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BEYOND BEEF AND BARLEY

Table 4.1: Case Studies in Diversification: Summary of Social and Organizational Factors

	Business Form	Household and Labour Relations	Organizational Innovations	History and Context	Public Agency and Industry Links	Local Linkages and Challenges
Grain and specialty crop farm with cow-calf operation	Sole proprietorship.	One principal operator. Spouse works off-farm as teacher. Long-term seasonally hired man critical to farm operation over two generations. Casual labour employed for cattle operation.	Substantial cow-calf herd plus diversified crop rotation on expanding land base. Caraway and dill recently added to cropping system. Polish canola used as a companion crop for caraway. Farm includes 450 acres of native pasture preserve.	Farm inherited from parents. Demise of Crow, made conventional crops less remunerative. Neighbour innovator provided model. Mother's knowledge of garden-scale spice production also critical.	Self-funded. Experience on FDRB provided information on diversification, management experience, and industry contacts. Member, Herb and Spice Association.	Neighbour provided seed, advice on spice production and markets. Collaborated in on-farm research. Markets through specialty crop broker in region. Strong community connections through hockey.
Family stock farm, B & B	Family farm and tourist business, with share in small abattoir and meat shop.	Couple partners in farm and farm-based business. Casual employees only on farm. Meat business provides full-time employment for local youth who trained at technical college.	Husband, wife, own cattle. Husband partner in meat business. Converting to grass, network with HRM families. Bought second house for B & B market via tourism directory and church network.	Brothers farmed until couple took over. Wind erosion led to experiments with chem fallow. Opted for grass and cattle as sustainable system. Had investment in local feedlot with brother.	B & B listed in TISASK. Small REDA loan to working partner in meat business. REDA assisted with feasibility study. FCC loan to farm. NISA participants.	Strong ties to local community and church. Ties to family, e.g., farmer nephew exchanges labour for machinery; father of wife located used abattoir equipment.
Mixed farm and pregnant mare urine operation (PMU)	Family farm, one (female) owner-operator. Operator took over management when spouse died, and other relatives involved sought to exit operation.	Three children live at home, including teenage son who works with cattle herd. One full-time (seasonal) hired labourer, lives on premises, paid monthly salary.	Horses leased from outside party. Urine production (quota) contracted to Manitoba buyer. Barn built to buyer specs. Field reps. (include one female) inspect animals monthly and provide technical advice.	Farm crisis of 1980s catalyst for diversification. Owner-operator has background in nursing and farming.	Government loan on land. CU loan on horses. Family loan for barn. Member North American Equine Ranching Information Council.	Presence of two other PMU operators (one female) in area crucial to establishment and survival of operation. Access to highway, trucking services important.

Table 4.1: Case Studies in Diversification: Summary of Social and Organizational Factors (continued)

	Business Form	Household and Labour Relations	Organizational Innovations	History and Context	Public Agency and Industry Links	Local Linkages and Challenges
Pedigreed seed farm with associated livestock operation	Intergenerational production co-operative.	Restructuring due to retirement, death, and financial losses. One principal operator. Female members provide seasonal labour. Sister-in-law has separate livestock operation as do principal operator & spouse.	Sell wholesale to large grain companies. Long-term working relationship with seed cleaner and marketer. Considering sale of shares to nonfarm relatives to assist with repurchase of land lost to lenders.	Farmed with father and brothers. Formalized co-operative to make contributions and equity transparent. Purchased land with pedigreed seed crop. Diversified into other seed crops.	Experience as CWB delegate useful in marketing. Former chair of crop insurance board. Also belongs to NFU and local credit union. Borrowing exclusively from banks.	Mobilized seed growers to stage annual seed show in regional centre. Active in local church. Recruitment and retention of quality farm labour difficult. Compete with local manufacturing jobs.
Organic farm and seed processing facility	Verbal partnership: husband, wife, and son.	All partners active on farm. Married son commutes 55 km to farm and runs cleaning/processing plant. One part-time worker. Both wives work off-farm. Future of farm uncertain.	Two generation partnership. Rent additional land from relative. Grow and process organic grains, oilseeds, speciality crops. Market primarily to Europe and USA.	Classic wheat/fallow farm turned organic due to agrochemical costs. Cleaned grain for local farmers, then converted farm to organic. Processing adds value, provides market.	Organic farmer network and OCIA provide support, broker contacts, production, and processing information. SRC used farm as research site.	Close to rail lines and highways. Little use of local services except banking. Parents involved with regional park. Viewed locally as successful diversification.
Diversified game farm and processor	Incorporated farm. Shares owned by husbands and wives in two related households.	Main operator, spouse, and children involved in operation. Male partners have additional off-farm work. Hire seasonal labour.	Sell breed stock, meats and by-products (e.g., velvet, hides, horn) from the farm gate. Produce own grain for feed. Supply meat to local stores.	Early importer of bison. Principal operator worked off-farm. Other family members operated farm. Avid hunter. Built herd slowly. Diversified game operation with help of family members.	Principal operator involved in several game producer organizations. Loans from FCC and ACS. Assistance from provincial agencies promoting speciality livestock and diversification.	Wife provides farm tours and meals. Work with regional meat packers. Work with local Indian reserves on game farming start-ups.

