

***New Zealand Internet websites, Information  
Transfer and Rural Education***

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## *Abstract*

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New Zealand has a relatively high living standard, a well-educated rural population and a relatively high usage of computers and the Internet. These factors mean that many farmers and horticulturists now use the Internet websites for information access and education purposes. Using examples of rural focused websites this paper illustrates some ways the Internet is used for informal and formal education in the rural community. Telecommunication access problems and possible future solutions are outlined. Potential of rural Internet website use for education and human resource development are briefly considered.

## *Context*

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The 2001 Obihiro Asia and the Pacific Seminar on Education for Rural Development was held at Obihiro University of Agriculture and Veterinary Medicine, Hokkaido, Japan from August 28 to September 4, 2001. The seminar was opened by the President Yasuyuki Sasaki of Obihiro University. A commemorative address was presented by Tetuhito Minami, a representative of UNESCO. The countries represented were Australia, Japan, Korea, Nepal, New Zealand, Sri Lanka, Thailand and Vietnam.

The theme of this seminar was Information Technology for Education for Agricultural Regional Development with an emphasis on the characteristics of each country's experience with information technology systems.

Representatives presented country reports for discussion and comparison. The focus was on how each country is using information technology systems to improve agriculture production and human resource development. The range of experiences was seen to vary widely between participating countries. The seminar included the presentation of country reports, technical presentations from the host country, Japan, field visits, discussion and formulation of a final report by the participants.

This paper, *New Zealand Internet websites, information transfer and rural education* attempted to outline, using a few examples, some of the ways that New Zealand rural people are using Internet communications for educational purposes. A key focus was the extensive informal educational network that has developed in New Zealand in the form of various websites and associated discussions groups.

The presentation of this paper included many links to the websites described and was intended as an introduction to some of the ways New Zealand websites can be used for rural development in New Zealand. By following the URL's listed in the paper, readers can explore this topic in more detail. Relative to other countries attending the seminar, rural New Zealanders make far more use of the Internet as a communication and educational medium and can be described as leading both Japan and Australia, the two other most developed countries attending the seminar, in the use of this medium.

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# ***New Zealand Internet websites, information transfer and rural education***

## ***Introduction***

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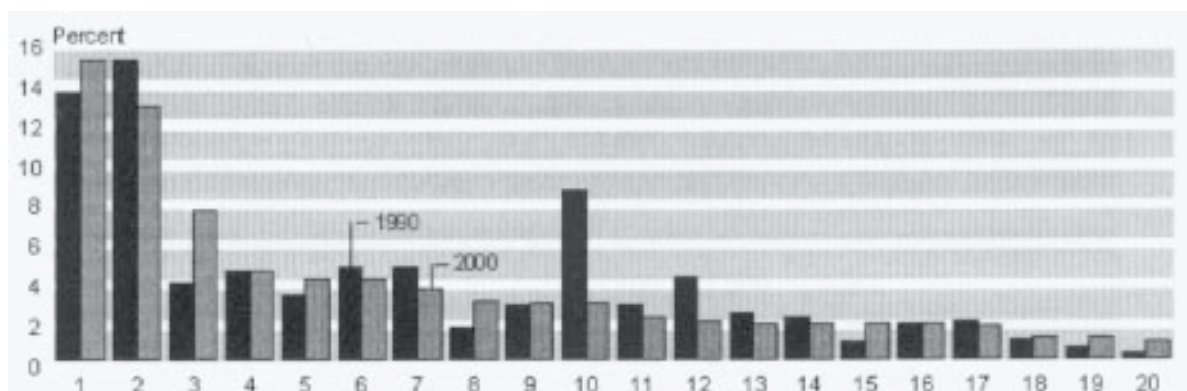
This country report<sup>1</sup> explores the use of information technology for human resource development and education for rural development. It focuses on some of the ways the Internet and rural websites are used for this purpose in New Zealand and outlines some of the issues associated with using information technology for extension education and informal information transfer in rural areas.

Approximately 14% of New Zealand's population of 3,831,000 live in rural areas. Agriculture, horticulture and forestry are major industries, providing a high proportion of New Zealand's export earnings. Merchandise exports (Figure 1) are dominated by primary products, with milk powder, butter and cheese the commodity group with the largest export value, followed by meat and edible offal, and logs, wood, and wood articles.

Wool's contribution to the value of merchandise exports has declined steadily from being the third most important export commodity in the year ended June 1990 to its current 10th position. Logs, wood and wood articles' contribution increased steadily in the early 1990s. Since the 1970s horticultural produce has also become an important export earner.

