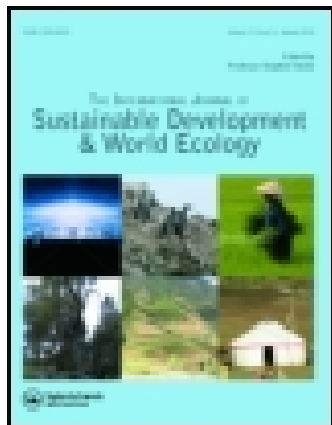


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Strengthening the performance of farming system groups: perspectives from a Communities of Practice framework application

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Farming system groups are fast emerging as key players in the generation and sharing of farmer relevant information in agriculture. These are groups of farmers who, in association with broader agricultural industry members, are involved in conducting locally relevant research and extension activities. The strength of these groups to a large extent depends on the voluntary cooperative participation of growers in group activities. This paper draws on case studies of farming system groups in Western Australia and applies the Communities of Practice (CoP) framework to understand their role and effectiveness in addressing the information needs of growers. The paper adopts the CoP model to study and analyse the emergence, evolution and role of the groups as farmer learning structures and discusses aspects that could play a key role in impacting their effectiveness. The results highlight that community-based local groups are more effective at impacting member engagement in group activities and more readily serve the specific information needs of farmers. Large geographically dispersed groups on the other hand need more effort in terms of connecting members, promoting interactions, building interpersonal relationships, ensuring members to understand and support a clear and defined joint enterprise and meeting a broad range of information.

Keywords: farming system groups; community of practice; practice-based learning; joint enterprise; shared repertoire; mutual engagement

1. Introduction

Farming systems around the world are under increasing pressure to develop and adapt technologies and practices to improve efficiency while ensuring long-term sustainability (Tonts & Siddique 2011). Traditionally, government extension agencies played a key role in ensuring the transfer of requisite knowledge and skills to farmers to remain competitive and sustainable. However, with the widespread reduction in centralised state-led extension following the economic liberalised policies and structural reforms of the 1980s and 1990s, farmer organisations are increasingly promoted to play a central role in driving agricultural transformations in most parts of the world (Campbell & Junior 1992; Petheram & Clark 1998; Black 2000; Marsh & Pannell 2000; Opore 2007; Packham et al. 2007; Ponniah et al. 2008; Kalra et al. 2013). Farmer participation in research, development and extension is now promoted as an essential strategy for sustainable development and is seen as a means to empower farmers by enabling them to have more control over their information needs and the way it is delivered (Black 2000; Marsh & Pannell 2000; Kumba Festo 2003; Robinson 2003; Gianatti & Carmody 2007; Leeuwis 2010; Kalra et al. 2013).

The increasing focus on farmer-participatory research and extension found expression in a plethora of organised entities such as farmers associations, producers groups and

cooperatives actively participating in grassroots research, development and extension. Several of these organisations have demonstrated remarkable competence in influencing farmer relevant research and extension needs. The recent years have witnessed a rapid emergence and rise in the number of farming system groups with a proactive role in promoting grower-centred innovation¹ process in agriculture. These groups not only take initiative in the analysis of local problems and opportunities but are also actively involved in seeking partnerships with members from the broader industry for undertaking on-farm experiments to develop innovative solutions and share relevant information. In this way, the groups demonstrate much more authority in controlling their research, development and extension needs (Thompson et al. 2009). Their role is not simply restricted to passive participation by farmer members but involves a more direct engagement in undertaking organised on-farm experimentations and associated development activities (Hassall & Associates 2004; Gianatti & Carmody 2007; Morgan 2011; Madsen & Noe 2012; Kalra et al. 2013). In essence, the commitment by farmers to participation in these groups is more than a form of 'tokenism' (see Arnstein 1969) and an important part of the process of learning about needs, opportunities and the actions required to achieve them (Pederson 2001). This while strengthening farmers planning and management abilities builds on their knowledge and practice, promoting

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their capacities to develop and adapt new technologies and practices (Heinrich 1993; Gianatti & Carmody 2007; Opere 2007; Madsen & Noe 2012; Kalra et al. 2013). Thus, the dynamics of these groups are based on facilitating capacity building of growers through participatory research and development activities and building social networks (Gianatti & Llewellyn 2003; Gianatti & Carmody 2007; Llewellyn 2007).

This paper argues that the functioning and management of farming system groups can be understood by reference to body of scholarly work related to 'Communities of Practice' (CoP). CoPs are defined as groups of people who share a set of problems, concerns or a passion for something and who interact regularly to learn how to do it better (Brown & Duguid 1991; Wenger 1998). 'The model operationalises social learning and relates it directly to social structures as well as to the practices of participants in the process' (Morgan 2011, p. 100). Recent years have witnessed a growing interest in the CoP model in agriculture and environmental management, particularly those related to participatory approaches (Van Buuren & Edelenphos 2006; Oreszczyn et al. 2010; Madsen & Noe 2012).

This paper focuses on the Western Australian grain belt as a case study region where a range of farming system groups have emerged as central players in the state's research and extension landscape. The empirical basis of the paper is derived from case studies of three groups selected on the basis of variation in size, geographical coverage, structure and mode of operation. Key concepts from the CoP framework are then applied to study the emergence, evolution and role of these groups in the generation and dissemination of agricultural information and to analyse their effectiveness as farmer learning structures. The paper then adapts concepts from farmer learning behaviour to discuss factors that may influence the competence of these groups in addressing the information needs of the growers effectively and their sustained contribution to research and extension. The findings can be used to draw out lessons for application in policy implementation for extension and rural development.

