure and drought, I was considering not growing any rape this year. However after seeing Dualis on the DSV stand at Cereals with its high autumn vigour and good agronomic characteristics I decided to give it a try. It shot out of the ground and has looked a cracking crop throughout the winter with little foliar disease.”

Trevor Bedford — Paradise Farm, Cambridgeshire

“After yielding 4.7 t/ha with our Incentive 45 last year we have decided to grow it again for harvest 2018. I feel we have worked out how to grow the variety and it is reliable, with a simple programme that makes it an easy choice for our farm.”

William Speakman — Stag Batch House Farm, Herefordshire
## DSV Winter Oilseed Rape Guide

### Hybrids

<table>
<thead>
<tr>
<th>Hybrids</th>
<th>Temptation</th>
<th>Sparrow 45</th>
<th>Incentive 45</th>
<th>Dariot</th>
<th>Dualis</th>
<th>DSV15</th>
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<tr>
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<td>MSL</td>
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<td>MSL</td>
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<td><strong>Status</strong></td>
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### Agronomic Characteristic

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</tr>
<tr>
<td><strong>Spring Vigour</strong></td>
<td>High</td>
<td>Very High</td>
<td>High</td>
<td>Medium</td>
<td>Medium</td>
<td>High</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Seed Quality

| Oil Content (%)        | 45.9%       | 45.7%      | 45.8%        | 45.7%   | 45.7%   | 44.9%  | 45.9%  |

### Disease Resistance

| Light Leaf Spot        | 6           | 6          | 6            | 6       | 7       | 6      |
| Stem Canker            | 5           | 5          | 4            | 9       | 7       | 6      |
| Verticillium Wilt      | Medium      | High       | Medium       | Medium  | —       | —      |
| Pod Shatter            | Medium      | Medium – High | Medium | High    | Medium  | High   |

### Technical Comments

- Double layered PNN variety with TuYV resistance and quick autumn vigour
- PNN variety, excellent oil content, robust disease package
- Consistently high yielding, excellent autumn vigour, high tolerance to Verticillium Wilt
- First DSV PNN variety, vigorous in autumn and spring, high disease scores
- Multigenic phoma stem canker resistance, good light leaf spot resistance
- Clubroot resistant variety with rapid autumn vigour
- Triple Layered variety with outstanding autumn vigour
- RLM 7 gene for phoma, robust plant with high resistance to pod shatter
- Strong autumn vigour, new benchmark in the Clearfield® segment
- The first Clearfield® variety bred using the MSL system. High Verticillium Wilt tolerance and stem stiffness

*Relative to Clearfield® yields from DSV trials*
Plurax CL

Plurax CL is the latest Clearfield® winter oilseed rape variety released by DSV and is commercially available this autumn. It has been bred and selected to bring together DSV’s pioneering genetics with the latest Clearfield® hybrid technology.

Plurax CL is a step forward in Clearfield® genetics as it has been specifically bred to have a strong tolerance to Verticillium wilt and has proven itself in recent ADAS trials. It is a new generation hybrid with high yields and outstanding levels of oil content. In UK trials Plurax CL has given a seed yield of 103% and an oil content of 46.5%. It is quick to establish in the autumn putting down a robust rooting system. Its stem stiffness and resistance to lodging are two of its key strengths. Plurax CL highlights DSV’s autumn vigour – being on par with market leading varieties – for making maximum use of the first 45 days of growth after drilling, where OSR plants lay the foundations for future yields. Plurax CL has a strong agronomic package with a score of 7 for light leaf spot and 6 for phoma stem canker.

Plurax CL is suitable for sowing in a range of soil types and conditions, due to its autumn vigour and the branching capacity of the plant.