## Main Commodities: Contribution to Total Exports

Year ended June 2000



1 Milk powder, butter and cheese; 2 Meat and edible offal; 3 Logs, wood and wood articles; 4 Fish, crustaceans and molluscs; 5 Mechanical machinery; 6 Aluminium and articles; 7 Fruit and nuts; 8 Electrical machinery; 9 Casein and caseinates; 10 Wool; 11 Mineral fuels; 12 Rawhides, skins and leather; 13 Wood pulp and waste paper; 14 Paper and paperboard and articles; 15 Aircraft and parts; 16 Textile and textiled articles; 17 Iron and steel and articles; 18 Vegetables; 19 Plastics and articles; 20 Optical, medical and measuring equipment.

(Source: Statistics New Zealand, 2001)

**Fig. 1** Contribution of main commodities to total exports in New Zealand to June 2000

New Zealand farmers are almost totally exposed to world market forces. They receive no subsidies from government and have to compete with subsidised production from other producing countries. The GATT Uruguay Round Agriculture Agreement, which began to take effect in 1995, imposes progressive reductions on the subsidies that other countries can give to agricultural production and exports, and is slowly increasing access opportunities for New Zealand exports into overseas markets. The loss of government subsidies has meant farmers had to look for new efficiencies and helped create a culture where new technologies are actively explored and adopted.

While the standard of living has fallen from 1.25 times the average standard of living in high-income countries in 1965 to 0.62 in 1999 (*Independent Business Weekly* NZ 20/12/2000), New Zealand is a high per capita income country relative to many other Asian and Pacific countries. In particular New Zealand dairy farmers have enjoyed record returns for their produce this season. May 2001 saw a record level of shipped dairy exports at just under \$1NZ billion and totalling 167,000 tonnes, which was 10,000 tonnes up on the previous record in October 1999 (*The Dominion*, June 16 2001: 20). The viticulture industry is also enjoying worldwide recognition for producing premium quality wines.



However, not all rural industry sectors are enjoying the same buoyant level of economic success. Some sectors, such as the pipfruit industry, are currently experiencing poor export returns, and some regions such as Marlborough are currently suffering the impact of a severe summer drought.

**Table 1:** Category of attainment for highest existing qualification by sex for the agriculture, forestry and fishing industry.

<b>Agriculture, Forestry and Fishing Industry by Sex and Highest qualification</b>				
<b>Category of Attainment</b>	<b>Male</b>	<b>Female</b>	<b>Total</b>	<b>% in categories</b>
No Qualification	38,919	15,687	54,606	37
School Certificate	14,997	9,564	24,561	16
Sixth Form Certificate	9,162	6,210	15,372	10
Higher School Certificate	3,792	1,893	5,685	4
Overseas School Qualification	861	948	1,809	1
School Qualification Not Specified	3,165	1,800	4,965	3
Basic Vocational Qualification	3,198	1,944	5,142	3
Skilled Vocational Qualification	7,413	2,154	9,567	6
Intermediate Vocational Qualification	1,260	282	1,542	1
Advanced Vocational Qualification	5,562	5,817	11,379	8
Bachelors Degree	3,267	1,764	5,031	3
Higher Degree	1,083	600	1,683	1
Post-school Qualifications Not Specified	5,379	2,760	8,139	5
<b>Total</b>	<b>98,058</b>	<b>51,423</b>	<b>149,481</b>	

(Adapted from: Statistics New Zealand, 1998: Table 12)

Table 1 shows the highest qualifications by broad field of study for the agriculture, forestry and fishing sector based on the 1996 Census. 6% of people with qualifications in this industry sector had completed a university or higher degree, and 24% have a skilled vocational qualification or higher. New Zealand is third out of 22 developed countries in increasing its direct expenditure on educational institutions, and these institutions are described as highly computer literate (OECD, 2001).

These factors, coupled with a rapid uptake of information technology by the general New Zealand population, has meant that a relatively high number of farmers and growers now use the Internet to access information and to communicate with each other, their suppliers and their markets. A recent

survey of 15,000 rural delivery locations around New Zealand found an overall Internet adoption rate of almost 50% (Atkins, 2000: 7). As Howell (2000: 2) points out, reported computer usage in rural areas (61%) at least matches if not exceeds the national penetration, which is projected to be approximately 50% (Ministry of Economic Development, 2000).

However, there are still infrastructure problems that limit access to this medium for some rural dwellers. In some parts of New Zealand spatial isolation of farms means that it is not economic to upgrade telecommunication facilities, and access is currently limited for some rural people. Atkins' (2000: 7) survey concludes that reported telephone line infrastructure problems are worse with increasing distance from population centres and these problems are affecting the use of technologies such as the Internet that require lines of higher than voice quality.

