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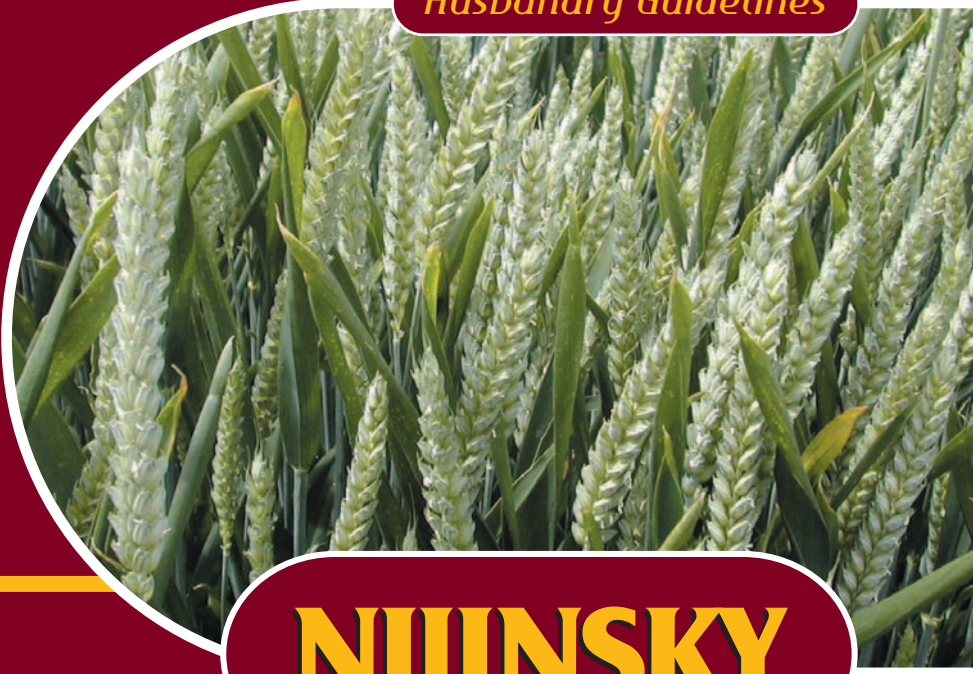
HGCA

Husbandry Guidelines



# NIJINSKY
## Winter Wheat


NICKERSON

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## Introduction

Plant breeding is often compared to the breeding of racehorses - combining the best characters from established "pedigree" lines. This analogy is particularly relevant in the development of the winter wheat variety Nijinsky.

This variety was selected from the cross Claire x Consort. This brought together the two leading soft milling varieties of the late 1990s/early 2000s, with the objective of combining the best features of both varieties.

Consort, bred by PBIC, became the standard soft milling biscuit/export wheat for many growers. A significant benefit of the variety was its very stiff straw and on-farm reliability. The poor disease profile of the variety was of lesser importance, as at the time of its introduction, grain prices were high, allowing higher levels of expenditure on fungicides.

Claire, bred by Nickerson, was introduced into the UK market in 1999 and soon began to dominate the market. Combining similar soft milling end use characters to Consort, it had a far superior disease resistance profile but not quite such good standing power.

Nijinsky was bred to combine the agronomic benefits of Consort, notably shorter and stiffer straw, with the high disease resistance characters from Claire.

Nijinsky represents an improvement over its parents and provides a similar marketing opportunity for grain for the export, biscuit and domestic feed markets.

Bill Angus, Senior Wheat Breeder


Excellent all-round disease resistance


Nijinsky meets the criteria for HGCA UKS export markets


Progeny of widely grown parents Claire x Consort

NIJINSKY Winter Wheat


UK Group 3 suitable for a wide range of markets

## Nijinsky - Its Place in the Market

The UK has a long history in producing soft milling biscuit wheats. From the early 1970s varieties such as Norman, Longbow, Brock, Riband, Consort and Claire have established the UK as the world's leading producer of biscuit wheats. The wide-spread growing of Riband in the 1980s opened up export opportunities which were subsequently filled by Consort and Claire. Currently around 20% of the UK wheat crop is exported.

Nijinsky, as a NABIM Group 3 variety, will meet the demands of the domestic biscuit, distilling and feed markets. Nijinsky has been placed in the British Cereal Export UKS export (soft wheat) category and will meet export requirements for that class. For further information on the HGCA British Cereal Export initiative see **www.hgca.com** and **www.ukwheat.com**.