Table 4.1: Case Studies in Diversification: Summary of Social and Organizational Factors (continued)

	Business Form	Household and Labour Relations	Organizational Innovations	History and Context	Public Agency and Industry Links	Local Linkages and Challenges
Poultry and fish farm, water treatment systems	Incorporated farm and incorporated water treatment systems company.	Parents, son, and son-in-law principal operators. All family members contribute while pursuing off-farm careers. Other extended family members work on farm.	Family members share key decisions and planning. Fish operation diversified to include hatchery and "grow-out" facility. Develop and market water systems and equipment. Market fish to province and private producers. Share information.	Family moved from another province and relatives followed. Farm purchased with view to future retirement. Farm operation grew to rival urban careers in importance.	Work with SRC and PFRA testing water systems and equipment. SRC provided aqua-culture course and new species. IRAP subsidized research. WDF loan. Network with other fish farmers.	Relatives have moved to area from out-of-province. Provide farm tours, host exchanges. Highway access and within commuting and local call range of city. Participate in local community organizations and events.
Community shared agriculture (CSA) market garden	Sole proprietorship.	Principal owner-operator does some off-farm work. Wife works off-farm. Family members work for produce shares. One part-time employee.	Organic farming and CSA direct marketing.	Twenty years organic gardening experience; carpentry skills used to build solar greenhouse.	PFRA provided CSA information and contacts.	Barters produce for land. CSA shareholders involved in planning. Networks with other CSA operations. Support by local media in marketing.
Community shared agriculture (CSA) farm	Verbal partnership involving three couples: parents and two daughters with their respective husbands. Revenues split among three households.	Intergenerational farm. Daughters and father provide majority of labour. Other three partners have off-farm jobs but farm on weekends. Third generation young but involved.	Shares provide 32 kinds of organic vegetables and fruits. Also sell poultry, beef, pork. Link to shareholders via newsletter, surveys, volunteer farm work. Processing adds value. Share market, surpluses, information via CSA Network.	Grain farm was not profitable. Women sought to expand small market garden. Learned about CSA at PFRA-sponsored seminar.	PFRA provided info on CSA and assisted with marketing. Common Ground Learner Center, SFFAF, Regina Environmental Group, Sask. Rural Life Ministry supported CSA formation.	Creates links to shareholders families in two urban centres. CSA markets eggs, maple syrup, honey from neighbouring farms. Surplus production sold at farmer's markets. Media coverage helpful.

Table 4.1: Case Studies in Diversification: Summary of Social and Organizational Factors (continued)

	Business Form	Household and Labour Relations	Organizational Innovations	History and Context	Public Agency and Industry Links	Local Linkages and Challenges
Compressed forage producer and processor	Written partnership between husband and wife.	Partners active in operation and also work off-farm. Several full-time and seasonal employees. Majority from farms.	Sought value-added market to justify irrigation. Researched technology abroad. Brokers facilitate international sales.	Off-farm income helped with purchase of land. Utilized technical experience to design plant.	Financial support from provincial and federal agencies.	Neighbours provide additional forage. Processor does harvesting. Transportation challenging. Utilize local businesses and services.
Berry producer and processor	Written partnership.	Husband and wife share management; seasonal hiring of neighbour women and teens.	Linking to other growers; market via small and large store outlets.	Returned to inherited farm after nonfarm career; sought viable enterprise.	Agriculture Canada, Inspections Branch; Horticulture Dept. U of S; PFRA, PARD, ADF.	Use local shippers, suppliers & labour; wholesale via stores and chains regionally and nationally.
Maple syrup producer	Incorporated joint venture.	Five shareholders share work and manage by consensus. Limited family involvement except for wife of one partner.	Joint venture of unrelated partners. Evaporator unit on trailer can be moved between sites.	Initiated by Aboriginal partner and a farmer who had consulted PFRA. Several partners have diversified farms. All have off-farm work experience, e.g., school teacher.	PFRA provided information and equipment. Local RDC provided business consultation and had temporary equity position.	Indian partner taps trees on reserve. Other trees tapped on neighbour farms. Final processing in kitchen rented from local restaurant.
Fruit Producers	Joint venture involving a dozen partners from local farm and nonfarm households. Considering limited partnership.	Work collectively on major tasks (planting orchard, irrigation installation). Share maintenance tasks. Age range 30–60.	Viewed as social and economic project. Studying options for processing and marketing berries.	Past RDC director originated idea. Friends linked through local Lion's Club became partner-investors. Meetings called to seek additional partners.	PFRA designed irrigation system and funded water tests. Use former RM well in return for upkeep and public access. Seek to purchase former pasture land leased from province.	Local town council supportive. Partners good friends, belong to the same organizations. Credit small-town atmosphere with successful formation of joint venture.

