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Agronomy of oilseed rape in Ireland



Key external stakeholders:

Growers, advisers and agronomists, seed suppliers

Practical implications for stakeholders:

There has been relatively little recent research on the agronomy of winter oilseed rape under Irish conditions. With renewed interest in the crop combined with significant developments in the agronomy of the crop abroad this work aimed to investigate the agronomy of the crop under Irish conditions. The work showed that

- On average hybrid cultivars out yielded conventional cultivars but effects were cultivar specific
- Seed rates giving maximum yields were generally in the range 60-80 seeds/m² where volunteer oilseed rape was not present.
- There was no consistent difference between hybrid and conventional cultivars in terms of the seed rate that gave maximum yield.
- Significant yield responses to fungicide application were not common and tended to occur only where visible disease was present at the time of fungicide application.

Main results:

Restored hybrid cultivars gave, on average, a higher yield than conventional cultivars but individual conventional cultivars could out yield the majority of hybrid cultivars.

No consistent difference between hybrid and conventional cultivars in terms of the seed rate giving maximum yield was observed

Seed rate giving maximum yield of winter oilseed rape was generally in the range of 60-80 seeds/m².

Disease levels were generally low and significant responses to fungicide applications, which were infrequent, tended to occur where robust rates were applied to crops with visible disease.

Opportunity / Benefit:

The work demonstrated that high yields of oilseed rape can be achieved under Irish conditions making it a potentially profitable crop

Optimum seed rates for winter oilseed rape under Irish conditions have been established showing that there is little consistent difference, in terms of yield, between different cultivar types.

Hybrid cultivars can be used to achieve higher yields but the best conventional cultivars can give similar yields to the majority of hybrid cultivars.

Fungicide applications to oilseed rape should be made on the basis of the presence of disease rather than on a prophylactic basis to avoid unnecessary use of fungicides.

The results of the project have been incorporated into Teagasc advisory recommendations for oilseed rape production.

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1. Project background:

Lack of non-cereal break crops, interest in alternative sources of fuel and increased prices have increased interest in production of oilseed rape in recent years. However there has been little recent research on oilseed rape production under Irish conditions. There have been significant advances in oilseed rape production techniques in other countries such as the introduction of restored hybrid cultivars and the use of lower seed rates than would have been used in Ireland previously. The effects of these factors on yield potential under Irish conditions have not been assessed. The requirement for fungicide application at different stages in the crop growth cycle has also received little recent attention under Irish conditions. In addition a range of new fungicides have become available, the efficacy of which have not been assessed on oilseed rape under Irish conditions.

2. Questions addressed by the project:

What is the optimum seed rate for autumn sown oilseed rape under Irish conditions?
Do hybrid cultivars give higher yields than conventional cultivars under Irish conditions?
Does cultivar type affect seed rate?
What is the fungicide requirement of winter oilseed rape in Ireland?

3. The experimental studies:

Field trials were carried out over three seasons (2006 to 2008) at Oak Park Research Centre with winter oilseed rape to examine (a) the effect of seed rate on yield of a conventional cultivar (cv. Winner), a low biomass conventional cultivar (cv. Castille) and a restored hybrid cultivar (cv. Excalibur) (b) the effect of cultivar type (conventional or hybrid) on yield of OSR and (c) effects of different fungicide programmes on oilseed rape yield. For seed rate experiments seed rates of between 13 and 135 seeds/m² were compared. For cultivar comparisons a range of cultivars, both hybrid and conventional, were compared.

To determine the importance of fungicide timings on winter oilseed rape an experiment comparing single applications in the autumn, early spring or at early pod formation and combinations of these timings was carried out over three seasons 2006 to 2008 with the cultivar Castille. Caramba (0.75 l/ha) was used as the autumn application in 2006 and 2007 (MBC (0.5 l/ha) was included in 2007), Prosaro (0.9 l/ha) was used in 2008. Caramba (1 l/ha) was used as the spring application and Rovral as the early podding application in all seasons. .

4. Main results:

There was no consistent interaction between seed rate and cultivar indicating that there was no difference between cultivars in terms of their yield response to increasing seed rate. When there was a difference it occurred between the two conventional cultivars rather than between a conventional cultivar and a hybrid cultivar. This suggests that, when sown in good conditions, there is no reason, other than cost, for using a lower seed rate with hybrid cultivars compared to conventional cultivars. Seed rates giving maximum yields were generally higher than has been observed in other countries and were generally in the range 60-80 seeds/m². However these trials were carried out on land that had no recent history of oilseed rape production and there were no volunteer oilseed rape present, which if present, would reduce the seed rate required to give maximum yield as volunteer plants would substitute for plants from sown seed. There were indications that when yield potential was reduced, as occurred in one of the three seasons, the response to seed rate was decreased. Oil content decreased as seed rate increased although differences between the lowest and highest seed rate were generally small (~0.5%).

A comparison of a range of hybrid cultivars with conventional cultivars indicated that, on average, hybrid cultivars can give a small yield advantage over conventional cultivars. The average yield advantage of hybrids over conventional cultivars was 0.3 t/ha in 2007 and 2008 and 0.1 t/ha in 2006. However individual conventional cultivars can outyield individual hybrid cultivars.

Disease levels were low in the majority of the fungicide experiments and no statistically significant yield

response to fungicide application was obtained in the majority of experiments. Any statistically significant yield responses to fungicide application that were obtained tended to be associated with robust two or three-spray (autumn, spring +/- early podding) programmes applied to crops with some visible disease present. This suggests that prophylactic applications of fungicides to oilseed rape in Ireland are unlikely to give a consistent economic response and that fungicide application should be targeted at crops that have visible disease present. As the area of oilseed rape the occurrence of disease may change.

5. Opportunity/Benefit:

The work provides guidelines on the production of winter oilseed rape under Irish conditions and in particular gives guidance on appropriate seed rates, choice of cultivar type and the requirement for fungicide of oilseed rape.

6. Dissemination:

Hackett, R. (2006) Oilseed rape agronomy. Teagasc Crops Research Centre Oak Park Research report 2006 pp 26-28

Hackett, R. (2007) Evaluation of the agronomic potential of oilseed rape in Ireland. Teagasc Crops Research Centre Oak Park Research report 2008 pp 13-15.

Hackett, R. (2008) Evaluation of the agronomic potential of oilseed rape in Ireland. Teagasc Crops Research Centre Oak Park Research report 2008 pp 25-28.

Hackett, R. (2011) Making oilseed rape profitable Teagasc National Tillage Crops Forum 2011 September 2011 Newbridge (http://www.teagasc.ie/publications/2011/1024/Richie_Hackett_teagasc.pdf)

Hackett, R., Dunne, B., Kennedy, T., Forristal, D. and Burke, J.I. (2006). Growing oilseed rape in Ireland. Teagasc, Carlow 26pp.

Field trials were also presented at a number of open days during the course of the project.

Results have been incorporated into Teagasc advisory recommendations for oilseed rape production.

7. Compiled by: Richie Hackett