2. Communities of practice

The activities of farming system groups closely associate with the theories on CoP which describe learning as a collective process by a group of people, engaged in mutual action and interacting regularly to seek change and improvement (Ison et al. 2007; Mahon et al. 2010; Reed et al. 2010; Morgan 2011). Learning in this context is 'situational' meaning it occurs as a result of active participation in practice where learners construct their understanding by using and contributing to a range of common resources (Lave & Wenger 1991; Wenger et al. 2002; Oreszczyn et al. 2010; Morgan 2011). Participation is thus viewed as an essential factor of practice-based learning within a CoP (Barston & Tusting 2005; Oreszczyn et al. 2010).

The CoP framework of learning focuses on the interaction between knowledge, practice and social structure. 'Learning within a CoP occurs primarily as part of a broader process of social construction and knowledge sharing' (Morgan 2011, p. 101). It is based on participation where members through mutual practice develop and construct knowledge. Practice in this sense is a social and interactional process, and thus learning through practice complies with the notion of community as a structure that binds members together to facilitate learning. The term 'community' here differs from its common place-based meaning and is more specifically referred to as being composed of people sharing a similar pursuit, activity or concern and acting collectively towards achieving a negotiated goal. In the process they develop a shared, implicit understanding, which binds them together, and forms the basis of knowledge sharing (Brown & Duguid 1991; Lave & Wenger 1991; Wenger 1998; Allen 2000; Barston & Tusting 2005; Morgan 2011). Morgan (2011) describes this understanding among community members as the bonds between them which may be recognised as an expression of their identity.

The nature of CoP to a large extent is determined primarily by two aspects: (1) understanding among its members about the shared practice and (2) the bond developed among them in the process (Lave & Wenger 1991; Wenger 1998). CoPs may take several forms and may be small or big, long- or short-lived, collated or distributed, homogenous or heterogeneous; however, their basic structure remains more or less the same. They are dynamic,² embrace an ongoing cycle of learning and doing with fluid goals around learning, and thrive on constant interaction among members (Wenger et al. 2002; Hearn & White 2009). Participation is voluntary, with people joining for different reasons such as getting value out of the community, developing personal connections or as an opportunity to improve their skills. People will often have different levels of interest in the community which influences the extent of their involvement. Based on the level of involvement, members within a community can be categorised as core, active or passive, with the proportion of passive members being the largest in most communities. Indeed, communities thrive based on the delivery of value to members; however, some of the most valuable community activities are everyday interactions that take place within the boundaries of the community. Successful communities therefore make opportunities for interactions among their members whether through community events, websites or one-on-one conversation (Wenger et al. 2002; Hearn & White 2009).

People often join multiple communities as per their needs and reconcile their degree of involvement in different communities based on the extent to which the communities serve their needs (Hearn & White 2009). Also, members within a community will keep changing extent of their involvement depending on the relevance of its domain. In this sense, CoPs could be regarded as permeable and overlapping with other CoPs with individual

members having varying degrees of involvement, and members moving in and out of the community at any given time (Amin & Roberts 2008; Morgan 2011). This makes defining the boundary of the community difficult and members may sometimes be dispersed in spatial and relational terms. Careful consideration is needed when defining the extent of dispersion that is permissible for the community to retain its operational significance (Wenger et al. 2002).

Further, CoPs can be identified on the basis of three distinct dimensions that enable them to evolve and contribute as stable learning structures (John 2006; Oreszczyn et al. 2010):

- Mutual engagement: members initially interact with each other and in the process establish norms and relationships around what they do.
- Joint enterprise: members are bound together by an understanding of a sense of mutual accountability that becomes an integral part of the practice in which they engage by virtue of being part of the community.
- Shared repertoire: practices which members of a community adopt as part of being involved in it. This may include rituals, stories, ways of doing things and so on to become a common repository.

3. Methods

The focus of this research is on farming system groups that in recent years have emerged as key players in the Australian research and extension landscape. These groups demonstrate incredible competence in influencing farmer participatory research and development activities and play a key role in the generation and dissemination of grower relevant information. Most farming system groups in Australia are either agency or grower-driven, depending on the context and elements within a particular region and goals of the projects undertaken by them (Hassall & Associates 2004). For the purpose of this study, the focus is on farmer-initiated and managed groups based in Western Australia. The state has over 40 formally known farming system groups that have emerged as central players in managing information needs in agriculture. More than half of the grain growing population in Western Australia is a member of at least one of these groups. These groups originated and continue to function under the control of farmer members, and are engaged in conducting highly relevant production and sustainability-based research and development activities in their local region. As part of their research and extension needs, they organise projects and trials in collaboration with industry partners and adopt various measures such as organising group events (field days, workshops, bus tours) and use group publications and websites to share information. A more detailed description of these groups is in the study by Gianatti and Llewellyn (2003).