Table 4.1: Case Studies in Diversification: Summary of Social and Organizational Factors (continued)

	Business Form	Household and Labour Relations	Organizational Innovations	History and Context	Public Agency and Industry Links	Local Linkages and Challenges
Production co –operative and speciality crop processor	Intergenerational production co-operative in joint venture with major co-operative to run speciality crop cleaning plant.	Five member-operators plus 2–3 hired men. Hired manager at off-farm plant. Runs seven days/wk with two shifts/day. Export to Central and South America, Middle East and Africa. Spouses run small businesses locally.	Value-added diversification. Sought partnership with grain firm (which took minority position). JV income split equally among farm members. Farm income split according to land and labour contributions.	Co-operative farm started by three families. Second generation developed seed-cleaning business. Formed joint venture to expand at rail-line site, included elevator slated for closure.	Used established consulting firm to do feasibility study. Co-operative structure allowed new ventures and partnering with larger organizations.	Original partners in production co-operative farm were neighbours and family. Farm has history of custom work in region. Strong connections to farm and business community.
Trailer manufacturer	Closely held corporation and joint venture with distributor.	Hired general manager; several dozen workers, mostly local. Constant effort to locate skilled labour. Employee compensation above industry average; managers involved in profit sharing.	Sole proprietorship plus investment in partner firm providing parts & distribution. Farm provided base for trailer firm and now custom farmed by neighbour.	Family farm required trailer to transport combine header; manufactured additional trailers on farm in response to local demand.	NRC, SRC provided technical support. U. of Regina Co-op Work Program provided student employees.	Expanded factory in local community despite challenges to distribution and sourcing of inputs Financial and service donations to local projects. Hopes to keep business in family.
Family farm and farm directory company	Family farm and non-family corporation.	Two principal shareholders active in business. Employ 15 sales reps, 5 office staff. Wife of principal runs additional farm-based riding business.	Joint venture initiated by farmer partner. Rural base lends legitimacy. Desktop publishing and sales do not require a storefront.	Principals experienced in agriculture, business, and public service. Saw opportunity to market unique product.	PARD funding to explore US market. PIMA membership added markets. Added input directory tendered by government.	Strong ties in agriculture and business. Local business supportive (credit, etc.). Local post office crucial. Easy highway and city access.

Table 4.1: Case Studies in Diversification: Summary of Social and Organizational Factor (continued)

