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Farmer-learning Contract Session

Farmer learning, successful technology transfer and agricultural extension

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Agriculture has played and will continue to play an important role in the New Zealand economy. New Zealand earns \$30 billion a year from its primary industries, which make up over 70% of New Zealand's merchandise export earnings (Ministry for Primary Industries 2013). The primary sector as a whole had a 3.3% annual compound growth rate during the period 1984 to 2007, while forestry was at 1.6% and the wider economy at just 1.0% (Morris 2013). Further, productivity of the primary industries has increased 2.5 times from 1978 to 2009, almost twice as much as the wider domestic economy (Ministry for Primary Industries 2013). Because of the scale of the primary industries, small changes in productivity can cause big

changes in export earnings – for example, an additional one percent annual productivity growth will generate an additional \$4 billion in export earnings in 2025 at constant prices (Ministry for Primary Industries 2013). A significant proportion of the gains observed in primary industry productivity in the last 30 years have been through impressive gains in per animal productivity across all the animal industries. For example, the sheep industry has increased lamb weaning percentages from 98% in 1987 to 122% in 2012 (Beef + Lamb New Zealand 2013) during a period in which some of the 'better quality land' was converted into dairy cattle production. In this same period, carcass weights have risen from 14 to 18 kg.

Table 1 The average usefulness score (1=no use, 2=little use, 3=useful and 4=very useful, \pm 95% confidence interval) given for each technology transfer type.

Tech transfer type	n ¹	Score
Text updates	865	1.45 (1.37 - 1.53) ^a
Phone applications	872	1.47 (1.39 - 1.55) ^a
Certificate courses	853	1.55 (1.47 - 1.64) ^{ab}
Diploma courses	840	1.60 (1.52 - 1.69) ^b
Tertiary courses	854	1.64 (1.55 - 1.73) ^b
CDs	882	1.67 (1.59 - 1.76) ^b
DVDs	864	1.83 (1.74 - 1.92) ^c
Scientific seminars	879	1.88 (1.79 - 1.98) ^c
FITT (Farmer initiated technology transfer)	853	2.08 (1.99 - 2.18) ^d
Television	937	2.19 (2.10 - 2.29) ^{de}
Science literature	899	2.31 (2.21 - 2.41) ^{ef}
Demonstration farms	884	2.33 (2.24 - 2.44) ^f
Radio	936	2.34 (2.25 - 2.44) ^f
Monitor farms	905	2.35 (2.25 - 2.45) ^f
Web information	885	2.42 (2.32 - 2.53) ^{fg}
Industry workshops	889	2.51 (2.40 - 2.61) ^{gh}
Email updates	909	2.59 (2.48 - 2.69) ^{hi}
Fact sheets	891	2.64 (2.54 - 2.75) ^{hi}
Farmer groups	906	2.67 (2.56 - 2.78) ⁱ
Newspapers	941	2.72 (2.62 - 2.83) ⁱ
Field days	937	2.89 (2.78 - 3.00) ^j
Books / booklets	957	3.05 (2.94 - 3.16) ^k
Farming press	963	3.16 (3.05 - 3.27) ^k

Adapted from Blair *et al.* (2013).

¹ number of farmers answering this question.

Values with differing letter superscripts differ significantly (P<0.05).

The Government's Business Growth Agenda goal is to raise exports from 30 to 40% of GDP by 2025 (Ministry for Primary Industries 2013). To help achieve this, it has the 'Export Double goal' which is to double the value of New Zealand's primary industry exports by 2025 (Ministry for Primary Industries 2013). Any gain in the total value of export products will occur through an increase in both the value of individual products and increased productivity. Therefore, future growth in New Zealand's economy will still be heavily dependent on farmers making further improvements in productivity. While advancements will be made in technologies and production systems via research in the next 10 years, allowing for greater productivity in the future, it is likely that many farmers currently are not producing to their potential, through lack of knowledge as a result of sub-optimal technology transfer mechanisms. There has been a paucity of activity in the area of improved technology transfer and agriculture extension in the last 20 years in New Zealand. Instead, many industries have somewhat *ad hoc* or shot-gun approaches, without fully understanding their success rates, which may, in fact, have been a waste of time and opportunity. An example of the array of approaches used and their relative 'usefulness', as perceived by farmers in the sheep industry, was reported by Blair et al. (2013). As can be seen in Table 1 there has been a wide range of methods used, but not all are 'deemed useful' by farmers. Therefore, this contract session is

firstly aimed at understanding what is currently being utilised across the animal industries, and what is being investigated, evaluated and suggested in the scientific community as a means forward. The second aim is to understand how farmers like to learn. The third aim is to begin the discussion on what is the appropriate approach to these issues in the future, to ensure maximum benefit is achieved from technology transfer and agricultural extension.

References

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