**Table 1. Export specifications for UKS wheats**

| | Export Specification | Claire | Consort | Nijinsky |
|---|---|---|---|---|
| W value | ⩽ 120 | 101 | 112 | **105** |
| P/L value | ⩽ 0.55 | 0.4 | 0.3 | **0.3** |
| Protein (%) | 10.5-11.5 | 11.6 | 11.6 | **11.6** |

Source: HGCA

## Nijinsky - Pedigree and Selection Mechanism

Pedigree: Nijinsky = Claire x Consort

The background to the formulation of the pedigree for Nijinsky has been outlined in the introduction. The primary objective, apart from enhanced yield performance, was to develop a shorter, stiffer variety with the excellent disease profile of Claire. Table 2 illustrates the traits within Nijinsky that have been derived from its parents Claire and Consort. In general terms Nijinsky has inherited the excellent disease profile of Claire and the stiffer, shorter straw of Consort.

Claire, whilst suited to early sowing, has a relatively low vernalisation requirement (the cold period necessary to initiate flowering). Nijinsky has inherited the high vernalisation requirement from Consort. This, combined with the strong daylength response inherited from Claire enhances Nijinsky's suitability for early drilling, compared to Claire.

**Table 2. Nijinsky - derivation of breeding traits**

| | Claire | Consort | Nijinsky |
|---|---|---|---|
| Yield treated | 100 | 99 | **102** |
| Yield untreated | 81 | 73 | **82** |
| Straw strength - PGR | 6 | 8 | **8** |
| Straw strength + PGR | 7 | 9 | **8** |
| Height without PGR (cms) | 90 | 87 | **86** |
| Resistance to mildew | 4 | 6 | **6** |
| Resistance to yellow rust | 9 | 6 | **8** |
| Resistance to brown rust | 8 | 4 | **7** |
| Resistanceto *Septoria nodorum* | 8 | 5 | **(7)** |
| Resistance to *Septoria tritici* | 6 | 4 | **6** |
| Resistance to *Fusarium* | 7 | 6 | **7** |
| Resistance to eyespot | 5 | 6 | **5** |
| Primordia development | Late | Late | **Late** |
| Latest safe sowing date | End Feb | End Jan | **End Jan** |

( ) = limited data

Source: HGCA Recommended List 2005/06

## Nijinsky - Resistance to Disease and Pests

With low grain prices and concerns over reduced efficacy of some fungicides, Nickerson continue to emphasise the value of high levels of genetic disease resistance. Nijinsky is no exception to this philosophy, combining an extremely robust disease profile with an attractive agronomic type.

This section explains the importance of disease resistance factors present within Nijinsky as well as their prospects for longevity.

Good yellow rust resistance allows growers to diversify risk

### Yellow rust

Since the introduction of Claire (the disease resistant parent of Nijinsky) a large amount of work has been carried out to determine how robust the yellow rust resistance factors used in this variety are.

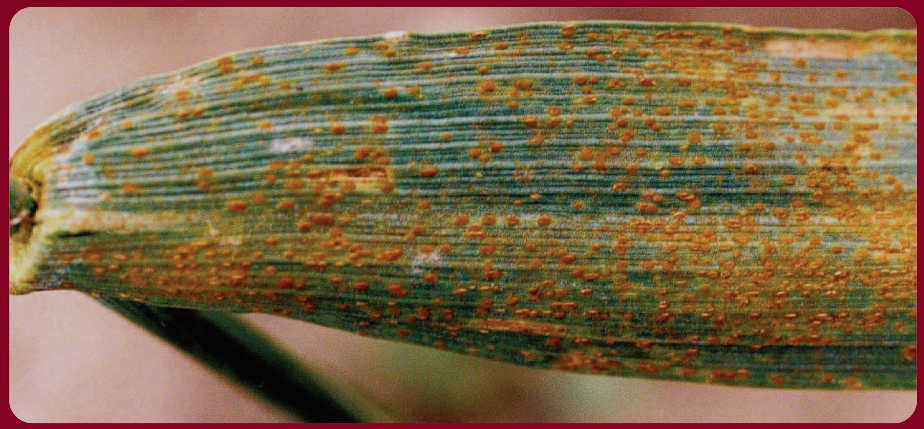
This resistance has been utilised in a range of varieties such as Parade, Buster and Dynamo as well as more modern varieties such as Claire and Nijinsky. Sporadic reports of breakdown have been received over the last thirty year period. All these have been checked by the Nickerson breeders/pathologists with no recorded incident having been verified. Research at the John Innes Centre, Norwich, indicates that a number of partial resistance genes are working together to produce this highly effective level of resistance. The combination of a number of partial resistance genes, rather than simple major gene protection gives credence to the expectation that this resistance will have longevity in commerce.
One observation that has been made is that sometimes very low levels of yellow rust can be found when grown alongside very susceptible varieties. Any sporulation will soon dry up and thus fungicidal control measures will be unnecessary.

