

# Plant Breeding Matters

Information from the British Society of Plant Breeders

May 2007

## FAIR PLAY update

The FAIR PLAY campaign was established by BSPB to promote and ensure compliance with farm-saved seed payments, both to safeguard future plant breeding and to make sure the majority of farmers who do comply with the system are not subsidising those who don't.

The first objective of the campaign is to ensure all farmers using farm-saved seed are aware of their legal obligation to declare and pay. The second is to identify and tackle evasion.

Plant breeders need to secure proper payment for their products. The increase in farm-saved seed use and the resulting greater potential for evasion of payments represent the single biggest threat to the future availability of UK-bred varieties. That's why BSPB has committed significant resources to a bespoke database to handle the details of farmers' seed and variety use, supported by access to both farm-saved and certified seed use information.

Over successive seasons, the database is beginning to provide an increasingly powerful tool to identify unpaid royalties and deliver the objectives of FAIR PLAY. Even at this early stage, BSPB has been able to identify the mis-declaration of zero-rated, older varieties such as Riband and Hereward as key problem which can now be a focus of enforcement activity to improve fair royalty collection.

**FAIR PLAY**  
ON FARM- SAVED SEED

For more information visit [www.fairplay.org.uk](http://www.fairplay.org.uk)

## What happens to your FSS payments?

It's important that farmers paying farm-saved seed royalties understand where their money goes once payments have been

made to BSPB. *Plant Breeding Matters* explains the basis for royalty payments on crop varieties as a means of safeguarding future progress.



Royalties on both certified and farm-saved seed are a necessary payment for using successful innovation, and the only means of financing future research and investment in market-focused plant breeding. They are variety-specific, not a general industry levy to fund plant breeding.

Developing each new variety is an expensive business, requiring many years of upfront investment with no guarantee of success. The intellectual property protection granted to plant breeders on each new variety is similar in principle to the protection offered by copyright on books and music, or patents on inventions. These rights

allow payment to be made for the use of valuable inventions, so stimulating further development and innovation.

Plant breeders rights are only granted to varieties which meet stringent testing criteria to ensure they are not only distinct from all other varieties, but also

that they perform true to type. Once granted, these rights require the users of a protected variety to pay a royalty to the breeder which can then be re-invested in future variety development.

Like copyrights and patents, this system is entirely market driven, and generates the greatest income for the most successful varieties which farmers choose to grow.

Farm-saved seed royalties are collected centrally by BSPB, acting on the breeders' behalf. A small proportion of the revenue collected (around 7%) is retained by BSPB to cover administration costs. This is a fraction of the cost of equivalent schemes elsewhere in Europe, and the remaining income is then distributed to individual breeders according to the variety on which it was paid.

This means that 93 pence in every £1 collected on farm-saved seed is available to successful breeders to fund the ongoing process of crop improvement.

# Breeding for Food Safety & Healthy Eating



Plant breeders have responded to demands for healthier vegetable oils for frying



New barley varieties have been bred to address changing customer requirements

In the last issue, *Plant Breeding Matters* examined how breeding objectives are evolving to meet the requirements of an expanding market for biofuel crops. Here we focus on the food and drink sector, and highlight two significant advances in plant breeding which will help UK farmers respond to changing consumer preferences.

Concerns over food safety and healthy eating have attracted increased attention in recent years, bringing major changes in the demands of food and drink processors and their customers.

#### Healthier vegetable oils

A case in point is the increasing pressure to reduce dietary consumption of trans fatty acids, which have been linked to increased risk of heart disease and stroke. Trans fats are the result of the partial hydrogenation of vegetable oils, a process used in the food industry to prevent rancidity and extend product shelf life.

Plant breeders have responded with oilseed rape varieties whose oil profile is high in oleic acid and low in linolenic acid. This offers food processors improved stability in storage and use without hydrogenation, reduced saturated fats and negligible levels of trans fatty acids when used for frying. Through these varieties, UK growers have an exciting opportunity to share in a growing market for healthy eating.

#### Low-GN barley varieties

In the malting barley sector, distillers have recently requested varieties with low levels of a compound called glycosidic nitrile (low-GN varieties). This is in response to concerns that under certain conditions, a breakdown product of glycosidic nitrile can react with ethanol, catalysed by copper in the stills used for whisky distilling, to produce traces of a potentially harmful substance known as ethyl carbamate.