While this paper focuses on the use of the Internet websites for rural human resource development, the impact of other telecommunication advances and Internet uses should not be overlooked. Where reception is available penetration of mobile phones into rural areas is relatively high at 70% (Atkins, 2000: 7). Telecommunication facilities are also assisting rural people with farm business management. For example, a farmer with good cell phone coverage can communicate with a stock and station agent even while working on the far reaches of his farm or can give instructions to farm workers. The facility to send and receive emails via mobile phones is now widely available. One New Zealand farmer recently patented a remote control system that can turn electrical devices off and on. He invented the system to avoid twice-daily trips to and from the pump shed to turn on the farm irrigation. (*Sunday Star Times*, June 17, 2001: E1).

In similar fashion, other Internet website services such as electronic banking, electronic stock auctions and computer email communications are all contributing to a change in the way rural farmers and horticulturists do business, access expert advice and stay informed. The combined impact of these telecommunication advances and Internet uses on rural communications is significant.

This paper

- briefly surveys the kinds and number of rural-oriented Internet websites available in New Zealand,
- provides examples of ways existing websites can be used to disseminate extension education, research and informal information services to rural users,

- outlines the access problems particular to rural Internet users in New Zealand and suggests some possible technological solutions,
- summarises the ways the use of Internet websites impacts on education for rural human resource development.

The paper concludes by considering how the New Zealand experience might apply to other countries. While it is recognised that a digital-divide<sup>2</sup> exists between developed and lesser developed countries in Asia and the Pacific, the paper should be of interest to other countries seeking to use the benefits of the information technology to improve education for rural development and to increased farm production efficiency. It will at least provide some examples of how this technology can be used.

## *Agricultural extension education and information transfer websites*

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Most rural people use the Internet for purposes beyond the routine management of the property. Family health issues, hobbies and regular email communications with absent family members are widespread uses for rural people, as they are for the general New Zealand population. Although not examined in detail in this paper, a wide range of rural or agricultural discussion forums are available via the Internet. The amount of information disseminated via these discussion groups contributing informally to rural human resource development is extensive and cannot be underestimated. Indeed, the Internet opens up a global world of information to all rural people and helps to overcome the feeling of isolation some farmers and their families sometimes experience. Concentration on rural-oriented websites in this paper in some ways creates an artificial distinction that does not exist for rural Internet users.

Table 2 lists the New Zealand institutions providing formal educational instruction, their website addresses, those offering agricultural courses, distance education courses and website-based courses available via the Internet. The table lists only public universities and polytechnics but not the numerous private training providers that have emerged in the New Zealand in recent years. Many of these private training providers offer basic vocational training for the agriculture and horticulture industries but their activities are difficult to track and most do not have an Internet profile.

Interestingly, all public educational institutions now have websites to provide information about the institutions, the qualifications, courses and the advantages of studying at particular institutions. For rural dwellers unable to travel to classes, distance education courses or online website-based courses are the only accessible options for formal education.

While distance education providers support students using email facilities and many have discussion forums, at this time, only three New Zealand institutions offer totally online website-based courses.