Data Source : DSV Trials Network 2017

<table>
<thead>
<tr>
<th>Seed Yield</th>
<th>Oil Content</th>
<th>Autumn Vigour</th>
<th>Winter Hardiness</th>
<th>Plant Height</th>
<th>Flowering</th>
<th>Maturity</th>
<th>Lodging</th>
<th>Stem Stiffness</th>
<th>Stem Canker</th>
<th>Light Leaf Spot</th>
</tr>
</thead>
<tbody>
<tr>
<td>103%</td>
<td>46.5%</td>
<td>High</td>
<td>Very Good</td>
<td>Medium – Tall</td>
<td>6</td>
<td>6</td>
<td>9</td>
<td>8</td>
<td>6</td>
<td>7</td>
</tr>
</tbody>
</table>

Phoenix CL

Phoenix CL was DSV’s biggest selling Clearfield® variety in 2017. The variety has performed well across the UK with many growers reporting strong establishment. It has shown to have outstanding autumn vigour with a good seed yield of 105%. With an oil content of 45%, an oil bonus of 10% can be achieved with the variety, adding extra value to the crop. It has a benchmark disease performance with a 6 for light leaf spot and a 6 for phoma stem canker. Phoenix CL is a typical DSV variety with ‘45 Days’ autumn vigour and good spring development which suits most soil types, giving you flexibility in later sowing if adverse weather conditions occur. Phoenix CL offers added pod shatter protection helping to maximise growers yields at harvest.

Data Source : DSV Trials Network 2017

<table>
<thead>
<tr>
<th>Seed Yield</th>
<th>Oil Content</th>
<th>Autumn Vigour</th>
<th>Winter Hardiness</th>
<th>Plant Height</th>
<th>Flowering</th>
<th>Maturity</th>
<th>Lodging</th>
<th>Stem Stiffness</th>
<th>Stem Canker</th>
<th>Light Leaf Spot</th>
</tr>
</thead>
<tbody>
<tr>
<td>105%</td>
<td>45%</td>
<td>High</td>
<td>Good</td>
<td>Medium – Tall</td>
<td>6</td>
<td>6</td>
<td>8</td>
<td>7</td>
<td>6</td>
<td>6</td>
</tr>
</tbody>
</table>

“I am growing a trial area of Plurax CL along with a selection of other new Clearfield® varieties. Plurax CL stands out compared to the other hybrids, really growing away quickly this spring. It was the first into flower with no adverse effects following the cold winter. The crop has strong healthy looking plants with large dark leaves. I am looking forward to taking the variety to harvest.”

Dan Wormwell — PR Wormell Farms, Essex

“Phoenix CL has a vigorous autumn growth habit which is just what we are looking for to help prevent damage by pests like flea beetles and slugs. It also grew away nicely in the spring and was quickly into flower. Phoenix CL looks to be a fairly short variety that should help to manage our harvest losses and lead to easy combining. We initially chose the variety to help combat issues with charlock which was becoming more and more of a problem in the field. Phoenix CL looks to have a high oil content and yield so we are hoping to see little or no yield lag.”

John Barrett — Sentry Farms Ltd, Norfolk
Veritas CL

Veritas CL is an imidazolinone resistant hybrid variety with strong youth development before winter. Veritas CL carries the RLM7 gene giving it resistance to phoma stem canker as well as having a strong score for light leaf spot. It is a robust and healthy variety with a very good tolerance to drought. Veritas CL also has enhanced pod shatter resistance for extra flexibility at harvest. Growers need to be aware that Veritas CL is slightly later flowering than some varieties.

