A university perspective on innovations in forestry science and technology

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Universities are in an unequalled position to contribute to innovation through science and technology, and do so on a regular basis. Consider, if you will, the following examples:

- The world-renowned biogeoclimatic classification system for British Columbia is based on original research work done at the University of British Columbia (UBC) in the 1960s and 70s.
- For more than three decades, the volumes of most trees cruised in BC and many other parts of the world have been calculated using “taper equations” developed originally at UBC.
- The Japanese Ministry of Construction has made major changes to its lumber code philosophy after adopting new procedures for calculating allowable stresses based on full-size testing. These new procedures were developed by researchers at UBC.
- The IFPA (Innovative Forest Practices Agreement) pilot projects in British Columbia are a highly innovative approach to forest management and several of these projects are guided by university-based research activities.

These are just a few examples of how university research has led to innovative solutions. University-based research is unique in as much as it is comparatively unconstrained by outside pressures, political or otherwise. The freedom that academics have to pursue a wide range of research interests, from theoretical inquiry to pragmatic and applied solutions, offers a flexibility that government-based research, for example, does not have. Furthermore, university-based researchers are exposed to a myriad of interdisciplinary research opportunities through interactions with graduate students, colleagues, funding agencies and academic peers. This is especially true for schools with large graduate programs (there are over 200 graduate students at UBC’s Faculty of Forestry), where there is a high output of research and an immense potential for providing innovative and collaborative solutions to complex and multifaceted modern-day forestry issues.

Although universities do not directly contribute a significant proportion of Canada’s science and technology funding, they are very often recipients of provincial and federal fund-

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ing programs as well as various leveraging opportunities (Watts and Kozak 2000). University Chair positions (such as Forest Renewal BC Chairs) have been successful in attracting the crème de la crème to academic positions which, in turn, have led to increased opportunities for funding, networking and research excellence. In 2001, UBC was awarded a highly prestigious Canada Research Chair in forest ecology.

That all said, perhaps the university’s most unique distinction is that its focus must not only be on research, but also on teaching. In defining research excellence, the University of British Columbia’s Academic Plan states that, “...our goal is to enhance and extend UBC’s research environment and to integrate research and teaching in all areas of academic endeavour.” It is teaching that most clearly delineates the function of the university compared to other research organizations and institutes.

As teachers of future generations of foresters, engineers and scientists, it is our responsibility to offer cutting edge education by continually updating our course offerings to include research that is current, relevant and readily applicable. The most efficient means of doing so is to incorporate a holistic approach—simply integrating our research findings into our teaching. Pedagogically speaking, this represents a major challenge. Not only must course content be state-of-the-art, but so too must be the way in which we deliver this information.

The teaching methods of yesteryear are no longer applicable in a rapidly changing world and the field of forestry is certainly no exception. Paradoxically, forestry issues only become increasingly complex as we gain knowledge and information becomes more easily accessible. Simply put, we are moving the bar up for each new generation of foresters. As graduates of a forestry program, they must now have a package encompassing a wide range of knowledge and skills—effective management and communication, consensus building and community involvement, First Nations and environmental issues, business acumen, and so on. Our teaching methods must reflect this evolution, and consequently, so too must our research programs.

The Faculty of Forestry at UBC is trying to address the changing requirements of education on many levels. At the gradu-

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ate level, we are attempting to develop professional programs in addition to our already existing research-based programs. The aim of such targeted offerings would be to improve the skills and knowledge of currently practising foresters. Our traditional undergraduate suite of courses will be complemented by a co-op work placement program. The purpose of this program is simply to provide our undergraduates with practical experience (and thus marketable skills) prior to entry into the forestry sector. Last but certainly not least, we will endeavour to develop and deploy distance learning initiatives in the Faculty. To succeed at this initiative, we must foster partnerships with other educational and research institutes, allowing for synergies to emerge in key research and teaching areas.

Universities across Canada are currently at a critical juncture, and Forestry schools are certainly no exception. The past twenty years can be characterized as a time of consolidation, with funding for university-based research steadily eroding. We are rapidly losing talented researchers to greener research pastures around the world in what has been vividly dubbed the "brain drain." In the late 1990s, the top ten Canadian universities mounted a concerted effort to reverse this trend by lobbying Ottawa to develop strategies to attract the "brightest and best" researchers in the world. This led to the creation of the

Canada Foundation for Innovation (CFI), which has funded close to \$4 billion in research and infrastructure costs and has been instrumental in spurring on science, technology and innovation programs across Canada. In 2000, the government announced its Canada Research Chair program with the intention of improving Canada's international research profile. Clearly, universities are the big winners as the government pushes ahead with its innovation agenda, which includes a commitment to double federal research spending by 2010 and make Canada one of the top five R&D countries in the world—well up from its current ranking of 15th. Traditionally, the multiple disciplines of forestry have been overlooked in setting national agendas on science and technology. A variety of reasons have contributed to this reality, not the least of which is that forestry is very often not perceived to be cutting-edge science. This attitude is unfounded, myopic and must change. It is absolutely imperative for Forestry faculties across Canada to exploit these new opportunities and keep abreast of other scientific disciplines.

References

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