**Table 2:** New Zealand educational institutions, websites, agriculture courses and online courses.

Institution	Website	Agricultural courses <sup>1</sup>	Distance or extramural courses <sup>2</sup>	Web-based online courses <sup>3</sup>
Auckland University of Technology	<a href="http://www.aut.ac.nz/">http://www.aut.ac.nz/</a>		✓	✓
Bay of Plenty Polytechnic	<a href="http://www.boppoly.ac.nz/">http://www.boppoly.ac.nz/</a>	✓		
Christchurch Polytechnic	<a href="http://www.chchp.ac.nz/">http://www.chchp.ac.nz/</a>	✓	✓	
Eastern Institute of Technology	<a href="http://www.eit.ac.nz/">http://www.eit.ac.nz/</a>	✓		
Lincoln University	<a href="http://www.lincoln.ac.nz/">http://www.lincoln.ac.nz/</a>	✓	✓	
Manukau Institute of Technology	<a href="http://www.manukau.ac.nz/">http://www.manukau.ac.nz/</a>	✓		
Massey University	<a href="http://www.massey.ac.nz/">http://www.massey.ac.nz/</a>	✓	✓	
Nelson Marlborough Institute of Technology	<a href="http://www.nelpoly.ac.nz/">http://www.nelpoly.ac.nz/</a>	✓		
Northland Polytechnic	<a href="http://www.northland.ac.nz/">http://www.northland.ac.nz/</a>	✓		
Open Polytechnic of New Zealand	<a href="http://www.topnz.ac.nz/">http://www.topnz.ac.nz/</a>	✓	✓	✓
Otago Polytechnic	<a href="http://www.tekotago.ac.nz/">http://www.tekotago.ac.nz/</a>	✓		
Southern Institute of Technology	<a href="http://www.sit.ac.nz/">http://www.sit.ac.nz/</a>			
Tairāwhiti Polytechnic	<a href="http://www.tairāwhiti.ac.nz/">http://www.tairāwhiti.ac.nz/</a>			
Taranaki Polytechnic	<a href="http://www.taranaki.ac.nz">http://www.taranaki.ac.nz</a>	✓		
UNITEC Institute of Technology	<a href="http://www.unitec.ac.nz/">http://www.unitec.ac.nz/</a>	✓		
Universal College of Learning	<a href="http://www.ucol.ac.nz/">http://www.ucol.ac.nz/</a>	✓		
University of Auckland	<a href="http://www.auckland.ac.nz/">http://www.auckland.ac.nz/</a>			
University of Canterbury	<a href="http://www.canterbury.ac.nz/">http://www.canterbury.ac.nz/</a>			
University of Otago	<a href="http://www.otago.ac.nz/">http://www.otago.ac.nz/</a>			
University of Waikato	<a href="http://www.waikato.ac.nz/">http://www.waikato.ac.nz/</a>			
Victoria University of Wellington	<a href="http://www.vuw.ac.nz/index.shtml">http://www.vuw.ac.nz/index.shtml</a>	✓		
Waiariki Polytechnic, Rotorua	<a href="http://www.waiariki.ac.nz/">http://www.waiariki.ac.nz/</a>	✓		
Waikato Polytechnic	<a href="http://www.twp.ac.nz/">http://www.twp.ac.nz/</a>	✓		✓
Wanganui Polytechnic	<a href="http://www.whanganui.ac.nz/">http://www.whanganui.ac.nz/</a>			
Wellington Institute of Technology	<a href="http://www.hvp.ac.nz/">http://www.hvp.ac.nz/</a>	✓		
Whitireia Community Polytechnic	<a href="http://www.whitireia.ac.nz">http://www.whitireia.ac.nz</a>			

1. Agricultural is used in the broadest sense and includes horticulture, forestry, viticulture, landscaping and so on.

2. Distance and extramural courses are those that can be studied without attending physical classes

3. Web-based courses are e-learning courses delivered in totality via Internet websites

Another important category of website are individual farm, orchard or vineyard homepages. Many farmers and viticulturists have created their own homepages on the Internet for information or marketing purposes. With innovative new DNA meat tracking systems, consumers in Europe will be able to use the Internet to view the farm on which the meat they are purchasing was produced. Many vineyards use websites to direct market their wines and already one study on the usability of such sites to assess their effectiveness has been conducted (Proctor, C. & Symonds, J., 2000).

As at June 2001, the search services of Telecom Xtra, a leading New Zealand ISP provider, lists 707 websites in its agriculture category<sup>3</sup>. These are sub-divided into agriculture organisations (33), agriculture products (101), forestry (17), horticulture (147) and livestock (297). Most are business-oriented websites of companies promoting products and services but a number can be classified as information service and research websites. The distinction between business-oriented and information-oriented websites is not sharp. The blurred boundaries become apparent in the example of Fencepost.com(tm) below, where a private business-oriented website promoting products and services also provides free information access, links to other information sources and discussion forums.

The paper will now briefly outline some ways that three rural-based websites disseminate informal education and research information. It cannot attempt to describe the full range of information available on these websites but only show some ways they are useful for extension education purposes. The sites are selected provide examples of a private organisation, a crown research institute, and a government website, to show the kinds of information available. Their inclusion as examples in this paper should not be seen as in any way promoting them. There are many other websites providing similar and equally useful information to rural people. The addresses of some other rural-oriented websites are given in Appendix A.

### ***Fencepost.com<sup>TM</sup> website<sup>4</sup>***

The first example is 'the Fencepost.com<sup>TM</sup>', a private website which advertises itself as New Zealand's leading agricultural portal (Figure 2). Owned by the Kiwi Dairy Company<sup>5</sup>, this site offers free registration. Registration is required to access all the services offered at this site. From the front (home) page, as well as weather information, registration, about us and email pages, the site is divided into business services available under the headings *store, classified, livestock exchange, insurance, banking and health*. From the front page, users can also go into four sector pages — dairy, wool, livestock and horticulture.

The *store* section offers goods for sale ranging from agricultural chemicals and seeds through to holiday travel specials. The *classified* section allows users to place their own classified advertisements for any item that they want to sell and a means for buyers to contact sellers. The *livestock exchange* matches buyers and sellers of livestock and currently caters for beef, sheep dairy and deer. The insurance, banking and health sections offer the usual range of products as well as links to New Zealand's e-banking services.

