Introduction
➢ Grassland farming is becoming more technologically advanced leading to improvements in productivity, environmental outcomes and animal welfare
➢ Is widespread uptake of new innovations more effective by marketing through (a) dedicated paths where the intellectual property (IP) is controlled or (b) through multiple paths to market where there is no IP control
➢ Strong IP protection offers (a) an effective form of security to the plant breed; and (b) more importantly brings returns on investment through licences and commercialisation arrangements
➢ IP protection not only provides legal security but confirms that the product is unique, distinctive and of value
➢ IP rights foster innovation and invention by encouraging individuals to develop/invent new ideas from which they can potentially gain a return
➢ Without the ability to capitalise on their work, innovators have little incentive, other than an altruistic motive, to produce any invention
➢ The opposing view is that patents and plant variety rights are “killing freedom to operate and crushing science with rules”, and in so doing are stifling innovation rather than encouraging it

Aim
To examine the value and motivations for IP protection, and examine the different forms of IP protection available.

Intellectual property (IP)
IP rights (IPRs) provide a system, protected in law, for the inventor or creator to earn recognition or financial benefit from the invention or creation.

Types of IP protection
1. Copyright – provides rights over literary and artistic work, computer programmes, databases, advertisements, maps and technical drawings
2. Patent – provides protection for a unique invention
3. Trademark – protection for a distinguishing brand or mark
4. Plant variety right – protects the development of distinct, uniform and genetically stable varieties of plants
5. Industrial designs – protects the ornamental or aesthetic aspect of a design
6. Integrated circuit design – protects layout design of semi-conductors and integrated circuits
7. Geographical indications – protects the association of provenance with product’s origin
8. Trade secrets – protection that is self-imposed and ensures that IPRs are held confidentially

Case study 1 - AR1 and AR37 Epichloë endophytes
➢ AR1 while protected by patent, PVR and trademark, research and development into this endophyte was largely funded by the government - licences for this technology were available to all seed companies.
➢ This non-exclusive release showed rapid uptake by New Zealand farmers peaking at 70% of the total perennial ryegrass sales within 7 years of release – Figure 1
➢ Seed companies soon realised they had no way to differentiate their product and so instead focused on unique traits of their own PVR protected ryegrass cultivars carrying the endophyte
➢ AR37 and its development was funded by a single seed company and the commercial subsidiary of the research organisation that developed it.
➢ Protected initially by patent, PVR and trademark, it was licensed exclusively to the investing seed company.
➢ While various other third party endophytes have entered the market, sales of AR37 still attain more than a 50% market share some 12 years after commercialisation.

Case study 2 - Perennial ryegrass cultivar Grasslands Nui
➢ Grasslands Nui ryegrass became commercially available in 1973 before PVR protection was available in New Zealand.
➢ Grasslands Nui was renowned for its ability to persist through dry conditions.
➢ Was funded entirely by public funding, remains publicly available and is still used both in New Zealand and overseas.
➢ Considered to have been superseded by new cultivars but is the cheap option sold at a price well below that of current proprietary cultivar prices.
➢ Economic value on dairy farms of $56 to $79/ha compared with up to $576/ha for proprietary cultivars.
➢ Grasslands Nui is now sold essentially as commodity and with no effective IP protection is not considered an added value product.

Thoughts
➢ IP protection serves as the foundation of innovation modern economies
➢ IP protection can also be used leading to inefficient and anti-competitive behaviours
➢ Follow-on innovation that adds value to ground-breaking inventions needs to be encouraged and championed to ensure continued technological advancement and development

Conclusion
➢ No simple answer as to whether IP protection stimulates or constrains innovation and technology transfer.
➢ IP protection is here to stay
➢ Both individuals and organisations who use IP protection must aim at delivering maximum benefit to the end user farmer.
➢ IP protection in itself does not constrain innovation however abuse of the temporary monopoly it grants can do so