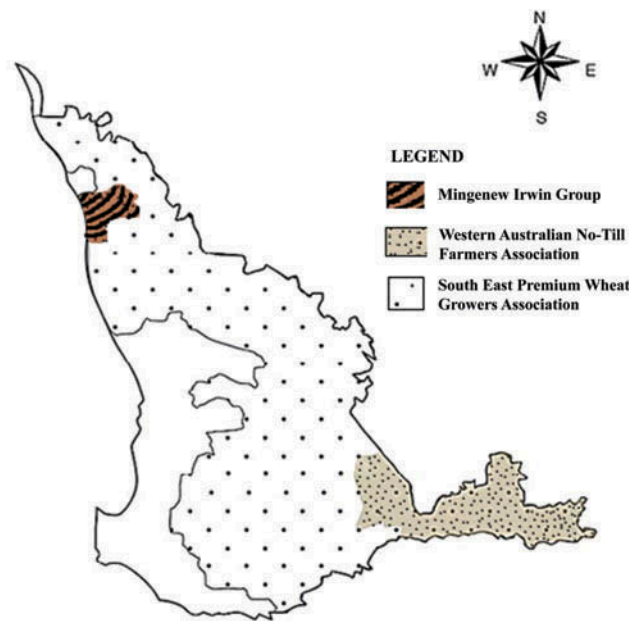


Figure 1. Location of the case study groups across Australia.

This study focuses on case studies of three groups (see Figure 1) selected on the basis of their distinct features (Table 1) and their competence in influencing grower-relevant research and development for an extended period. The selected case study groups are:

- Western Australia No-Till Farmers Association (WANTFA) – the largest grower group in Western Australia in terms of coverage and membership, focusing on the generation and dissemination of concepts on no till.
- Mingenev Irwin Group (MIG): a regional group based in the northern agricultural region of the state, and perhaps the only group involved in the production of information related to both commercial agriculture and natural resource management.
- South East Premium Wheat Growers Association (SEPWA): a regional group spread across the south coast region of the state. It is considered one of the largest groups within the state and focuses on improving the quality of grain production in its region of operation. It works as an umbrella organisation and implements its research and development activities by collaborating with other local groups in the region.

Two main data collection methods were used. The first was a series of face-to-face interviews with 30 farmer members belonging to the three groups. The interviews lasted between 30 and 45 minutes and were used to gather information regarding the role of the groups in influencing generation and dissemination of farmer-relevant information, and their effectiveness in impacting member involvement and learning. The second main

Table 1. Farmer group characteristics.

Group	Group size	Geographical dispersal	Criteria for membership	Main focus	Structure	Major learning approach
WANTFA	Over 500	Statewide group, with few members from other states and overseas.	N.A	Promote no-till technology.	Management of the group by a board – comprising of both farmers and scientist. Operational support provided by a team of staff.	Mainly group publication and field days.
MIG	Nearly 200	Three shires in northern agricultural region of Western Australian grain belt: Mingenew, Irwin and Moorawa.	Full membership restricted to growers within the three shires	Focus on improving environmentally sustainable agriculture in the region.	Management of the group by an executive committee of farmers. Operational support provided by subcommittees of growers with technical support provided by a team of staff.	Mainly field days.
SEPWA	Nearly 200	Extended over the Esperance port zone, located on the south coast region of Western Australia	N.A	Focus on improving the grain quality in the Esperance port zone.	Management of the group by an executive committee of farmers. Operational support provided by subcommittees of growers with technical support provided by a team of staff.	Mainly field days.

Note: N.A – Not applicable.

Source: Author.

method was a questionnaire that was sent to the farmer members of the groups. A response rate of 20.5% ($n = 127$) from WANTFA members, 23.4% ($n = 46$) from MIG members and 25.4% ($n = 66$) from SEPWA members was received. The questionnaire mainly focused on details about the extent of member engagement in group activities and the effectiveness of means adopted by the groups in influencing learning. In addition to these two main sources, the research drew on qualitative data obtained from numerous informal discussions with farmer members and industry partners, many of which were at

various group events organised by the groups throughout the year.

Based on the data obtained, each group was examined from a CoP perspective (Table 1) to identify factors that could play a key role in influencing the effectiveness of these groups as farmer learning structures. The groups were examined mainly on the basis of their ability to influence member involvement in group research and development activities, the means adopted to disseminate the information and the ability to meet the specific information needs of members (Table 2).

Table 2. CoP dimensions and relevant member characteristics.

CoP dimension	WANTFA	MIG	SCFG
Mutual engagement	Members comprise mainly of farmers and others involved in agricultural industry throughout the grain belt region of Western Australia, other Australian States and overseas.	Members are mainly farmers from three shires in Northern Agricultural Region of Western Australia.	Members are farmers from the Esperance region in Western Australia.
	Considerable proportions have membership in other regional and local farmer groups.	Few members also belong to other local groups and WANTFA.	A large majority have membership in other local groups and few in WANTFA.
	Variable member involvement in group research and development activities.	High member involvement in group research and development activities.	Group events well attended, although member contributions to group research lower.
Joint enterprise	Promoting no-till technology to combat erosion.	Promote 'best practice' in cropping, livestock and environmental aspects suitable to the region.	Improve the grain production in Esperance region.
Shared repertoire	Four to five meetings of management committee annually. Team of staff to undertake research and development activities.	Min 10 meetings for management committee annually and regular meetings for divisions supporting the management committee. Team of staff to assist growers in undertaking research and development activities.	Min 10 meetings for management annually and regular meetings for subcommittees. Team of staff to undertake research and development activities in collaboration with local groups spread across the area of operation.
	Group publications, group events and websites	Group events, group publications and websites	Group events, group publications and website

Source: Author.