Growers, agronomists and advisers have become complacent over the threat of this potentially very damaging disease.

With over 25% of the UK acreage now sown to susceptible or very susceptible varieties (HGCA ratings of 3 or 4), growers should monitor their crops regularly. If one takes into account the area sown with varieties that potentially can carry a high level of yellow rust (HGCA ratings 5 or 6) this vulnerable area rises to 46%. Nijinsky should feature as part of an overall control strategy as it can be sown safely alongside more susceptible varieties.

### Brown rust

Nijinsky has good resistance to brown rust (HGCA rating 7), but growers in high risk areas should include a T3 fungicide application as routine. Brown rust epidemics have been rare over the last few years but as with yellow rust there is potential for an increase in this disease should conditions favour it.



Brown rust can cause serious yield loss in susceptible varieties in some years

### *Septoria*

The profile of this particularly damaging disease has been raised by the appearance over the last few years, of strobilurin-resistant races of *Septoria tritici*. Indeed such has been the evolution of strobilurin resistance that no part of the UK wheat growing area has been left unaffected. In 2004, 80% of *Septoria* populations examined showed the presence of strobilurin-resistant races.

The use of triazole and chlorothalonil based products will be of high value to growers but this **must** be combined with good genetic resistance. The resistance to *Septoria spp* in Nijinsky has not been fully characterised, but work at the John Innes Centre, Norwich suggests a number of genes are involved in this complex characteristic. There has been some speculation that Nijinsky's resistance, derived from Claire, has been eroded over time. Careful monitoring of disease nurseries and disease 'hotspots' indicates that there has been no significant change to the effectiveness of this highly effective resistance. This resistance is not complete and growers should use appropriate fungicide measures to complement the genetic resistance.

### Mildew

Nijinsky has improved levels of resistance to mildew, compared to Claire (HGCA rating = 6). This disease has never been a major threat to Claire, despite its low rating (HGCA rating = 4) and growers should experience no problems with Nijinsky provided they follow the agronomic advice within this booklet.

### Eyespot

Both Claire and Consort exhibit an acceptable level of resistance to eyespot, thought to be inherited from the French variety Cappelle Desprez, which was widely grown in the UK in the 1950s, 60s and 70s. This resistance, which has been inherited by Nijinsky, has been effective over a long period. In later sown first wheat situations, control measures are unlikely to be cost effective. However in early sown first wheats as well as second/continuous wheat situations, fungicide control measures should be used to enhance the genetic resistance. Cyprodinil based products e.g. Unix (Syngenta (**www.syngenta.com**)) have proven to be the standards for eyespot control and these products can be used in high risk situations to complement the genetic resistance available in Nijinsky. Other products such as Proline (Bayer) and Tracker (BASF) are also claimed to be effective.



Left unchecked, severe *Fusarium* infections can reduce yield, affect quality and contaminate grain with mycotoxins

### *Fusarium spp*

There are increasing concerns over the levels of mycotoxins present in wheat crops. *Fusarium spp* will enhance the development of mycotoxins (particularly *Fusarium graminearum* and *F. culmorum* which produce several mycotoxins including deoxynivalenol (DON) and nivalenol (NIV) ). These mycotoxins can be harmful if fed to animals or humans.

In high risk years and particularly when wet weather coincides with flowering, fungicides should be used to complement the high levels of genetic resistance found in Nijinsky. Wheat in maize rotations is particularly vulnerable to *Fusarium* attack.

### Resistance to Wheat Orange Blossom Midge

Wheat orange blossom midge (WOBM) has become a major pest over the last three years (2002-4 inclusive). Differences in resistance have been identified in a range of varieties. Nijinsky falls into the category as having a 'moderate' level of resistance. As such, under high risk situations, applications of chlorpyrifos based products should be considered. This is the only product with approval for the control of WOBM and is the only chemical with the necessary persistence to control hatching over a period of several days. Attempted control using pyrethroid based products may exacerbate the problem as these products may reduce the natural enemies of WOBM - hymenopterous parasitoids. Growers should seek advice from Dow Chemicals (e-mail **fhihotl@dow.com** or freephone 0800 689 8899) regarding the use of their chlorpyrifos based products.

## Nijinsky - Yield Potential

Nijinsky has been evaluated in HGCA Recommended List trials for a period of two years, following a two year evaluation in NIAB/BSPB National List trials. There is thus a robust database for evaluation. Following these trials Nijinsky has been shown to have a 2% yield advantage over Claire and 3% over Consort. However in the southern areas of the UK the yield advantage of Nijinsky compared to Consort is 5%.

