



incotec

the seed enhancement company

Part of Croda International Plc

Genetic quality control

using a protein platform



Genetic quality control of your seed is becoming increasingly important now that most of your customers rely on you to deliver seed with a defined genetic quality. You cannot afford to sell seed that turns out to have an unexpectedly high number of female selfing or off-types. The use of grow-out testing is an option, but this procedure can be long and laborious and is hardly reliable. You cannot depend on out-crossing (in non-homogeneous parental lines) or female selfing being detected phenotypically. A sensible, fast and reliable solution is to have INCOTEC take care of your genetic quality control. Our Analytical Services have a longstanding reputation in this field.



Genetic quality control

using a protein platform

Unique ultra-thin IEF protein technology

With our advanced and unique ultra-thin-layer iso-electric focussing (UTLIEF) protein technology we are able to identify differences between your parental lines and hybrids. We have many different methods and protocols available for the detection of inbreds (female selfing) and off-types. Usually we work with seed, which eliminates the need for producing seedlings. The image shows some of the banding profiles that we typically observe.

Vegetables

When performing QC in vegetables, we often make use of isoenzymes, which are enzymes with identical function that are expressed either by different alleles of the same gene, or by different genes. These isoenzymes can be used as molecular markers to discriminate between the female line, male line and hybrid. In some cases they can also be used to identify off-types. We work with many isoenzymes including ADH (alcohol dehydrogenase), MDH (malate dehydrogenase), PGM (phosphoglucomutase). We also work with total protein staining in vegetables.

Field Crops

Quality control in field crops, like sunflower, rice, maize, cotton etc. is mostly done with total protein stain using Coomassie Brilliant Blue or Silver Stain. With this procedure many proteins are visualized, representing a significant part of the genome. Once a useful marker is found, it can be very effective for identifying the female, male and hybrid pattern. In many cases off-types can also be identified.

Many different applications

There are numerous uses for our methods. The list below gives a few examples but there are many more applications conceivable:

- variety verification and hybrid purity testing
- comparison testing of different or (supposedly) identical varieties
- monitoring and control of genetic drift for open-pollinated varieties
- purification of parental lines
- breeding support by grouping based on protein profiles
- assistance in backcrossings

Contact us for more information about our services.