Thanks to improved varieties, the distilling industry is now able to reduce GN levels even further to meet the ever more stringent quality demands of the largest export markets such as the USA. Varieties are already available showing a five-fold reduction on previous GN levels, and breeding effort continues to focus on the development of high-yielding varieties with non-producing levels of glycosidic nitrile.

Once again, UK plant breeders are helping farmers respond to these changing market demands.

## Five ways to declare

Don't forget there are five ways to declare farm-saved seed use to BSPB, using the FSS reference number on your declaration form:

- By post (SAE provided)
- E-mail [sara.seekings@bspb.co.uk](mailto:sara.seekings@bspb.co.uk)
- Online at [www.bspb.co.uk](http://www.bspb.co.uk)

- Fax 01353 661156
- Phone 01353 653209



WWW



# Coping with Climate Change

Efforts to curb global warming through reduced carbon emissions make headline news on a daily basis. The issue is on everyone's agenda, and the food industry is no exception. Supermarkets are already competing to show off their green credentials by reducing their use of packaging, plastic bags and air-freighted products. Food production methods are also under scrutiny, and agriculture is facing up to the challenges and opportunities ahead. *Plant Breeding Matters* identifies five key ways in which plant breeders can help farmers tackle the causes and effects of climate change.

## 1 Resistance to new pests and diseases

The need for new varieties, adapted to the UK's unique growing conditions, will continue to be driven by the challenge of evolving disease and pest pressures. Climate change may lead to the more rapid development of entirely new strains of disease, changes in disease resistance levels, or the arrival of new pests.



Defra recently issued a warning to maize growers in the south of England about the increasing threat of Western corn rootworm as a new invasive pest of maize in the UK

## 2 Drought and stress tolerant varieties

Resource conservation will become increasingly significant in the UK if, as predicted, climate change leads to warmer, drier summers. Developing crops with improved tolerance to drought and heat stress is a global priority among researchers and plant

breeders. The first drought tolerant crops are expected to be commercially available in the US by 2011.

## 3 Varieties suited to reduced inputs and cultivations

Like all other industrial sectors, agriculture is under increasing pressure to cut carbon emissions. Plant breeders are already selecting for varieties which have greater nutrient use efficiency, pest and disease resistance and higher harvest index, and can therefore help reduce sprays and fuel consumption. Similarly, varieties can be selected which perform well under minimal or no-tillage regimes, so reducing the need for ploughing which contributes to greenhouse gas build up by releasing soil carbon and consuming fuel.

## 4 New crops adapted to UK conditions

By shortening its growth period, plant breeders have adapted forage maize to thrive under UK growing conditions, allowing a six-fold increase in plantings since the late 1980s. Warmer, drier conditions may also open up possibilities to increase production of grain maize in the UK, or to establish new crop species – such as soya or durum wheat – on a commercial scale. Again, plant breeding will be needed to adapt such crops to UK growing conditions.

## 5 Improved seasonality of produce

Wherever possible, UK food retailers are looking to increase their sourcing of local products in an effort to reduce food

miles. Some farmers are already responding to these opportunities, and plant breeders can help by further extending the availability of seasonal vegetables and fresh produce.



Hybrid breeding technology has transformed productivity, uniformity and availability within the UK fresh produce sector, and breeding advances continue to extend seasonal availability



# Response to HRH on 'old' varieties

Prince Charles hit the headlines recently on a seeds-related issue, attacking 'crazy' EU laws which prevent the sale of seeds from old varieties and which, he claims, have led to the disappearance of hundreds of varieties. 'What could be crazier than having the kind of EU legislation which made it impossible to sell the seeds of many of these wonderful old varieties that people have developed over thousands of years?' he told BBC Radio 4 Gardeners' Question Time.

Charles also expressed concern that the loss of these older varieties may lead to over-dependence on too few varieties which in turn may become more and more subject to disease and complications.