Many growers do not operate at the peak of the response curve for nitrogen, for fear of lodging. The stiff, short straw of Nijinsky gives growers the opportunity to increase nitrogen rates to increase yield potential.


Nijinsky is the earliest ripening of all recommended Group 3 varieties, allowing early entry for oilseed rape

## Nijinsky - Place in Rotation

### Early Sowing

The term early sowing means different things to growers in different parts of the UK. As growers look to drill earlier, a consequence of increasing areas of winter wheat, variety choice becomes critical. Early drilling will increase biomass production and consequently the potential for higher grain yields. However early drilling will also significantly increase the disease threat as well as the potential for lodging - a consequence of increased straw production. Late primordia development is also a prerequisite for early sown varieties in that it helps avoid late spring frosts (which can cause reduced ear fertility in some varieties). Exsept is an ideal variety for early drilling but many growers look to concentrate on soft milling biscuit varieties. This is where Nijinsky can play a valuable role in diversification as it can be stored, if necessary, with Consort and Claire.

Nijinsky fulfils the requirements for early drilling. In comparison with Claire, a variety regularly used for early drilling, Nijinsky has shorter and stiffer straw. In common with Claire, Nijinsky has a prostrate winter habit and late primordia development.

Crops drilled at the beginning of September are relatively more prone to lodging, and growth regulators should be used as routine for this demanding rotational position. Barley Yellow Dwarf Virus (BYDV) is a potential threat, particularly in the south west, and consideration should be given to early plant protection with the use of seed treatment products such as Secur (**www.bayercropscience.com**).

Grain quality similar to Claire/Consort/Robigus allows easier storage

### Late Sowing (November onwards)

Nijinsky should not be considered as a candidate for late drilling. Crops drilled into late sown situations tend to come under grain filling pressure and growers should consider Istabraq, a sister variety to Nijinsky, as a candidate for this slot in the rotation (see Nickerson Istabraq Husbandry Guidelines).

### Second or Continuous Wheats

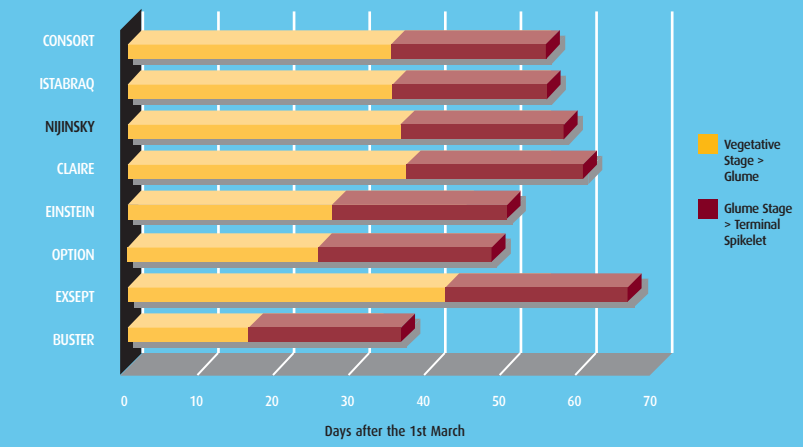
Consort is often cited as a 'good second wheat'. Trials data from a range of independent testing organisations fails to corroborate this. The variety does perform acceptably well in second wheat situations - better than Claire. However growers of soft milling biscuit/export varieties have had little choice and thus Consort has often been selected for this rotational position. Nijinsky now gives soft milling wheat growers a new option and the variety should be considered as an alternative to Consort in this slot. This will allow growers to simplify their storage logistics as Nijinsky can be stored safely with Claire/Consort when necessary.

**N.B. Always consult your grain merchant before mixing varieties in store. Whilst these varieties can be mixed together in terms of their grain quality characteristics, some buyers may specify single variety loads for certain markets.**

## Nijinsky - Response to Plant Growth Regulators (PGRs)

Nijinsky has a development pattern very similar to its parent Claire. Growers familiar with Claire will be accustomed to the late development pattern associated with this type of variety. Nickerson experience has been that PGRs targeted at the glume primordia stage give the most effective response. The first application of a split PGR programme should be targeted at the 'glume primordia' development stage. This will shorten the first internode and thus increase straw stiffness. The following chart shows the developmental patterns of a number of key varieties. The best way to determine the developmental stage is by dissection but PGRs targeted at the stage when the first node is starting to move off the base is acceptable for those unfamiliar with plant dissection techniques. Nijinsky has inherently stiff straw and we have no evidence to suggest that newer products will give an enhanced performance over products based on Chormequat Chloride (CCC). If seed rates and nitrogen applications have been carried out in line with our recommendations it is unlikely that PGRs will be necessary for crops with a yield potential less than 8 tonnes per hectare. Growers may however wish to consider a reduced rate PGR application as 'insurance'. However crops with yield potential above 8 tonnes per hectare should be treated routinely with a 2/3rd application at glume primordia followed by a 1/3rd application after the first node is detectable. Remember though that these applications will be later than for the majority of winter wheats being grown owing to Nijinsky's late development pattern.