The screenshot shows the homepage of Fencepost.com. At the top, there is a search bar and navigation links for 'About You', 'About Us', 'Register', and 'Login'. Below this is a main navigation bar with links for 'Store', 'Classifieds', 'Live.ex', 'Finance', 'Jobs', 'Travel', 'Email', and 'Calendar'. On the left, a vertical sidebar lists categories: 'HOME', 'DAIRY', 'WOOL', 'LIVESTOCK', and 'HORTICULTURE'. The main content area is divided into several sections:
 

- Weather:** Features a map of New Zealand with weather icons (clouds and rain) and a 'WEATHER WARNING' section. It includes a 'Regional Forecasts' section with a 'Select a region' dropdown and a 'Go' button. The text 'Last updated: 08:24AM Nov 21' is visible.
- Win A Year's Worth of Holden!** A promotional text for a Holden Rodeo competition, with a 'Click here now' button and an image of a Holden Rodeo vehicle.
- What's Happening?** A section with the text 'Have your say on everything rural - Discussion Groups' and a link to 'Discussion Groups'.
- JOBS:** A section with a 'Need People?' advertisement featuring a photo of a man and a 'What's New?' sub-section with links to 'Pasture rotation made easy!', 'Record, store and graph 15 types of weather data', and 'Click here for more new stuff'.
- Best Buy:** A section with the text 'The famous TCAC 'Ham For Drench' specials are back in the - Store'.
- Today's Headlines:** A section with the headline '¥ Kyoto Critics Shroud Wavers, Says Hodgson' and a sub-headline 'Research, Science and Technology Minister Pete Hodgson has scolded Federated Farmers for "shroud'.

Fig. 2 Homepage of Fencepost.com(tm) from November 2001 (original in colour)

The discussion groups are divided into six main categories, horticulture (4 discussions), Global Dairy-public (1 discussion), dairy (17 discussions), livestock (17 discussions), wool (4 discussions) and public (11 discussions). The number of messages in each discussion range from 1 to 49. Topics of discussions range from 'how do you stop crust forming on the top of the effluent pond' to discussions on 'growing the rural Internet community'. The value of discussion groups as opportunities to share knowledge about everyday practical farming problems and to discuss issues of concern to rural people cannot be under estimated as an educational medium. It allows rural people to interface with one another and learn from shared experience.

From the wool section page, the user has access to a page entitled 'expert farming'. This page contains numerous articles on such topics as feeding ewes over winter, subdivision and grazing management, controlling Californian

thistle, water quality management and soil compaction. Each of these articles gives up-to-date information and advice on these issues.

Fencepost.com(tm) also has links to other sites, such as DairyMeats, Woolnet and Kiwi Dairies Best On-Farm Practice programme (BOFP). The latter accessed from the dairy section page, helps users identify and record optimised quality systems and practices for the modern dairy supplier. By registering, dairy farmers are able to access this online quality management programme.

### ***HortNet website<sup>6</sup>***

HortNet is the website for the government Crown Research Institute, HortResearch. It is an information centre for New Zealand's plant-based industries. The front page contains a site search engine and presents a central link to the latest horticultural news as well listing other web-pages on the site for a number of horticultural organisations. They are the New Zealand Fruitgrowers Federation, the New Zealand Plant Protection Society, the Hawkes Bay Focus Orchard and the New Zealand Society for Horticultural Science. From the front page the main links are to Publications, HortFacts, Crop Centres, Events, HortDirectory, BugKEY as well as a link to the main HortResearch web page.

The link to Focus Orchard provides a good example of how the web is used to disseminate information. The Focus Orchard project is a technology transfer programme. It brings together the best available scientific and applied research personnel and seeks to apply the most appropriate technology in a commercial orchard environment for the purpose of encouraging sustainable fruit production.

From the Focus Orchard project website users can access information about field days, community group meetings, economics, organic production, spray application issues, soil and water issues, tree and crop management and pests and diseases.

The BugKEY accessed from the main HortNet page gives users access to keys for the identification of pipfruit and stonefruit insects. Using descriptive keys and photos, it enables growers to identify the common insects they might find in their orchards.



## **MAF website<sup>7</sup>**

This is the website for the New Zealand Ministry of Agriculture and Forestry, a government agency. The Ministry aims to create opportunity for, and manage risks to, New Zealand's food, fibre and associated industries. The main page has direct links to topical news items relating to agriculture, horticulture, forestry and biosecurity issues. From the main page, the following sectors can also be accessed: Agricultural Compounds and Veterinary Medicines, Animals, Animal Products, Animal Welfare, Biosecurity, Dairy and Plant Products, Disease, Food, Forestry, Issues, Meat, Plants, Policy, Rural, Seafood, Standards, and Statistics.

