

Multidisciplinary knowledge partnerships and research teams for dairy innovation: experiences in the FutureDairy project (Australia)

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Abstract: *The FutureDairy project is developing more productive forage and feeding systems and testing technical innovations such as robotic milking in Australian pasture based dairy systems. Associated with this work are 'Knowledge Partnerships' where researchers from multiple disciplines (dairy science, extension and social research) engage with farmers and advisors to adapt forages and feeding technical options to commercial situations. The approach brings together the professions of research, farming and agricultural advisors and the formal disciplines of dairy science, social research and extension. After two years the approach is delivering on its major objective - fast tracking innovation within the dairy industry. However, social research studies of multidisciplinary within FutureDairy have uncovered significant challenges in the approach. This paper recounts some of the experiences of the project management team trying to negotiate ways around conflicting world views and beyond the dominant science paradigm.*

Keywords: *Dairy science, extension, social research, multidisciplinary, Knowledge Partnerships.*

Introduction and background

The FutureDairy project aims to help Australian dairy farmers meet the challenges they will encounter in the future - increasing pressures on land, water and labour resources and changing lifestyle and worklife expectations among dairy communities (Garcia & Fulkerson 2005). In FutureDairy, researchers are developing more productive forage and feeding systems and testing technical innovations such as robotic milking, remote sensing of rumen pH and rapid pasture measurement in Australian pasture based dairy systems. Associated with this work are formal 'Knowledge Partnerships' where FutureDairy's management team, composed of dairy scientists, extension specialists and social researchers work with farmers and advisors to co-develop technical options (e.g. forage systems) on commercial farms. Within this approach exists two levels of multidisciplinary - one brings together the professions of research, farming and agricultural advisors (public and private) and is referred to as Knowledge Partnerships. Early lessons associated with Knowledge Partnerships in FutureDairy are reported by Crawford *et al* (2007), and Kenny and Kaboré (2006). Briefly, the Knowledge Partnership approach is helping to fast track innovation in the dairy industry at a number of levels, although constraints have been noted. Results from the completed first stage of this work in FutureDairy will be published in 2008.

The other level of multidisciplinary in FutureDairy brings together formal disciplines of dairy science, social research and extension, operating as multidisciplinary project management team. The aim of the study was to identify the benefits of the approach, because including social research and extension at the research end of a conventionally linear RD&E spectrum was relatively new in the Australian dairy industry. Researchers were keen to know to what extent this enhanced project performance and outcomes. What also emerged were significant lessons about multidisciplinary research teams that bring together disciplines from the natural and social sciences. Experience in FutureDairy highlights the need for facilitated discussions about worldviews underpinning the different disciplines, and the practical implications for the research and prospects for integrated knowledge outcomes. There is also a need for continued reflection on these throughout the project.

Research approach

Studies and reporting on the experiences of the multidisciplinary management team used applied social research methods including transcription and thematic coding of recorded research interviews

with each member of the project management team. Confidential interviews were done early in the project (March 2005) and repeated in November 2005 and September 2006. In addition participant observation was used where social researchers attended management group meetings to observe and record interactions while contributing social research knowledge to decisions made by the group.

Results

In the early work of the FutureDairy management team and in interviews at the outset of the project communications and discussions were all framed around what was to be delivered to farmers and industry in terms of improved technologies and 'future' farming systems. This was in line with expectations of project stakeholders. For example in early evaluation planning reports, stakeholder statements about *'What success looks like'* were all associated with defining new systems and producing management guidelines for feeding and forages and innovative technologies (e.g. AMS), and ensuring that these integrated farmer knowledge. There was no explicit mention of ensuring integration of knowledge from the different scholarly disciplines (dairy science, extension, social research); it was just assumed that each would contribute towards achieving success. The first obstacle arose as researchers began to develop their roles and map out research boundaries for their discipline. An issue of access to the Partner Farms had to be dealt with by management team when extension anticipated that activities by other disciplines would undermine their relationship building with farmers. The management team decided extension would act as 'gatekeeper' for Partner Farm activities and mediate contact from the other disciplines. However, this constrained social and technical research opportunities in the long term, because these were also dependent on close relationships with the farmers. This problem was not anticipated at the time because although there had been general discussions in the project planning phase and agreement among the disciplines on each other's goals and research questions, there had been nothing to trigger deeper discussions of the practical implications of where research boundaries would begin and end, whether or not they could comfortably overlap, how to avoid boundary conflicts.

Until the multidisciplinary management team actually started to implement their individual areas of work, they could not envision the practical implications of different disciplines working together. And it took a 'decision crisis' to reveal the very different assumptions under which each discipline was operating; assumptions based on different world views that underpin natural and social sciences. The crisis revolved around the difficulty of making a decision to change research direction; which would have large repercussions for each discipline's work and role. This period saw the FutureDairy management team engaging in meetings and discussions that spanned over 12 months, with no real consensus on the issue. However, there were learning benefits for the team because the assumptions underpinning each discipline's interpretation of the problem, were exposed and challenged. Team members recognised that they contributed and responded according to their professional stance and tended to only value outcomes that met the strictly defined criteria of their own discipline. Over time, listening to alternative narratives about the problem, there was acceptance that what the group was striving for - knowledge integration - was not going to be achieved by team members having only vague ideas about where the other disciplines were coming from. Members had to be open to learning about alternative worldviews - e.g. what it meant to subscribe to a positivist, post-positivist, constructionist or pragmatic view of the world - and had to be prepared to adjust behaviour and thinking to generate useful, integrated outcomes.

Conclusion

Multidisciplinary research teams are likely to be increasingly common in agricultural projects in Australia. There are many lessons in the literature from other fields such as organisational theory, management, health, social and NRM where multidisciplinary teams have been studied. But while problems and pitfalls are well described, there is little practical advice on overcoming them. Experience in FutureDairy suggests that researchers from natural and social science disciplines must be facilitated to learn how to work together. Multidisciplinary research teams need to 'unpack' their disciplines in terms of worldview and must ensure that each discipline is engaged in the conceptualisation of the research problem and establishment of a common research goal. And, as occurs in the corporate world, there must be investment in team building, development and health. Finally, multidisciplinary researchers need much more than to be competent in their own field, they must also possess highly developed team skills and an ability and willingness to cross disciplines.

References

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