**Chart 1. Ear Primordia Development**




## Nijinsky - Seed Rates and Treatments

Nijinsky produces a prostrate winter habit and has a high tillering capacity. It is important that seed rates be reduced in line with those recommended for Claire winter wheat to minimize lodging threat. Seed rates should be determined by an evaluation of sowing date, soil conditions and moisture availability, geographic region and potential pest problems.

**Table 3. Recommended seed rates for Nijinsky winter wheat**

| Time of sowing | Seeds/m² (Ideal Conditions) | Seeds/m² (Adverse Conditions) |
|---|---|---|
| Sept 1st - 15th | 120-160 | 160-250 |
| Sept 16th - 25th | 160-200 | 200-280 |
| Sept 26th - Oct 5th | 220-275 | 275-325 |
| Oct 6th - Oct 31st | 265-325 | 325-375 |
| Nov 1st - Nov 30th | 300-350 | 350-425 |
| Dec 1st - Feb 14th | 325-375 | 375-450 |

In first wheat situations a single purpose seed treatment should be applied as routine as even healthy looking grains can harbour disease in high risk years. For early sown crops the application of a broad spectrum seed dressing should be considered. This type of dressing is likely to improve early vigour, enhance disease protection and improve standing power.

In second wheat or continuous wheat situations or where take-all is likely to present a problem, products such as Jockey (**www.basf.de/en/produkte**) or Latitude (**www.monsanto.co.uk**) should be considered. However take-all is a sporadic problem and these treatments should be reserved for high and very high risk situations.

In early sown situations, particularly in the south and south west, Barley Yellow Dwarf Virus (BYDV) treatments such as Secur (**www.bayercropscience.com**) should be considered. This treatment alone is unlikely to remove the need for additional insecticide sprays but will considerably reduce the risk of heavy BYDV attack until the crop has grown sufficiently to present an adequate spray target.

Early sown crops are at risk from increased levels of foliar and root diseases and whilst Nickerson suggest the use of reduced seed rates for Nijinsky some of the financial savings should be re-invested in better quality seed and improved seed dressings.

## Nijinsky - Tolerance to Herbicides

Field tests by Makhteshim Agan (**www.mauk.co.uk**) indicate that Nijinsky can be sprayed safely with Alpha Chlortoluron 500 (Dicurane).

## Nijinsky - Response to Fungicides

There is a lot of conflicting advice with regard to the utilisation of strobilurin chemistry, following the widespread resistance of *Septoria tritici* to this product group. In addition higher rates of triazole chemistry are likely to be required to achieve the same control of this disease, compared to four years ago. With grain prices low it is important to choose varieties, such as Nijinsky, with inherently high levels of genetic resistance.

Nickerson has a philosophy of testing newer varieties with new and established fungicides and results are shown for the years 2003 and 2004. These two years contrasted as 2003 was a dry summer and 2004 was relatively wet.

Large scale husbandry trials are carried out each year at Woolpit

Table 4 shows the fungicide treatments carried out in 2003. Individual treatments are shown along with their respective costings. It is impossible to test every possible combination of fungicides but an attempt has been made to emulate strategies that individual growers may use.
Of particular note is that treatment 3 is completely untreated with fungicide and treatment 4 is the HGCA Recommended List protocol. This fungicide regime has been developed to minimise any disease threat and is not designed to be a commercial programme. However this programme does reveal the 'potential' yield of the varieties under test.
The rest of the programmes were then formulated to see how much of this potential can be captured.

