

PVR Submission

Rather than address the specific questions raised by the Discussion document I have chosen to comment on high level PVR related issues that the document does not cover at all or only covers inadequately.

i) New Zealand's land based industries are based almost entirely on germplasm that originated overseas. This domination is likely to continue and, may even increase in the future as genetic improvement technologies become ever more sophisticated. As a consequence, our regulatory regime for genetic material can't be structured to just allow importation of material, it should facilitate importation if producers are to have continued access to elite genetic lines of plants. Our regulations must match international best practice, so encouraging international breeders to explore opportunities within New Zealand. The Discussion paper seriously underplays this requirement. Matching the important provisions of UPOV 91 must be the minimum objective.

ii) Some context is required to address the question of farm saved seed. For the breeder the important financial questions determining his return from a new cultivar are:

- a) The royalty rate;
- b) The efficiency of collection of royalties (i.e. minimising leakage)
- c) The speed of multiplication of the cultivar and;
- d) The final market share it achieves.

In any royalty system there is likely to be some trade off between these components. For example, using seed royalties and not allowing farm saved seed the efficiency of collection should be very high, but the multiplication rate usually lessened because of higher seed costs. Allowing farm saved seed and using end point royalties means the collection efficiency might be reduced somewhat but the multiplication rate increased significantly. In the New Zealand arable industry most of the breeders also have seed merchant roles and earn income from, for example, seed treatment and packaging. That this might encourage seed royalties and not allowing farm save seed must not result in a regulatory system that discourages end point royalties and trading farm saved seed. MBIE should study alternative systems (e.g. Australian Grain Technologies Seed Sharing system (<https://www.agtbreeding.com.au/sourcing-seed/seed-sharing>) before "tilting" regulations to favour seed royalties.

iii) The argument of some arable farmers that end point royalties penalises crop management cannot be sustained. Plant breeding programmes are replete with

genotypes that are “yield resistant” and achieving in the paddock the yield potential of the genotypes released as cultivars just demonstrates adequate and not exceptional management. Seed royalties penalise or advantage management choices depending on what seeding rate is chosen to achieve the desired plant population. End point royalties are a useful risk sharing mechanism for the farmer, reducing cash outgoings in the event of crop failure. Any regulation should not favour either royalty collection point, only make it clear that there can only be a single royalty collection point per seed generation or season.

- iv) The discussion about essentially derived varieties appears to have ignored consideration of the potential impact of gene editing technologies on plant breeding programmes. While New Zealand currently would require any gene edited variety to be classed as a new organism under HSNO this may not always be the case. These editing technologies may well enable the development by different entities of numerous different single gene changes to a successful cultivar that give meaningful and useful different phenotypic change. It is possible (Zhang et al. *Genome Biology* (2018) 19:210) that gene edited variations might become the most common source of innovation in genetically well characterised crops so the issue of essential derivation of cultivars becomes mainstream. Any new regulatory regime will need to be framed with this possibility in mind.