Data Source: DSV Trials Network 2017

<table>
<thead>
<tr>
<th>Seed Yield</th>
<th>Oil Content</th>
<th>Autumn Vigour</th>
<th>Winter Hardiness</th>
<th>Plant Height</th>
<th>Flowering</th>
<th>Maturity</th>
<th>Lodging</th>
<th>Stem Stiffness</th>
<th>Stem Canker</th>
<th>Light Leaf Spot</th>
</tr>
</thead>
<tbody>
<tr>
<td>98%</td>
<td>44.1%</td>
<td>Medium</td>
<td>Very Good</td>
<td>Tall</td>
<td>3</td>
<td>4</td>
<td>7</td>
<td>6</td>
<td>8</td>
<td>7</td>
</tr>
</tbody>
</table>

Click CL

Click CL, a new hybrid spring oilseed rape, has tolerance to BASF Clearfield® herbicides, combining excellent production statistics with highly beneficial agronomic characteristics, giving it a very valuable position in the rotation. Being a hybrid variety, it demonstrates outstanding early vigour on-farm, which translates into exceptional spring growth followed by high yields, which have been consistently proven across a variety of different years and growing conditions.

Data Source: DSV Trials Network 2017

<table>
<thead>
<tr>
<th>Seed Yield</th>
<th>Oil Content</th>
<th>Vigour Spring</th>
<th>Plant Height</th>
<th>Flowering</th>
<th>Maturity</th>
<th>Resistance to Lodging</th>
</tr>
</thead>
<tbody>
<tr>
<td>Good</td>
<td>Very High</td>
<td>High</td>
<td>Medium – Tall</td>
<td>Medium</td>
<td>Medium</td>
<td>Good</td>
</tr>
</tbody>
</table>

TerraLife – the special cover crop programme

TerraLife cover crop mixtures were developed to break down soil between crops and improve soil fertility and health. All mixtures include a proportion of quick-growing species to effectively suppress weed growth. The range of species guarantees good biodiversity and maximum variation in root development to ensure good soil penetration.

TerraLife-SolaRigol DT

TerraLife-SolaRigol DT is used in rotations with potatoes, to reduce the susceptibility of disease in the crop, to increase soil fertility and to ensure faster rooting which is beneficial for the seed potatoes. In ideal growing conditions when growing the cover crop, deep cultivations are not required to establish the following potato crop. This mixture can also be used prior to growing other vegetable and fruit crops.

TerraLife-BetaMaxx DT

TerraLife-BetaMaxx DT has been researched and developed for sugar beet rotations. Specific species within the mixture benefit the soil’s bacteria to help protect the sugar beet from pathogens. Early indications show an increase in yield of a sugar beet crop when using this mixture compared to a single species cover crop.

TerraLife-BetaSola DT

TerraLife-BetaSola DT is a mixture specifically designed to reduce the risk of nematodes where sugar beet and potatoes are used in narrow rotations. It protects against Heterodera schachtii, Meloidygne chitwoodi and Pratylenchus as well as promoting earthworm activity, increased crumb structure and produce 40-80kg/N in the correct growing conditions.

I have been growing DSV’s TerraLife mixtures for four years now. The main reason being to control nematodes and get better soil structure for the next crop. There was also a noticeable difference in the workability of the soil when spring cultivating this year, which I believe is due to the network of roots in the Rigol DT mixture, creating a good crumb structure for the following potato crops. Our sugar beet yields were better this year where a cover crop had been planted.

Thomas Love — Walcott Farms, Norfolk
The added benefits of TerraLife

TerraLife multi-species cover crop mixtures are the result of many years experience and R&D to meet the needs of modern, intensive agriculture.

TerraLife mixtures offer all kinds of benefits to your soils, including:

- Increased levels of organic matter levels
- Reductions in nutrient losses, making more available to following crops
- Improved soil structure, fertility and health throughout the soil profile
- Protection from pests and disease
- Increased suppression of weeds – recent trials show this results from the use of diverse multi-species mixtures.
- Increased soil life – particularly earthworms.

Earthworms make a valuable contribution to soil fertility

According to Charles Darwin (1882), man must be more grateful for worms than for the plough!

There can be up to 3 tonnes of earthworms/ha, producing around 600 tonnes of worm faeces per annum.

Worm faeces contain five times more nitrogen, seven-times more phosphate and eleven-times more potassium than the normal surrounding earth.