**Table 4. Treatment and Costings (£/ha) 2003**

| TREATMENT CODE | FUNGICIDE TIMING T1 (GS 31/32) CHEMICAL | L/Ha | CHEM COST | FUNGICIDE TIMING T2 (GS 37/39) CHEMICAL | L/Ha | CHEM COST | FUNGICIDE TIMING (GS 55) CHEMICAL | L/Ha | CHEM COST | FUNGICIDE TIMING T3 (GS 61/65) CHEMICAL | L/Ha | CHEM COST | TOTAL CHEM COST | TRAVEL COST £7/Ha | COST OF TREATMENT £/Ha |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | OPUS | 0.5 | 10.50 | OPUS | 0.75 | 15.75 | | | | FOLICUR | 0.5 | 7.75 | 34 | 21 | 55.00 |
| 2 | LANDMARK | 0.5 | 14.75 | LANDMARK | 0.75 | 22.13 | | | | FOLICUR | 0.5 | 7.75 | 44.63 | 21 | 65.63 |
| 3 | UNTREATED | | 0 | UNTREATED | | 0 | UNTREATED | | 0 | UNTREATED | | 0 | 0 | 0 | 0 |
| 4 | UNIX<br>OPUS<br>AMISTAR | 1.0KG/Ha<br>0.75<br>0.6 | 22.20<br>15.75<br>14.82 | OPERA | 1.5 | 42.75 | | | | FOLICUR | 0.75 | 11.62 | 107.14 | 21 | 128.14 |
| 5 | LANDMARK | 0.5 | 14.75 | OPERA | 1.2 | 34.20 | | | | CARAMBA | 0.75 | 12.56 | 61.51 | 21 | 82.51 |
| 6 | OPUS<br>BRAVO | 0.5<br>1.0 | 10.50<br>3.20 | OPERA | 1.2 | 34.20 | | | | SWING GOLD | 0.75 | 14.80 | 62.7 | 21 | 83.70 |
| 7 | LANDMARK | 0.5 | 14.75 | | | | OPERA | 1.2 | 34.2 | | | | 48.95 | 14 | 62.95 |
| 8 | ACANTO<br>OPUS<br>BRAVO | 0.6<br>0.4<br>1.0 | 16.26<br>8.40<br>3.20 | AMISTAR<br>OPUS<br>BRAVO | 0.75<br>0.4<br>1.0 | 18.52<br>8.40<br>3.20 | | | | FOLICUR | 0.4 | 6.20 | 64.18 | 21 | 85.18 |
| 9 | OPUS<br>BRAVO | 0.5<br>1.0 | 10.50<br>3.20 | AMISTAR<br>OPUS<br>BRAVO | 0.75<br>0.4<br>1.0 | 18.52<br>8.40<br>3.20 | | | | AMISTAR<br>FOLICUR | 0.4<br>0.4 | 9.88<br>6.20 | 59.9 | 21 | 80.90 |
| 10 | ACANTO<br>OPUS<br>BRAVO | 0.6<br>0.4<br>1.0 | 16.26<br>8.40<br>3.20 | OPUS<br>BRAVO | 0.75<br>1.0 | 15.75<br>3.20 | | | | AMISTAR<br>FOLICUR | 0.4<br>0.4 | 9.88<br>6.20 | 62.89 | 21 | 83.89 |
| 11 | TWIST<br>OPUS | 0.8<br>0.5 | 12.16<br>10.50 | TWIST<br>OPUS | 1.2<br>0.5 | 18.24<br>10.50 | | | | FOLICUR | 0.5 | 7.75 | 59.15 | 21 | 80.15 |
| 12 | TWIST<br>OPUS<br>BRAVO | 0.8<br>0.5<br>1.0 | 12.16<br>10.50<br>3.20 | TWIST<br>OPUS<br>BRAVO | 1.2<br>0.5<br>1.0 | 18.24<br>10.50<br>3.20 | | | | FOLICUR | 0.5 | 7.75 | 65.55 | 21 | 86.55 |