By following the 'rural' link, users are able to access an online copy of the current and back issues of the *Rural Bulletin*. The *Rural Bulletin* is a monthly publication produced by Policy Information and Regions, part of MAF Policy, in association with the Department of Internal Affairs. Successive surveys have shown it to be enormously popular, and effective in achieving its objective of facilitating two-way information flow between government and the rural sector so that rural people have the opportunity for input into government programmes and policies. Users are able to subscribe to receive an email version of this bulletin and the webpage search function allows users to search all issues of the *Rural Bulletin* for specific topics since 1996. The range of information available through this source is immense, and it has the added benefit that it comes directly from the government agency responsible.

## *Access problems for rural Internet users in New Zealand and possible technological solutions*

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According to Atkins' (2000) survey, reported telephone infrastructure problems increase from 44% for those living 0-5km from the nearest village to 82% for those living more than 30 kms away. Additional phone lines are often required in households and businesses wanting to make more use of the Internet. In addition to telephone line problems, 40% of respondents also indicated occasional problems with power supply. Mobile phone coverage is reported as patchy and is affecting the way business is done. Lack of mobile phone coverage is considered to be a safety issue by many rural dwellers.

Some technologies likely to alleviate some of the rural infrastructure problems associated with copper-wire local access include new generation wireless technologies and broadband satellite services. Satellite mobile telephony will become more available but at higher cost. 'Satellite-based technologies appear to be most promising for overcoming the economic disadvantages of serving low population density areas' (Atkins, 2000: 9).

While problems accessing the Internet currently exist for some rural properties distant from rural settlements and telephone exchanges, wireless-based solutions are likely to alleviate these situations, but at increased cost. The economic, social and educational advantages, as demonstrated in the examples outlined in this paper, may well outweigh these extra costs. The issue is certainly deserving of further research, and some country-to-country comparisons would be interesting.

However, the following quote from Atkins' summary indicates a general widespread acceptance of the Internet and optimism about the future of this technology:

Despite the infrastructure and operations problems, over half the respondents are optimistic that telecommunications-based technologies such as the Internet will be available, and will provide them with benefits they can take advantage of in the future. As long as infrastructure issues are addressed, this optimism is vital to the rural community adopting and capitalising on the new Information Economy (Atkins, 2000: 8).

## **Summary**

New Zealand is in the fortunate position of having a relatively highly educated, computer-literate rural population, who are not afraid to innovate with new technology. The Internet and rural-based websites provide farmers, horticulturists, and rural people with access to large amounts of information as well as access to a wide range of products and services. Information available includes latest news, weather forecasts, climate data, expert advice, fact sheets, reports on latest research and ongoing experimental research projects, up-to-date bulletins, pest identification, and numerous ongoing discussion forums, which allow people to share ideas and information.

The impact of these resources in increasing production levels and educating people cannot be directly assessed without further research. However, the few examples of rural-oriented websites illustrated in this paper, demonstrate some ways they are being used. It is likely that the full capacity of this information technology to provide education for rural human resource development and subsequent increases in rural production is yet to be achieved.

While there are infrastructure problems that limit access to the resource, these are likely to be overcome by future advances in satellite-based delivery systems. New Zealand's problems arose mainly out of the need to utilise existing copper wire-based infrastructures and other countries looking to use this information technology for human resource development may be able to leap straight to the latest wireless-based technologies for Internet communications.

## **Conclusion**

This brief survey of rural-oriented Internet websites in New Zealand, the few examples provided, and the outline of access issues and some ways Internet use impacts on education for rural human resource development has provided member countries of the Asia and the Pacific Programme of Educational Innovation for Development with an overall picture of rural Internet websites in New Zealand. While recognising that there exists a wide digital-divide between New Zealand and some other member countries, it is important to understand that this medium has great potential for increasing food production through technology transfer and is well suited as means of assisting rural human resource development.

English-speaking readers wishing to learn more can explore the subject of rural websites in New Zealand by visiting the URL addresses provided in this paper and Appendix A via the Internet. By following links, you will gain a more

detailed picture of the kinds of educational information available and the potential of these resources. In closing, the writer would like to suggest that UNESCO could add to its already extensive website an adjunct sector devoted to disseminating latest research and production information to enhance education for rural development across the Asia and the Pacific region.