4. Results

4.1 Western Australian Farmers Association (WANTFA): statewide groups

WANTFA is the largest agronomic grower-initiated group in Western Australia, formed in the early 1990s to address widespread erosion problems within the state. The group was initiated by a small network of people who believed that no-till technology could help address erosion problems effectively. Within just 3 years of its formation, the group developed its first no-till seeding equipment in partnership with a local manufacturing company, and this marked the start of a rapid growth phase in the life of WANTFA. By the fifth year, group membership grew to over 600 people and in the same year a significant breakthrough occurred with the establishment of a long-term partnership with one of the world's leading grains research organisations, the Grains Research and Development Corporation (GRDC³). With funds from GRDC, the group appointed its first staff and also established a technology demonstration trial site in the central grain belt region of the state to conduct long-term research to assess the benefits of the no-till system (GRDC 2009). Prior to this, most group research was managed by group members on their farms. Once established, the WANTFA trial site became the centrepiece for most of the group's subsequent projects and trials. Together with investment from GRDC and in partnership with other government and private sector organisations, WANTFA carried out high profile no-till demonstrations and extension activities (GRDC 2009). This led to a rapid rise in group membership, which more than doubled in the next 5 years.

By 2002, the group had reached its peak in terms of membership with more than 1400 members spread across the grain belt region of the state along with some interstate and overseas members. Over the next few years, group membership remained more or less steady (Gianatti & Carmody 2007). The group was managed by a team of growers with administrative and technical support provided by a core team of staff. The funds for the group were mainly received from GRDC, Australian Government Department of Agriculture, Fisheries and Forestry, National Landcare Program, corporate sponsors, events income and membership fees. The rapid rise in WANTFA membership was accompanied by a steady rise in no-till adopters within Western Australia. According to Llewellyn and D'Emden (2009), between 1998 and 2009, the number of no-till adopters within Western Australia rose from 25% to 90%. This accelerated rate of adoption was very quick by extension standards (typical changes in agriculture takes 10+ years) and WANTFA is considered to have played a major role (Western Australia Grains Group 2010).

However, in recent years, group membership has declined steadily (GGA 2011). The group had started to focus on conventional farming techniques and has refined its management structure. The group is now managed by a board comprising both farmers and scientists with administrative and technical support from a team of staff.

WANTFA has membership with other networks such as Grower Group Allianz (GGA) and the Conservation Agricultural Alliance of Australia and New Zealand. Recently, the group celebrated 20 years since its inception.

Lately, WANTFA is planning to start a new grower group in the central grain belt to engage with and gain direction from local growers and to fill the void between other grower groups in the region. The new group will be based in Cunderdin where WANTFA's long-term trial site is located and will be initially sponsored by WANTFA. Eventually, the group is expected to become an independent grower-driven organisation bringing a social aspect to the region commonly developed through local grower groups (GGA 2011).

A CoP analysis of the group was conducted which mainly focused on the impact of the vast expansion in group membership. The widespread growth in WANTFA membership seemed to emanate from the mutual engagement of the original members, who subscribed to a joint enterprise of promoting no-till technology to combat the widely prevalent erosion problem within the state. As such, the group eschewed from restricting its membership within a fixed geographical boundary and over time, evolved into one of the largest agronomic grower groups within Western Australia with a membership of nearly 1500 spread across the state and a few other state and overseas members. However, such widespread expansion in group membership was noted to significantly influence mutual engagement of members towards the group joint enterprise overtime.

A survey conducted among WANTFA members identified that, of the 127 respondents, 20.5% ($n = 26$) have no involvement in group activities while a large proportion (60.7%) only spend 1–3 days per year on group activities and a smaller proportion (18.8%) spend more than 3 days per year. In order to further understand the extent of member involvement in the group, respondents were classified as active and passive members, with active members contributing to the group's research and development activities such as taking part in planning and consultation, conducting group trials and projects, and provision of inputs and labour. Passive members are receptors of information restricting their involvement to participation in group events or as subscribers of group publications. Based on this classification, only 28% ($n = 36$) of WANTFA respondents were found to contribute to group research with the remaining 72% ($n = 91$) mainly being receptors of information (Figure 2).

As with most farming system groups, a large proportion of members only have a passive involvement; however, the extent of passive membership is comparatively higher in larger, geographically dispersed groups such as WANTFA (Hassall & Associates 2004; Llewellyn 2007). A higher proportion of passive membership may negatively impact member commitments as well as connections between them and is an issue that deserves more attention (Macdonald & Poniatowska 2011).

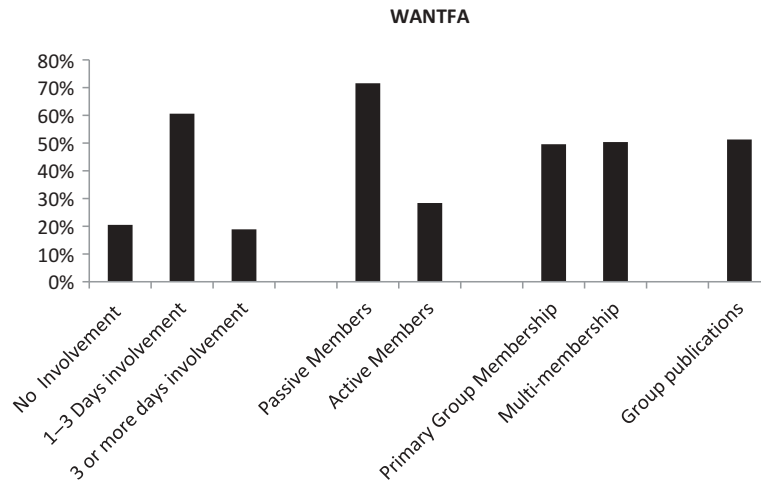


Figure 2. Extent of WANTFA member involvement and preferred means of learning ($n = 127$).