Worm castings contain a high percentage of humus. Humus helps soil particles form into clusters, which create channels for the passage of air and improve its capacity to hold water. (Holcombe et al, 1995)
Wheat

The winter wheat breeding programme of DSV is designed to produce varieties for all market segments. With a number of scientific tools at DSV’s disposal, the company is able to select lines which provide a high bread-making quality with a good disease resistance package without sacrificing yield. Additionally, DSV aims to produce varieties for feed with a top yield and resistance to major wheat diseases.

Marston
- High yielding hard feed wheat
- Suitable for sowing in a first wheat situation
- Chart topping yellow rust and Septoria tritici resistance
- Good grain quality – a farmer-friendly variety

DSV 316126
- Hard feed wheat
- Has one of the highest untreated yields in National List 2 trials
- Excellent disease resistance
- Same maturity as JB Diego

Olympus
- Consistant hard feed wheat
- Excellent disease including Pch 1 Rendezvous resistance gene for eyespot
- Big, bold ears for good grain fill
- Suitable for wholecrop market

DSV 316127
- Soft feed wheat
- Standout field characteristics
- Orange Wheat Blossom Midge resistance
- All round disease resistance

DSV 316139
- High quality bread making wheat
- One of the highest protein contents and specific weights of all bread entries in National List trials
- Early indications show good feedback from millers
- Has major genes for both rusts and Orange Wheat Blossom Midge resistance.

“We often make crosses with German bread-making lines in order to strengthen the dough properties in our bread-making programme and we also focus heavily on Septoria resistance. I am very excited about the next few years as the DSV UK wheat portfolio begins to take shape and cannot wait for our varieties to be grown on-farm. If you have any comments or suggestions then please get in touch as it is always useful to hear from growers.”
Dr Matt Kerton — Wheat Breeder, DSV UK

Dr Matt Kerton, Wheat Breeder DSV UK

<table>
<thead>
<tr>
<th>Status</th>
<th>Marston</th>
<th>DSV 316126</th>
<th>DSV 316127</th>
<th>DSV 316139</th>
</tr>
</thead>
<tbody>
<tr>
<td>NIAB Group</td>
<td>Group 4 (hard feed)</td>
<td>Group 4 (hard feed)</td>
<td>Group 4 (soft feed)</td>
<td>Group 1 (bread making)</td>
</tr>
<tr>
<td>Parentage</td>
<td>Timaru x Hereford</td>
<td>Stigg x Tuxedo</td>
<td>LEU 90105 x Scout</td>
<td>Crusoe x KWS Podium</td>
</tr>
<tr>
<td>Treated Yield</td>
<td>102%</td>
<td>100%</td>
<td>100%</td>
<td>95%</td>
</tr>
<tr>
<td>Untreated Yield</td>
<td>112%</td>
<td>125%</td>
<td>116%</td>
<td>103%</td>
</tr>
<tr>
<td>Protein</td>
<td>11.40%</td>
<td>15.20%</td>
<td>13.30%</td>
<td>13.60%</td>
</tr>
<tr>
<td>Specific Weight</td>
<td>76.8kg/hl</td>
<td>68.5kg/hl</td>
<td>68.9kg/hl</td>
<td>79kg/hl</td>
</tr>
<tr>
<td>Hagburg Falling Number</td>
<td>308 sec</td>
<td>300 sec</td>
<td>217 sec</td>
<td>308 sec</td>
</tr>
<tr>
<td>Height</td>
<td>87cm</td>
<td>87cm</td>
<td>95cm</td>
<td>86cm</td>
</tr>
<tr>
<td>Yellow Rust</td>
<td>9</td>
<td>9</td>
<td>9</td>
<td>7</td>
</tr>
<tr>
<td>Brown Rust</td>
<td>4</td>
<td>8</td>
<td>8</td>
<td>6</td>
</tr>
<tr>
<td>Septoria Tritici</td>
<td>6.8</td>
<td>6</td>
<td>7</td>
<td>5</td>
</tr>
<tr>
<td>Mildew</td>
<td>9</td>
<td>8</td>
<td>5</td>
<td>8</td>
</tr>
<tr>
<td>Markers</td>
<td>Major genes for Yellow Rust</td>
<td>—</td>
<td>5m1</td>
<td>5m1, Major genes for Yellow Rust and Brown Rust</td>
</tr>
</tbody>
</table>