Treatment costs are based on product prices at time of application

**Chart 2. Nickerson Agronomy Trials 2003: Nijinsky Grain yields and gross margins**

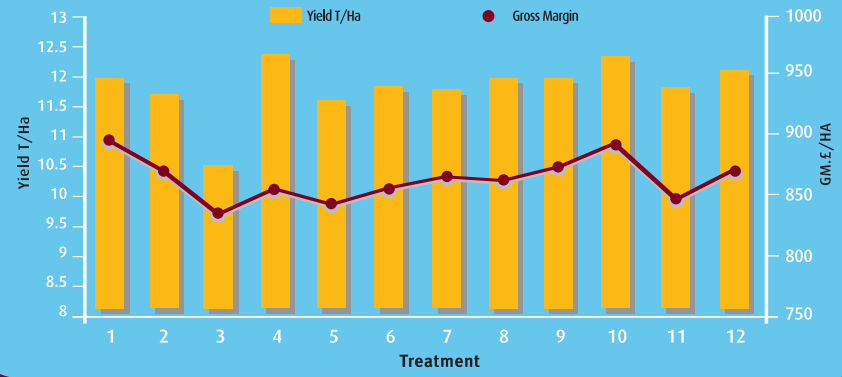



Chart 2 shows the results expressed as yield in tonnes per hectare (t/ha) as well as margins expressed in pounds per hectare (£/ha) over fungicide and associated travel costs. It is clear that the HGCA protocol did indeed give the highest yield - nearly equalled by treatment 10. Treatment 10 has a large triazole component as well as chlorothalonil (Bravo) applied at both T1 and T2. Comparison with treatment 9 is interesting as in this programme the T2 triazole component has been reduced and a strobilurin (Amistar) included. This has resulted in a lower yield and a much lower gross margin: the consequence of the lower yield. This suggests that even on a variety with a good disease profile, Nijinsky, the higher triazole component should be maintained. This hypothesis is supported by the results from treatment 1 which shows a high yield return combined with a high gross margin. This exclusively triazole programme was the cheapest programme.

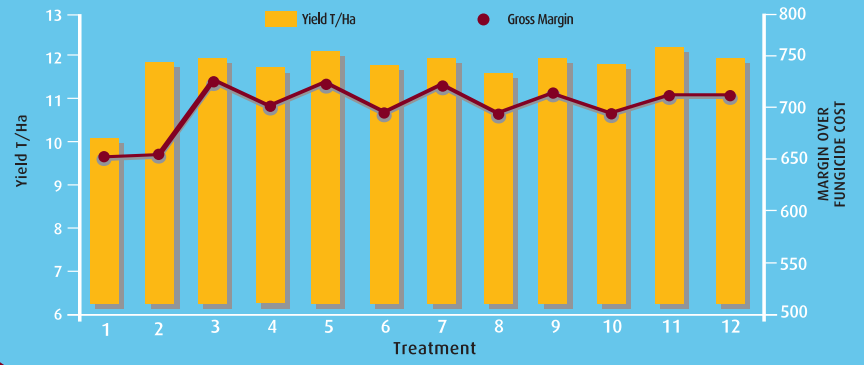
Treatments for 2004 are given in table 5 and results presented in chart 3. Again protocols and treatment costs are provided. Treatment 1 is untreated and treatment 2 the HGCA programme. As for 2003, the HGCA programme delivered one of the highest yields. The difference between treatments is less marked than in 2003 but similar trends do appear. Treatment 3 is primarily a triazole programme but, following the good performance of chlorothalonil in 2003, Bravo has been included. This treatment, with no strobilurin, gave the highest gross margin, because of the low product cost, though not the highest yield. In contrast treatment 11, which includes the new fungicide 'Tracker' from BASF, gave the highest yields with just a slight reduction in gross margin. This exemplifies the dilemma that farmers find themselves in. Historically the highest yields have given rise to the best gross margins but with low grain prices this may not be so if fungicide costs are high.