While distance was identified as one of the main reasons for lower member engagement in WANTFA group activities, multi-group membership also seems to play a role. More than half (50.2%) of the respondents have memberships in other regional or local groups (see Figure 2), all of which only have a passive involvement with WANTFA. Thus, local group membership seems to compete for member commitment towards WANTFA.

The geographically scattered membership along with the large group size further challenges the ability of the group to effectively cater to the diverse interests, priorities and expectations of its members. From the information gathered from the interviews, it seemed that the group's coherence and identity is vulnerable to the needs of members, with some having vastly differing attitudes and varying levels of commitment to the original aims. For example, a few members have concerns regarding group research not being localised, while some others are in the group for its legal affiliation rather than its original aim. Such divergence can lead to members moderating their involvement, or leaving the group over time.

As discussed earlier, reduced member involvement in larger groups presents challenges in connecting group members on a regular basis, unlike local groups where members meet more frequently due to their physical proximity. Wenger et al. (2002) noted that limited member connections in larger geographically dispersed groups make it difficult for members to make their presence felt and they normally resort to technologies that are not real substitutes for face-to-face interactions. Technological replacements further inhibit member connections, in the sense that, unlike in-person meetings, they do not offer easy opportunities for informal networking. In such cases, it takes more intentional effort for members to consult the community for help, spontaneously share ideas, or network with other communities.

Typically, with the case of WANTFA, group publications are the most popular medium adopted by the group for the dissemination of information. The survey results

indicated that 51.3% of the respondents' prefer group publications as the most effective means of information dissemination. This finding is supported by another survey conducted by the group, where the group's quarterly journal emerged as the best information source adopted by the group (WANTFA 2011). Field days were indicated as the preferred means of learning by almost half (48.7%) of the respondents. The higher preference for group publications over field days among WANTFA members was justified by a committee member as:

Being state-wide it's hard to get the membership from throughout the state. We have two big field days one just after seeding – early post-emergent and the spring field day and the main draw for it most probably would be a couple of km from the site. We are sort of certainly not impacting the whole membership by getting the field days here but I guess we try to focus on the research side of activities and I guess we gather some information from those rigorous trials and give that back to the members through the journal (Interviewee no. 04, Male, WANTFA Committee member).

The discussion so far has highlighted some of the main challenges that WANTFA is facing in terms of attracting member commitment and engagement in group research and development activities. The recent fall in WANTFA membership, however, is not fatal and is part of the process of evolution of the group. WANTFA through their broader reputation as experts in their field and their well-established networks could play a key role in carrying knowledge on conservation agriculture beyond the boundaries of its membership. The decision to start a new local group in the central grain belt region is expected to improve member involvement in its research and development activities. Mutual engagement would be locally produced in contrast to being required across, the whole membership. Mutual engagement in this case would be reinforced and maintained by the personal commitment and interaction of the members and less by efforts from the management. Similarly, joint

enterprise can be defined by what the local group understands about conventional farming. The local group is also expected to add to the social aspect of the group.

4.2 Mingenew Irwin Group (MIG)

MIG is a regional group based in the northern agricultural grain belt of Western Australia, covering approximately 300,000 hectares, across the Mingenew and Irwin areas. It was officially formed in 1998 by the merging of two Land Conservation District Committees and focused on integrating farm production and 'landcare' to encourage economically and environmentally sustainable agriculture in the region. From there the group grew slowly to reach a membership close to 100 by the tenth year and grew rapidly to nearly 200 members in the next 4 years (Gianatti & Carmody 2007; GGA 2011). As part of its research and development activities, the group organises nearly 70 small plot trials, farmer demonstrations, and independent trials for product suppliers and NRM on ground work. Recently, the group added livestock as another dimension to its sphere of activities. The MIG today is considered one of the most successful farmer groups within the state and was awarded the 'Innovation in Sustainable Agriculture' award as part of the National Landcare Awards in 2010. While developments to date indicate the steady progress MIG has made over the years, a CoP analysis of the group would enable a better understanding of the competence of the group to continue as an effective farmer learning structure.

From the beginning, MIG has maintained a strong focus on being predominantly grower-led and managed while being strictly confined to its region of operation and accommodating newer aspects as part of negotiated goals. This has played a key role in influencing the group structure and mode of operation and considerably influences the mutual commitment of members to group research and development activities and the strong bonds between them. A grower-led management committee

determines the direction of the group. The committee meets once a month, except during the peak season of seeding and harvest. Members often nominate themselves for positions within the management committee; however, the final decision is by an election at the annual general meeting of the group. Operational support for the group is provided by its Research and Development Division while the Environmental Division is driven by farmers. The division committee meets on a regular basis with project staff to provide feedback on progress, develop new themes and ideas for upcoming projects, and ensure that ownership of growth and direction of the group is managed by the members. The projects, trial works and extension activities are then jointly undertaken by group members and staff. Thus, the joint enterprise centred on the process of creating and disseminating information for agricultural development in their region builds a mutual interaction among MIG members. This facilitates management of the group as a social learning structure and plays a key role in influencing member engagement in group activities. The organisational structure of the group also provides a relatively undemanding environment, in communal terms for the group leaders. Leader 'burnout' is a common concern often noted among farming system groups; however, in the case of MIG, members seem more willing to take up leadership roles and commit both time and resources towards group research and development activities.