“We often make crosses with German bread-making lines in order to strengthen the dough properties in our bread-making programme and we also focus heavily on Septoria resistance. I am very excited about the next few years as the DSV UK wheat portfolio begins to take shape and cannot wait for our varieties to be grown on-farm. If you have any comments or suggestions then please get in touch as it is always useful to hear from growers.”
Dr Matt Kerton — Wheat Breeder, DSV UK
Maize

Maize is relatively new to the portfolio, but DSV are excited to be able to bring varieties into this important and expanding crop sector which are suitable for biogas production as well as making excellent silage and/or grain yields.

Movanna

Movanna was the first variety to be commercially available for the UK market from DSV and it has had good success for the medium maturing sector of the maize market. It has performed well throughout its two years of trialling. It has also had very good results on farm with many farmers saying it was their highest yielding variety.

It is an all-round variety which combines good agronomical characteristics with very early vigour and good standing power. Movanna also has excellent disease scores with little eyespot infections seen in the variety. Used for both forage and energy production with very high dry matter yields. Its starch content is high with good digestibility making it an ideal variety for dairy farmers and biogas plants.

Movanna, with an FAO 210, is suitable for all soil types including heavy clay soils.

Petroschka

Petroschka is a later variety in DSV’s maize portfolio, with an FAO of 230. This variety has completed its National List trialling and is commercially available in countries across Europe including the UK. With high energy and starch content per hectare it is therefore the ideal variety for dairy farmers and intensive beef rearing. It has good all-round disease and so is a very economically variety especially in current times with volatile milk prices.

2017 was our 1st year of growing LikeIt which immediately impressed. The crop started with excellent early vigour and looked impressive all season, producing a large fully enclosed cob and an excellent crop.

The crop went on to win first prize in the Gloucestershire Root Fruit & Grain best standing maize competition and our neighbour also came 2nd with the same variety. we were very pleased and are planting a much larger acreage in 2018.”

Sophie Round
— Elmore Back Farm, Gloucestershire

Joy

Joy is a dual purpose ultra-early variety which has become commercially available this year. In UK trials it was the highest yielding variety within its maturity group by over 3Mt/ha in DSV UK trials in 2016. With an FAO of 150, it can be harvested early or can be sown late with good dry matter yields and excellent starch content.

Profit from increased flexibility and choice. DSV high yielding forage maize varieties extend your maturity options from ultra-early to 210 days.

LikeIt was National Listed this year (in February) and looks to show real potential in the early maturing category for maize (FAO 180). LikeIt is suitable for forage and grain with high dry matter yields (103%) and high starch content. LikeIt is a very versatile variety which can be sown in any soil type and area, with exceptional early vigour. It has an excellent tolerance to disease with a very good eyespot score and good standing ability although it is a taller variety.

Sowing the seeds of greater flexibility...

