

UPOV Webinar - Environmental effects in expression of characteristics in DUS examinations

Tuesday 21 April 2026

Scott Gregan, Senior Plant Variety Rights Examiner

New Zealand Plant Variety Rights Office

Intellectual Property Office of New Zealand

MBIE



The New Zealand Plant Variety Rights Office

We are a small team, consisting of a Technical Lead and four examiners.

90 – 120 applications per year, across all plant genera and species.

Approx. 300 – 350 varieties under test at any one time.



Environmental effects in expression of characteristics in DUS examinations

Testing arrangements

Centralised growing trials

e.g. pasture, cereals, potatoes



Environmental effects in expression of characteristics in DUS examinations

Testing arrangements

Cultivar centre / variety collections

e.g. apples, pear, *Rubus*, roses



Overseas test reports

e.g. grapes, vegetables

Breeder testing

e.g. hops

Testing on an applicant's property

e.g. ornamentals



Environmental effects in expression of characteristics in DUS examinations

Our main focus is that we have knowledge about how varieties behave in different environments for DUS examinations/trials..... focus changes with the examination method.

Main considerations:

- Centralised growing trials – comparator/example varieties, developing national example varieties, characteristics that are used to define distinctness. Mostly seed propagated annual varieties with trial newly resown each season. Managed by increasing experience and year-on-year data collection.
- Cultivar centre / variety collections – perennial species. Characteristics that are used to define distinctness. Managed by increasing experience and year-on-year data collection.

Environmental effects in expression of characteristics in DUS examinations

Our main focus is that we have knowledge about how varieties behave in different environments for DUS examinations/trials..... focus changes with the examination method.

Main considerations:

- Overseas test reports – when we perform a field verification trial to compare to the test report description. The overall aim of doing it this way is to progress our understanding about potential environmental effects on expression and how that maybe used to interpret overseas descriptions moving forward.

Environmental effects in expression of characteristics in DUS examinations

Light environment/solar radiation and characteristic examples:

- Fruit skin colour
- Anthocyanin production in young vegetative structures

Temperature, which effects characteristics of:

- Vernalisation/winter growth
- Dormancy
- Sowing time

Environmental effects in expression of characteristics in DUS examinations

Light environment - fruit skin colour

- Intensity of overcolour, important for distinctness in New Zealand, but the same state of expression was not seen in overseas testing.



Anthocyanin in young vegetative structures.

- In raspberries, less anthocyanin expression in NZ growing trials, compared to overseas variety description



Environmental effects in expression of characteristics in DUS examinations

Temperature – sowing time/winter growth

- Our centralised pasture trials are autumn sown and grow through the winter. “with vernalisation” characteristics are important in our examinations.
- A number of example onion varieties from overseas, are considered spring sown, but we plant the same varieties in autumn in New Zealand.



Environmental effects in expression of characteristics in DUS examinations

Temperature – dormancy

- Blackberry – this variety flowered and produced fruit continually throughout the year and it will continue forming flower buds from buds lower down the cane through the summer and autumn, even in the winter, seems to never go completely dormant.



Thank you.