Plant Science into Practice

AI AND MOLECULAR MARKERS FOR SOFT FRUIT

Next generation sequencing and marker development with artificial intelligence technology for UK soft fruit breeding and variety testing.

Plant Breeder's Rights are intellectual property rights to protect new plant varieties. PBR offers a plant breeder (which can be a company or an independent person) a mechanism to financially benefit from the efforts invested in creating a new variety.

Part of the application process for Plant Breeders Rights is the DUS test:

- Distinctness (D): must be sufficiently different from existing varieties
- Uniformity (U): plants within the variety must have consistent features
- Stability (S): all plants should remain consistent across subsequent generations.

DUS testing ensures that new varieties are unique and that they are 'true to type'. Distinctness is determined by visually comparing a new variety against the reference collection, and a standard test involves two years of growing trials. Differences between some varieties can be easy to detect but others may be far more subtle.

focus on NIAB research

In a Defra-funded project, NIAB is collecting whole genome sequence and exome capture sequence data for a range of raspberry varieties. The goal is to use artificial intelligence modelling to create a procedure that will assist with distinguishing between varieties and streamline the DUS test.

It is hoped that this work will improve the testing system and offer a solution to the practical difficulties that arise during the process.

It is essential that the testing system is effective in order to facilitate and encourage the development of new plant varieties for farmers and end users, which can meet the challenges and opportunities of a changing world.