**Table 5. Treatments and Costings (£/ha) 2004**

| CODE | T1 CHEMICAL | (GS 31/32) L/Ha | TREATMENT PRICE | T2 CHEMICAL | GS 39/45 L/Ha | TREATMENT PRICE | T3 CHEMICAL | GS 61-65 L/Ha | TREATMENT PRICE | TOTAL FUNG £ |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | UNTREATED | | 0.00 | UNTREATED | | 0.00 | UNTREATED | | 0 | |
| | | | **0.00** | | | **0.00** | | | **0** | **0** |
| 2 | UNIX<br>OPUS<br>BRAVO | 1KG/HA<br>0.75<br>1 | 22.40<br>17.10<br>3.30 | OPERA<br>BRAVO<br>OPUS | 1.5<br>1<br>0.2 | 41.10<br>3.30<br>4.56 | AMISTAR<br>FOLICUR | 0.6<br>0.5 | 15.30<br>8.00 | |
| | | | **42.80** | | | **48.96** | | | **23.30** | **115.06** |
| 3 | OPUS<br>BRAVO | 0.5<br>1 | 11.40<br>3.30 | OPUS | 0.75 | 17.10 | FOLICUR | 0.5 | 8.00 | |
| | | | **14.70** | | | **17.10** | | | **8.00** | **39.80** |
| 4 | LANDMARK<br>BRAVO | 0.5<br>1 | 16.00<br>3.30 | LANDMARK | 0.75 | 24.00 | FOLICUR | 0.5 | 8.00 | |
| | | | **19.30** | | | **24.00** | | | **8.00** | **51.30** |
| 5 | OPUS<br>BRAVO | 0.5<br>1 | 11.40<br>3.30 | TWIST<br>OPUS | 0.8<br>0.75 | 12.00<br>17.10 | FOLICUR<br>TWIST | 0.5<br>0.5 | 8.00<br>7.50 | |
| | | | **14.70** | | | **29.10** | | | **15.50** | **59.30** |
| 6 | TWIST<br>OPUS<br>BRAVO | 0.8<br>0.5<br>1 | 12.00<br>11.40<br>3.30 | TWIST<br>OPUS | 0.8<br>0.75 | 12.00<br>17.10 | FOLICUR | 0.5 | 8.00 | |
| | | | **26.70** | | | **29.10** | | | **8.00** | **63.80** |
| 7 | OPUS | 0.5 | 11.40 | AMISTAR OPTI<br>OPUS | 1<br>0.5 | 13.00<br>11.40 | AMISTAR<br>CARAMBA | 0.3<br>0.5 | 7.65<br>8.25 | |
| | | | **11.40** | | | **24.40** | | | **15.90** | **51.70** |
| 8 | OPUS<br>BRAVO | 0.5<br>1 | 11.40<br>3.30 | AMISTAR OPTI<br>OPUS | 1<br>0.5 | 13.00<br>11.40 | AMISTAR<br>CARAMBA | 0.3<br>0.5 | 7.65<br>8.25 | |
| | | | **14.70** | | | **24.40** | | | **15.90** | **55.00** |
| 9 | OPUS<br>BRAVO | 0.5<br>1 | 11.40<br>3.30 | AMISTAR OPTI<br>OPUS | 1<br>0.5 | 13.00<br>11.40 | AMISTAR<br>CARAMBA | 0.3<br>0.5 | 7.65<br>8.25 | |
| | | | **14.70** | | | **24.40** | | | **19.20** | **58.30** |
| 10 | OPUS<br>BRAVO | 0.5<br>1 | 11.40<br>3.30 | OPERA<br>OPUS | 1<br>0.45 | 27.40<br>10.26 | SWING GOLD | 0.75 | 15.98 | |
| | | | **14.70** | | | **37.66** | | | **15.98** | **68.34** |
| 11 | TRACKER<br>BRAVO | 1<br>1 | 23.00<br>3.30 | OPERA<br>OPUS | 1<br>0.45 | 27.40<br>10.26 | SWING GOLD | 0.75 | 15.98 | |
| | | | **26.30** | | | **37.66** | | | **15.98** | **79.94** |
| 12 | OPUS<br>BRAVO | 0.5<br>1 | 11.40<br>3.30 | AMISTAR<br>OPUS | 0.5<br>0.4 | 12.75<br>9.12 | AMISTAR<br>FOLICUR | 0.5<br>0.5 | 12.75<br>8.00 | |
| | | | **14.70** | | | **25.17** | | | **20.75** | **60.62** |

Treatment costs are based on product prices at time of application

**Chart 3. Nickerson Agronomy Trials 2004 : Nijinsky Grain yields and gross margins**




Other treatments to highlight are treatments 5 and 7. Again both treatments contain chlorothalonil, either as a straight product (Bravo) or in combination with a strobilurin (Amistar opti). Treatment 9 was a three spray programme involving Bravo, this produced one of the best gross margins.

Grain yield is not the only consideration when looking at fungicide strategies. It is important to recognise that grain marketability has increasing importance and thus maximising grain quality has to be a priority. To this end Nijinsky crops should receive a robust T3 application. Whilst cost savings can be made by excluding this spray treatment, the potential for the build up of ear diseases, which can have a significant detrimental effect on grain quality, is increased significantly. Experience over a number of years has highlighted the benefits of a combined strobilurin + triazole application at the T3 timing. To date Amistar + Folicur/Caramba or Swing Gold has produced consistently good results.

## Fungicide Strategy Summary

• Early drilled crops will be vulnerable to eyespot and control measures should be considered.

• In high mildew situations, as with Claire winter wheat, Quinoxyfen (Dow) should be considered. Other products which have performed well include Flexity (BASF) which has curative as well as protectant activity.

• A three spray fungicide programme should be considered as routine.

• In terms of yield, applications of strobilurin chemistry, by virtue of their effect on green leaf area duration are likely to be effective.

• In terms of gross margins, triazole chemistry combined with chlorothalonil are likely to be the most cost effective. However strobilurin chemistry should be used as part of the T3 application.

• Even with a disease resistant variety such as Nijinsky, reducing fungicide rates is likely to be counter productive both in terms of yield and gross margins.

These guidelines are issued to give growers a wider insight to the variety Nijinsky. They do not constitute recommendations and growers should seek guidance from manufacturers/agronomists to aid their decision making.

The full HGCA Recommended List

Database can be consulted at

www.hgca.com