## Endnotes

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- <sup>1</sup> Country Report for the 2001 Obihiro Asia and the Pacific Seminar on Education for Rural Development held at Obihiro University August 28 to September 4, 2001.
- <sup>2</sup> The 'digital divide' is the term used to indicate the gap that occurs between different parts of society as a result of varying rates of adoption of Information Technology. The digital divide was first referred to in a socio-economic context to highlight disadvantaged groups unable to fully participate in the economy, and in society, because of their inability to be trained in, or access, Information Technology (Atkins, 2000: 7)
- <sup>3</sup> <http://www.xtra.co.nz/search/0,,1789-0-1-1,00.html>
- <sup>4</sup> <http://www.fencepost.com/home.jhtml>
- <sup>5</sup> Dairy farmers of the Kiwi Dairy Company and the New Zealand Dairy Group on 18 June, 2001 voted to amalgamate the two companies to form a new mega-company, Fonterra Dairy Cooperative, expected to be the 10th largest dairy company in the world.
- <sup>6</sup> <http://www.hortnet.co.nz>
- <sup>7</sup> <http://www.maf.govt.nz/MAFnet/index.html>
- <sup>8</sup> <http://www.unesco.org/>

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# Appendix

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## ***Some rural-oriented information service websites in New Zealand***

<b>Website name</b>	<b>Website address</b>	<b>Description</b>
AgResearch	<a href="http://www.agresearch.co.nz:8000/">http://www.agresearch.co.nz:8000/</a>	Crown Research Institute providing access to research information.
Agriculture ITO	<a href="http://www.agricultureito.ac.nz/">http://www.agricultureito.ac.nz/</a>	Provides training for people in the agriculture industry in New Zealand. Created by Government and industry to deliver high quality training and education in agriculture.
AgriQuality New Zealand	<a href="http://www.agriquality.co.nz/">http://www.agriquality.co.nz/</a>	AgriQuality New Zealand is a supplier of testing, analysis, and quality assurance systems for animal, plant, forestry and food products.
ALANZ	<a href="http://www.alanz.org.nz/">http://www.alanz.org.nz/</a>	Alpaca & Llama Association of New Zealand.
Bio Dynamic Farming	<a href="http://www.biodynamic.org.nz/">http://www.biodynamic.org.nz/</a>	Biodynamic Farming and Gardening Association in NZ promotes biodynamic methods for sustainable holistic organic agriculture.
BIO-GRO New Zealand	<a href="http://www.biogro.co.nz/">http://www.biogro.co.nz/</a>	The trading name of the NZ Biological Producers & Consumers Council Inc. owner of the BIO-GRO trademark and has developed a set of production standards for organic agriculture, which are internationally recognised and respected.
CropLink (NZ) Ltd	<a href="http://www.croplink.co.nz/">http://www.croplink.co.nz/</a>	Link to Information for leading edge technical, management and strategic information relating to floriculture, with emphasis on recently developed crops.
ENZAFOODS	<a href="http://www.enzafoods.co.nz/">http://www.enzafoods.co.nz/</a>	Subsidiary of the New Zealand Apple and Pear Marketing Board.
Federated Farmers	<a href="http://webnz.com/fedfarm/">http://webnz.com/fedfarm/</a>	The Federated Farmers Homepage.
Forest Research	<a href="http://www.forestresearch.co.nz/">http://www.forestresearch.co.nz/</a>	Crown Research Institute responsible for delivery of research, technology and service solutions to the international forest and forest products sector.
MAF Quality Management	<a href="http://www.mqm.govt.nz/">http://www.mqm.govt.nz/</a>	MAF Quality Management MAF Quality Management, with a nationwide capability of 1800 staff.
MIRINZ	<a href="http://www.mirinz.org.nz/">http://www.mirinz.org.nz/</a>	Meat Industry Research Institute of New Zealand.
New Zealand Deer Farmers Association	<a href="http://www.nzdfa.co.nz/">http://www.nzdfa.co.nz/</a>	Deer farmers producing venison and/or velvet for sale are members of the Association and contribute by levy on the basis of the weight of venison and/or velvet sold.