It is a common charge that the success of modern plant breeding has led to an erosion of biodiversity. In fact, nothing could be further from the truth, as BSPB Chief Executive Dr Penny Maplestone explains:

'Maintaining biodiversity is central to plant breeding's aim to improve crop characteristics. It is in every breeder's commercial interest to ensure that the gene pool from which desirable traits are selected remains as extensive as possible. Plant breeders are actively engaged in a range of national and international efforts to classify and conserve existing biodiversity in the form of wild plants, primitive crop species, landrace varieties and obsolete varieties. Indeed plant breeders were among the first to raise concerns about the need to maintain genetic resources for food and agriculture, and created the first gene banks during the 1930s. Today, plant breeding companies commit an average of 5% of their research budget to maintaining genetic resources.'

'Far from working against the interests of consumers, European and UK seeds marketing legislation, to which Prince Charles refers, has

eliminated the confusing synonyms of the past, and the passing off of seed of one variety as another thanks to legal requirements for variety identity and seed traceability. The result is a clear choice of demonstrably different varieties. The current range of genuinely distinct varieties (ie not just different names for the same strains) is larger than ever before, and more could be made available if there were sufficient demand.'

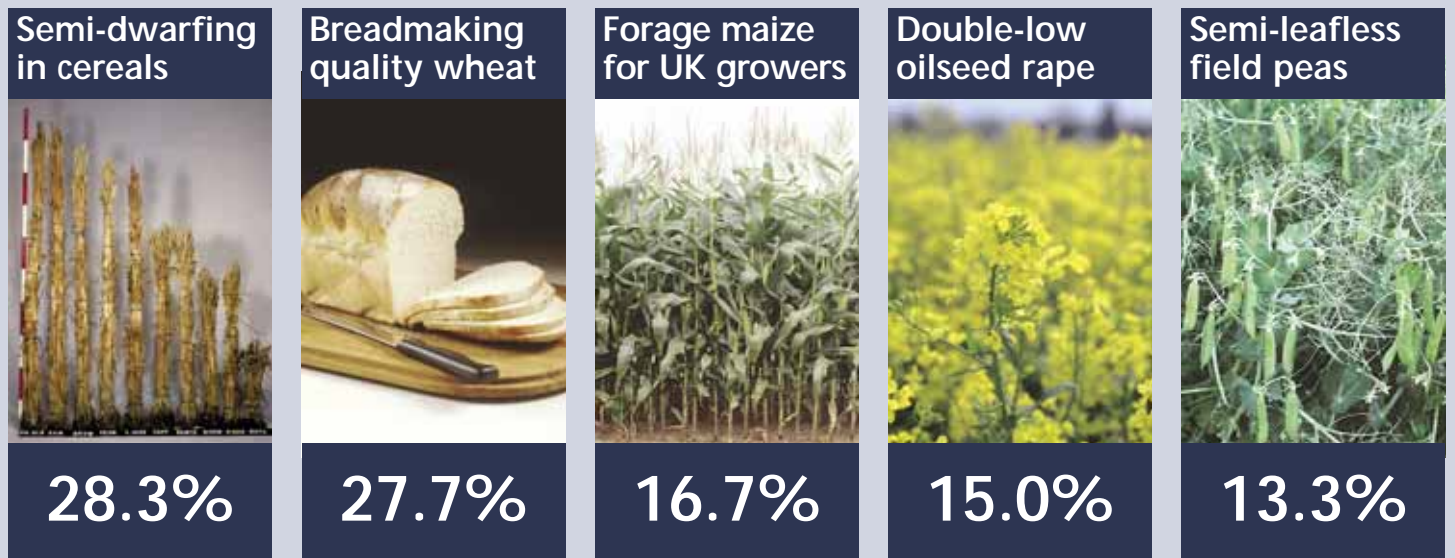
'Finally, Prince Charles may not be aware that the EU is in the process of bringing forward new legislation to deal with what are termed 'conservation varieties'. This legislation, expected to be finalised later this year, will simplify the marketing and availability of ancient and commercially obsolete varieties. So seed suppliers will be free to multiply and sell seed of those varieties if customers have a need for them.'

## On-line poll results

BSPB's on-line poll of plant breeding achievements, launched in the November 2006 issue of *Plant Breeding Matters*, attracted a remarkable response with more than 400 votes logged via the

Society's web-site. Throughout the polling period, it was a close-run contest between two candidates - semi-dwarfing in cereals and breadmaking quality in wheat. Both developments marked a

step change in the UK's productivity and self-sufficiency in grain production, but in the end semi-dwarfing in cereals came out on top. The final results of the poll were as follows:



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