The MIG survey results indicated a high level of member engagement in group activities. Of the 46 respondents, more than half (54.5%) spend 3 or more days annually in group research and development activities with a considerable proportion (26.3%) spending 10 or more days a year. Relatively, smaller proportions (4.3%) have no involvement. While 45.6% ($n = 21$) of respondents have only passive involvement, more than half (54.4%) are actively involved in group research and development activities. Of the 30.4% ($n = 14$) of MIG respondents that have membership in other groups, most ($n = 12$) are more involved with MIG (see Figure 3).

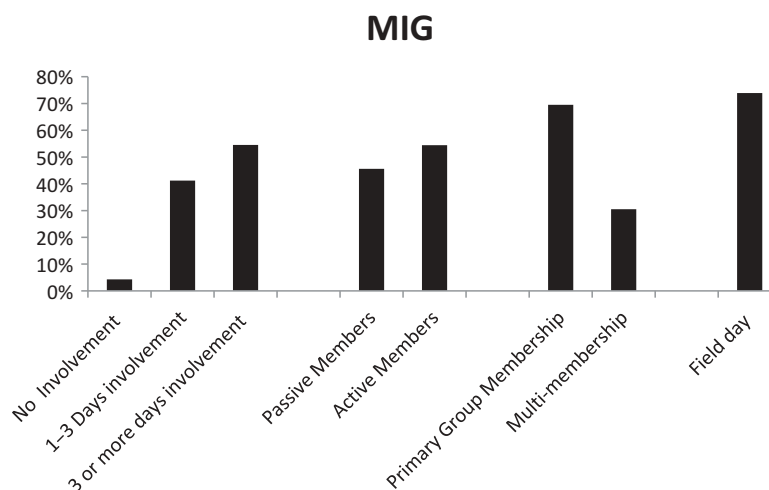


Figure 3. Extent of MIG member involvement and preferred means of learning ($n = 46$).

Indeed, the high commitment of MIG members to the joint enterprise of the group could be related to the explicit applicability of the information generated and disseminated by the group. However, the desire to stay connected with other growers in their region also emerged as an important reason for MIG members to be involved in the group, as explained by one of the members:

It has certainly helped to give exposure to a lot of research done in your backyard. Apart from that it has given an opportunity to meet and talk to so many different people from different organisations, whom I normally could not meet otherwise, like scientist from CSIRO. The social side of coming together is satisfied, which is a must for rural life in Australia with so much isolation. The group organises events where we sort of just interact with each other and that matters a lot (Interviewee no. 15, Male, MIG Ordinary Member).

People often collaborate not only in the expectation of concrete returns (e.g. getting an answer to a technical problem), but also for intangible reasons such as the desire to meet farmers with similar interests, learn from others and help others in common community (Wasko & Faraj 2005; Amin & Roberts 2008).

For MIG members, field days emerged as the preferred means of learning with 74% ($n = 34$) of the survey respondents indicating it as the best means of disseminating information adopted by the group. Most MIG field days are well attended, with some recording attendance more than 350 people (GGA 2011). Field days were identified as an important platform for gaining information and a meeting place where growers could interact with other growers and members from the broader industry. These interactions form an important part of learning and building connections within the communities and form one of the most valuable activities within a community (Wenger et al. 2002). Apart from field days, MIG organises various other events such as field trips, workshops and conferences, most of which are well attended.

The regularity and relatively high attendance at most MIG events ensures that, even though members may be associated with the group in a passive manner, the group identity was built on the basis of regular interaction. Constant interaction among members helps to build trust and personal relationships necessary to incite the 'we' feeling where members are more willing to contribute, ask for help and value the information coming out of the group (Wenger et al. 2002) as evident in the following quote:

The reason why we got involved with the group is that MIG is a very progressive group. It has great leadership, enthusiasm and brilliance and all the potential to put money into your pockets. MIG has some real progressive thinkers and we are able to ride on their backs. I think it's more of a source of pooling together your ideas, which could be pooling together your problems and experiences. We have got a variety of age groups – so it is a combination of ideas. The enthusiasm comes from there. It is an ongoing education program (Interviewee no.18, Male, MIG Ordinary Member).

Llewellyn (2007) reported that invariably members belonging to a local group value the information coming from their group more, but MIG members appreciate the information from their group significantly more than growers in local groups in other areas. It could be concluded that MIG has been successful in developing a strong sense of intimacy to the joint enterprise, close interactions around shared problems and a sense of community. These characteristics closely resemble the description of successful learning communities by Wenger et al. (2002) that have the potential to build into a lasting community. In this sense, MIG continues to play a key role in addressing the information needs of its members.