<table>
<thead>
<tr>
<th>Maturity</th>
<th>Joy</th>
<th>LikeIt</th>
<th>Movanna</th>
<th>Petroschka</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variety architecture</td>
<td>Medium height with broad leaves</td>
<td>Very early and tall with medium steep leaves</td>
<td>Very tall plant with broad, steep leaves</td>
<td>Leafy with high cob insertion</td>
</tr>
<tr>
<td>Fodder quality</td>
<td>Starch Content: Very High Digestibility: Very High</td>
<td>Starch content: High Digestibility: High</td>
<td>Starch Content: High Digestibility: Good</td>
<td>Starch Content: High Digestibility: High</td>
</tr>
<tr>
<td>Soil Type</td>
<td>Heavy, Medium and Light</td>
<td>Heavy, Medium and Light</td>
<td>Heavy, Medium and Light</td>
<td>Heavy, Medium and Light</td>
</tr>
<tr>
<td>Agronomic characteristics</td>
<td>Good Fusarium Resistance Good Resistance to Bacterial and Streaks</td>
<td>Excellent Early Vigor Good Eyespot Resistance Excellent Standing Ability</td>
<td>Very good Fusarium and smut resistance Excellent quality for dairy farms</td>
<td>High in Energy</td>
</tr>
</tbody>
</table>
Forage Crops

DSV has a wide range of products available including turf and forage grasses, forage rye, rape, turnips, lucerne and clovers.

Gorilla

Gorilla is a dark green, high dry matter content forage rape which is commercially available in the UK. Having a high total dry matter content means high yields and also intake by livestock is more beneficial per bite to the animal. The two key diseases in forage rape are not an issue, given impressive scores for mildew and in particular club root resistance. Overall performance is valuable as brassicas are now widely used as a forage crop.

Gorilla has good regrowth and therefore when planted in May, the crop can be grazed in August when grass growth may be faltering. There will be a second regrowth in November/December when there will be little growth of the grass. Alternatively it can be strip grazed.

Data Source: National List Trials

<table>
<thead>
<tr>
<th>Yield</th>
<th>DM Content</th>
<th>Height</th>
<th>Lodging</th>
<th>Clubroot Infection</th>
<th>Mildew</th>
</tr>
</thead>
<tbody>
<tr>
<td>109%</td>
<td>12.6%</td>
<td>78cm</td>
<td>9</td>
<td>10%</td>
<td>7.3</td>
</tr>
</tbody>
</table>

Marco

Marco is an early maturing tetraploid stubble turnip variety with a good root to leaf biomass relationship. One of its benefits, compared to other varieties, is that it rapidly builds a strong root system making it highly versatile in terms of feeding potential without the risk of bolting. The variety can be sown in July and August with feeding possible from October to December.

Bonfire

Bonfire is a multi-purpose forage rye variety which can be grown as a winter cover crop for forage or for AD production. An advantage of Bonfire is its rapid growth in the autumn and spring, providing a later sowing window than other varieties. In trials it has also given the highest yields in a rye-maize crop rotation. In UK trials last year it performed better than the market leaders.

Bonfire is a relatively tall variety (117cm), but in trials in the UK and in Germany little lodging was seen throughout the different trial networks.

<table>
<thead>
<tr>
<th>Dry Matter Yield</th>
<th>Dry Matter Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.16t/ha</td>
<td>15.30%</td>
</tr>
</tbody>
</table>

Grasses

DSV has bred a range of grasses from turf to forage. DSV is the number one breeder of turf grasses in Germany and has numerous global markets, with many international sportsgrounds having DSV turf. The DSV forage grass breeders throughout our five grass breeding stations focus on top level dry matter yields, persistence, disease resistance, winter hardiness, sward density, spring and autumn growth and drought tolerance. DSV UK’s grass breeder, Tim Ball, has been very successful in getting varieties recommended which include the perennial ryegrass AstonEnergy, AstonConqueror, AstonPrincess, AstonAmber and hybrid ryegrass AstonCrusader, to name just a few....!
Data source: All data is sourced from the UK AHDB Recommended List 2018/19 and National List trials for cereals and oilseeds.

On the 1 – 9 scales, high figures indicate that a variety shows the character to a high degree.

Note: Whilst every effort has been made to ensure that the information in this variety guide is accurate and complete, some of the information is supplied to us by third parties and we are not able to check the accuracy and completeness of that information. No guarantee is given, that the listed information represents all aspects of agricultural practice. We do not accept any liability arising from any inaccuracy or omission in any of the information provided in this guide.