New Zealand Farm Forestry Association	<a href="http://www.nzffa.org.nz/">http://www.nzffa.org.nz/</a>	Provides a quarterly NZ forest marketing report, a means to join the NZFFA and/or purchase NZ TREE GROWER magazine. Links to other forestry resources.
New Zealand Fruitgrowers Federation	<a href="http://www.fruitgrowers.org.nz/">http://www.fruitgrowers.org.nz/</a>	The federation represents 3 600 growers. Its role is to tackle key generic issues for the benefit of fruitgrowers and their industry.
New Zealand Grassland Association	<a href="http://www.grassland.org.nz/">http://www.grassland.org.nz/</a>	Provides a valuable forum for farmers, researchers, consultants, educators and commercial people to gain the latest information on: Recent research findings, farming trends and opportunities, agricultural problems and developments.
New Zealand Institute for Crop & Food Research Limited	<a href="http://www.crop.cri.nz/">http://www.crop.cri.nz/</a>	Government-owned research institute covers the production and processing of most agri-food crops cereals, pulses, forages, vegetables, flowers, fungi, essential oils, herbs etc.
New Zealand Meat Producers Board	<a href="http://www.nzmeat.co.nz/">http://www.nzmeat.co.nz/</a>	The Board is a non government organisation funded entirely by meat producers. The role and responsibilities of the Board are detailed here.
New Zealand Organic Products Export Group	<a href="http://www.organicsnewzealand.org.nz/">http://www.organicsnewzealand.org.nz/</a>	OPEG was formed to encourage and support companies and organisations, who have an interest in the New Zealand organic export industry. New Zealand currently exports around NZ\$29 million of organic products (up 45% from 1997). 2001.
NZHITO	<a href="http://www.hortito.org.nz">http://www.hortito.org.nz</a>	The NZ Horticulture Industry Training Organisation (NZHITO) is the horticulture industry own training organisation.
Plant Rights Variety Office	<a href="http://www.pvr.govt.nz/">http://www.pvr.govt.nz/</a>	Plant variety rights (PVR) issued by the PVR Office, under the New Zealand Plant Variety Rights Act 1987, give plant breeders exclusive rights of commercialisation over their new varieties.
Royal New Zealand Institute of Horticulture	<a href="http://www.rnzih.org.nz/">http://www.rnzih.org.nz/</a>	The mission of the RNZIH is to encourage and improve horticulture in New Zealand.
Southern Hemisphere Forestry	<a href="http://www.southernhemisphereforestry.co.nz/">http://www.southernhemisphereforestry.co.nz/</a>	A window on the world's most dynamic forestry countries in the Southern Hemisphere.
The Avocado Industry Council	<a href="http://www.nzavocado.co.nz/">http://www.nzavocado.co.nz/</a>	The official site of NZ offers product information, advice, company profile and details of upcoming projects.
The Institute of Natural Resources	<a href="http://www.inr.massey.ac.nz/">http://www.inr.massey.ac.nz/</a>	Consists of 120 academic and support staff from a wide range of discipline areas including: Ecology, Zoology, Soil and Earth Sciences, Environmental Science, Forestry, Plant Protection, Landscape Management, Agricultural and Horticultural Systems and Management and Natural Resource Management.



The New Zealand Chestnut Council Inc (NZCC)	<a href="http://www.nzcc.org.nz/">http://www.nzcc.org.nz/</a>	The New Zealand Chestnut Council Inc (NZCC) is the nationally recognised product group for chestnuts.
The New Zealand Emu Farmers Association	<a href="http://www.nzefa.co.nz/">http://www.nzefa.co.nz/</a>	Established to promote and foster the farming of emu in New Zealand.
The New Zealand Farming Directory	<a href="http://www.nzfd.co.nz/">http://www.nzfd.co.nz/</a>	To locate information and Company Websites with links all the Rural sites.
The New Zealand Sheep Breeders Association	<a href="http://www.nzsheep.co.nz/">http://www.nzsheep.co.nz/</a>	Administers the affairs for those breeds of sheep currently under its umbrella whilst actively promoting the stud breeding sheep industry.
The New Zealand Wool Board	<a href="http://www.woolboard.co.nz/">http://www.woolboard.co.nz/</a>	Funded by wool growers to co-ordinate work in wool production research and development technology transfer and international marketing.
The Royal Agricultural Society of New Zealand	<a href="http://www.ras.org.nz/">http://www.ras.org.nz/</a>	Home of New Zealand A&P Shows, Breed Societies, The Royal Show, The Royal Easter Show, Young Achievers Award, Agricultural Shows, etc
The Small Farmers	<a href="http://www.smallfarming.org.nz/">http://www.smallfarming.org.nz/</a>	Information about the Smallfarmers Association of NZ and its Journal The Smallfarmer.
The Soil Health Association of New Zealand Inc	<a href="http://www.soil-health.org.nz/">http://www.soil-health.org.nz/</a>	At the centre of the fight for safe, healthy food, protection of the environment and policies for sustainable farming and resource use in New Zealand and worldwide since it's formation in 1941. It is the oldest Organic Organisation in the world.
Tussock Grassland Management Information System	<a href="http://www.tussocks.net.nz/">http://www.tussocks.net.nz/</a>	An integrated management system for the South Island high country of New Zealand.
West Coast Forests	<a href="http://www.westcoastforests.co.nz/">http://www.westcoastforests.co.nz/</a>	West Coast Accord has made possible sustainable forest logging here on the West Coast, the conservation of our native forests, rimu and beach protection of our native birds plants and environment. This web site has been developed to provide objective information on the West Coast Forests.
Zespri™ New Zealand Kiwifruit	<a href="http://www.zespri.co.nz">http://www.zespri.co.nz</a>	Site of Zespri Group Limited exporter of New Zealand kiwifruit.