4.3 *The South East Premium Wheat Growers Association (SEPWA)*

Formed in the early 1990s, SEPWA is a group based on the south coast (Esperance zone) region of Western Australia covering 5.532 million hectares. It is considered to be one of the largest grower groups within the state in terms of both geographical coverage and membership. The group was mainly formed in response to the widespread perception that wheat in the Esperance region was of inferior quality to that of other regions within the state. The idea was to assist growers within the region to produce premium quality wheat, thereby improving their market position. Since then SEPWA has moved on from their original objectives and has now adopted a broader approach, with aims to improve profitability, sustainability and quality of grain production in the Esperance region. The group membership steadily grew to nearly 250 farm businesses by 2010 and now stands at 200 (GGA 2011; SEPWA 2013).

An analysis of the group from a CoP perspective identified some resemblance between SEPWA and MIG in terms of their evolution and mode of operation. Similar to MIG, SEPWA has broadened its negotiated goals over the course of their evolution and adopted a group structure that promotes contributions from members towards the group research and development activities. The group is managed by a committee dominated by farmers, with operational and technical support provided by four subcommittees of farmers and a team of staff. The four subcommittees of the group are: (1) Finance, Sponsorship and Governance; (2) Trials; (3) Events and (4) Ladies subcommittee. While, the executive committee meets once a month except for seeding and harvesting, the subcommittees meet as per need.

Although, the group has restricted its area of operation to the Esperance region, for effectively covering the vast stretch of the region, SEPWA organises its research and development activities mainly in collaboration with the Department of Agriculture at Esperance and other local groups in the region. In an effort to better address the information needs of its widely dispersed membership, particular consideration is given towards selecting members from different regions in the executive committee.

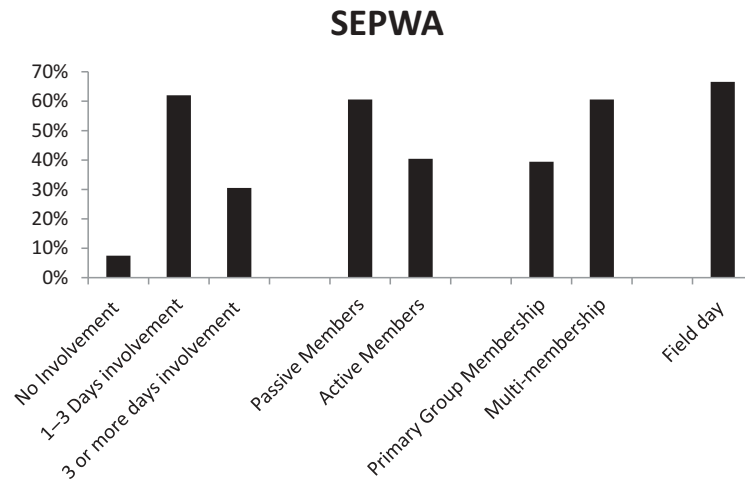


Figure 4. Extent of SEPWA member involvement and preferred means of learning ($n = 66$).

These measures are seen as effective means of staying relevant and connected with its vastly dispersed membership base, most of which have membership in other local groups in the region.

In the survey conducted among SEPWA members, of the 66 respondents who participated, 60.6% ($n = 40$) have membership in other local groups in Esperance region. Fewer (20.4%) are members of WANTFA (Figure 4). With most of its members associated with the local groups, organising their research and development activities in association with these groups forms a significant means of influencing the mutual engagement of SEPWA members around the group joint enterprise. Among the respondents having multi-group membership, 45% ($n = 18$) were found to have only passive involvement in SEPWA.

Our survey results indicate that while most (62%) of the SEPWA respondents spend between 1 and 2 days per year in group research and development activities, 30.5% ($n = 20$) spend 3 or more days, with the extent of non-involvement limited to a relatively small proportion (7.5%) of members. Further analysis revealed that although more than half (60.6%) of the respondents have only passive involvement with the group, almost 40.4% ($n = 26$) were noted to have an active role (Figure 4). The proportion of active members within SEPWA seems comparatively higher, taking into consideration its vastly dispersed membership. The networking role of the group seems to play a major role in influencing member involvement. However, in collaboration with local groups, SEPWA manages to conduct group trials and projects across the vast Esperance zone, and to a large extent, this helps to overcome some limitations associated with the geographically dispersed membership. Most group events are well attended and this ensured that the members stay connected.

However, based on the interview results, distance has negative implications in terms of influencing member commitment towards group research and development activities, with members expressing limited willingness

to take up the leadership role. Concerns were also raised about the ability of the group to meet the specific information needs. Thus, the findings reveal that large, dispersed groups such as SEPWA need to intentionally invest more effort in ensuring mutual engagement of members towards the group joint enterprise. Deliberate attempts need to be made in meeting the specific information needs of members and promoting member contribution and involvement in the group research and development activities.

The above sections focussed on an independent CoP analysis of each of the selected case study groups, mainly based on the extent of member commitment and involvement in the group research and development activities, membership pattern and the mode of information dissemination adopted by the different groups. Figure 5 provides a comparative illustration of the extent of member involvement and mode of learning adopted by the different groups, to provide a clearer picture on the extent of difference observed within the groups. The next section focuses on discussing the results.

5. Discussion and conclusion

This paper applies the CoP framework to highly organised farming system groups in Western Australia engaged in the generation and dissemination of grower relevant information. The three dimensions of the CoP model, namely mutual engagement, joint enterprise and shared repertoire, are applied in the context of regionalised and geographically dispersed groups to consider the effectiveness of these groups as farmer learning structures. The framework adapted for the study may help to understand the emergence, evolution and role of farming system groups and highlight factors that could play a key role in improving the efficiency of these groups in agricultural research and extension.

Morgan (2011) notes that the three dimensions of CoP (mutual engagement, joint enterprise and shared repertoire), although mentioned as separate entities, in

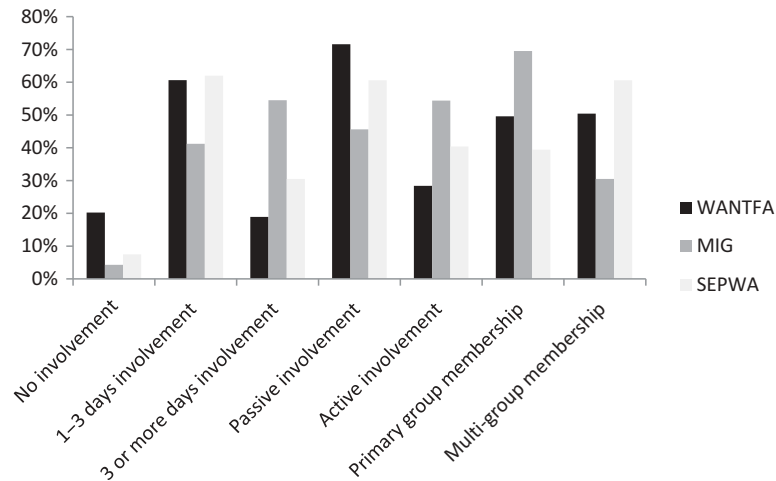


Figure 5. A comparative illustration of the extent of member involvement and membership pattern in the case study groups.

practice are closely interwoven and related. Often, mutual engagement is noted as the strongest where there is a firm commitment to the joint enterprise, and such engagements produce the best opportunities to develop shared repertoires. All three groups selected for the study were farmer-led and managed and dependent on the mutual engagement of members for their sustenance. The activities of these groups centre on the practical issues and challenges experienced in farming and focused mainly on the generation and sharing of relevant information to improve their farming practices. For all groups, the initial level of engagement originates from the already existing networks of growers, which is then improved and strengthened by involvement in the joint enterprise where members are engaged in the process of exploring and learning about negotiated common goals. In the process, members develop a shared understanding that binds them together and is built upon as the group evolves.

The case study groups demonstrate that mutual engagement and commitment towards the joint enterprise develops more spontaneously in groups where members interact regularly. Frequent interactions develop stronger bonds and a sense of communal identity among members and they become more willing to contribute and participate in the group activities. With most research and development activities based in the local area, local groups are comparatively more competent at influencing mutual engagement by members towards the joint enterprise. Not disregarding the high relevance of information generated by local groups, the constant interaction among members plays a key role in influencing their commitment towards group research and development activities. The shared repertoires developed by the group in the process such as regular meetings and discussions and the different events organised by the group as part of their extension programme further enhance the process of social bonding among members and influence group learning. Group events, such as field days⁴ with high member participation, form an important platform for

members for learning and to connect with others in the group. Literature on farmer learning behaviour suggests that field days are a preferred means of farmer learning as they prefer to learn through hands-on learning and one-on-one discussions rather than through printed media and the Internet. They value learning from the ideas and experiences of their peers and sharing their experience (Franz et al. 2010).

Geographically dispersed groups on the other hand strive hard to overcome the challenges associated with influencing the mutual engagement of members towards the joint enterprise. Limited member interaction within the geographically dispersed groups results in less connectivity among members, falling short of developing a communal identity with members less willing to engage in group activities. While distance makes connecting members challenging, a greater diversity of interests, priorities and expectations also makes it difficult to define the focus and scope of the domain. Besides a high proportion of members also have membership in other smaller local groups which influences member commitment to the larger wide-spread groups. Resultantly, larger wide-spread groups are found to have a higher proportion of members that are passive receptors of information in comparison with members actively contributing towards group research and development activities.

While multi-group membership is prevalent among larger group members, it suggests the need for larger group members to join local groups in their region to meet their specific information needs. With a widely dispersed membership base, it is not practically feasible for larger groups to deal with more specific information requirements of growers from the different regions. Rather, they tend to focus on aspects with wider applicability. With the increased challenge of attracting member involvement, larger geographically dispersed groups often resort to technologies such as group publications and websites to disseminate the information generated. These technologies further reduce the chances of face-to-face

interactions among members in that they inhibit opportunities for informal networking. This was apparent with the limited participation of members in group events, especially field days which form the major platform for member interaction. This impacts the ability of the groups to function as social learning structures.

Networking with smaller local groups within their region of operation works for groups with a defined coverage area, but those with a wide spread membership find the spatial and relational proximity among members more challenging. Regardless of the difficulties outlined above, larger wide spread groups with their wide networks play a key role in the dissemination of information outside the boundaries of group membership.

Continuous negotiation of the joint enterprise and the rise and fall in group membership is the natural process of evolution of groups which continue to be sustained as long as members find value in their constant interaction.

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Notes

1. Innovation here refers to the process that adds value or solves problems faced by farmers.
2. Grow and evolve continuously.
3. The GRDC is responsible for planning, investing and overseeing, research and development, and delivering improvement in production, sustainability and profitability across the Australian grains industry.
4. Field days are one of the most significant means of learning by farmers. They not only form an important venue for learning by actual participation but also provide an opportunity to interact with others and learn from their ideas and experience.

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