	Business Form	Household and Labour Relations	Organizational Innovations	History and Context	Public Agency and Industry Links	Local Linkages and Challenges
Abattoir serving niche markets	Partnership.	Two active partners in operation plus a skilled meat cutter and four casual employees.	Joint venture. One partner had farmland on which abattoir located. Elected to build to federal standards so they could sell in other provinces.	Identified business opportunity in niche markets serving ethnic consumers and exotic livestock producers. One partner has abattoir experience. Other partner has MBA.	Food Production and Inspection Branch, Agriculture & Agri-Food Canada provided advice and approved facilities	Serve local specialty livestock producers. Strong links to ethic markets. Transportation challenges: small loads, distance to highway, few carriers, high prices.
Custom Feedlot	Farmer and manager-owned joint venture.	Managing partner and spouse own significant shares. Four farmer partners. Experienced workers mean lower vet bills. Six employees. Managers live on-site.	Cater to smaller feeders with lots of 20–50 head, mostly for finishing. Good place for local farmers to sell barley that does not make malting. Recruit cattle investors via advertising, personal networks in cattle business. Welcome visitors.	Partners bought in because saw need for a feedlot in the area. Local bank provides operating capital. Managers bring experience in agribusiness and custom farming. Cattle volume and profits up and down with interest rates, commodity prices, programs.	Belong to Sask Cattle Feeders Assoc., a small organization. Receive advice, technical support from SAF. Stabilization programs useful but come and go.	Seek additional shareholders. Location facilitates access to markets and inputs. Protected site, good quality water. Captures most economies of size when near capacity. Challenge keeping lot full, balancing shareholder and company interests.
Hog barn and feed mill	Limited partnership.	Livestock management services co. owns 50% of Class A shares and manages barn. When fully operational will employ 5 full time.	Purchase of >4 limited partnership units (@ $5,000/unit) entitles investors to deliver 80 tonnes of feed grains to operation. Limited partnership results in tax savings for investors.	Local farmer investors partner with livestock management co. to develop limited partnership. Additional capital raised from bank loans and local sale of debentures.	Directors have links to RDC and SPI. SAF and PFRA provided technical support. Local ACS agents supportive but partnership unable to reach agreement with ACS office.	Directors long-time residents, farmers, and businessmen. Banks, credit unions provided loans to investors and partnership. Sharing info. facilitated sale of shares. Access to utilities expensive.

Table 4.1: Case Studies in Diversification: Summary of Social and Organizational Factors (continued)

	Business Form	Household and Labour Relations	Organizational Innovations	History and Context	Public Agency and Industry Links	Local Linkages and Challenges
Specialized pulse crop processor	Multifamily corporation.	Two brothers run firm. Eleven full-time and six part-time employees. Some are relatives. Plant runs 24 hrs (3 x 8-hr shifts), 7 days/wk.	Sell mostly to export markets. Firm's innovation in processing technology boosts quality and attracts custom processing orders from other companies.	Business started by Grandfather. Passed to son and then grandsons. Family has worked many decades with specialty crops; early processors and exporters.	SEDCO/BDB loan, DREE grant, and private bank credit. CSGA a source of new cultivars.	Quality raw product available locally. Hires locally. Local community stable. Banking done in metro centre. Lack of access to rail line a handicap.
Crop processing enterprise	Joint venture.	Plant employs eight. Raw product provided by local farmer-investors.	Local community investors formed co-operative that sought proposals for joint venture. Chose TNC as partner.	Local farmers mobilized to develop value-added diversification project.	WD funded research. Sask Justice assisted with co-op structure and community bond offering. Additional funding received at latter stage from ADF and PAWBD.	Raised capital via community bonds. RDC provided much support. Women active in venture. Product env. friendly. Sought co-op sector partnership but non-supportive due to risk.
Seed potato project	Joint venture involving local farmers; American farmers (with own corporate entity), local community, provincial agencies.	Seasonal labour hired at planting and harvest. RDC hired consultants and development officer. Farmer-investors provided volunteer organizing effort.	International joint venture. Opportunity to diversify and add value to farm operations using upgraded irrigation system.	One of several related agricultural diversification and intensification projects initiated by RDC representing six communities. Community and regional network of business and farm entrepreneurs.	RDC payed development staff and consultants. SIBED grant. PFRA and SaskWater involved in irrigation system. SEDCO loan. SaskTel upgraded cellular service. Federal grant for airport development.	Local community and producers supportive. Natural gas service an asset. Many inputs purchased locally. Railways not interested in small volume. Location makes truck access costly.

Table 4.1: Case Studies in Diversification: Summary of Social and Organizational Factors (concluded)

	Business Form	Household and Labour Relations	Organizational Innovations	History and Context	Public Agency and Industry Links	Local Linkages and Challenges
Regional meat packer	Corporate joint venture involving marketing board and manager-partner. Asian investor own some machinery in plant.	Unionized (male) labour force for processing. Low turnover, hired via family connections, etc. Job training in-house. Rotate line jobs to reduce injury risk.	Joint venture with farmer-controlled board as majority owner. Process hogs in unique way to preserve quality characteristics for export markets.	Located in regional city. Bought and expanded small, struggling packer. SPI was interested in developing an additional major outlet for pigs.	City provided access to land for expansion and short-term tax abatement. Marketing board took equity position and guarantees for bank loans.	Excellent water, highway, rail access. Good supply of raw product. Motivated local workforce. Share processing technology with anybody interested.
High volume speciality crop processor	Nonfamily dual corporate structure with marketing and seed-cleaning arms.	Two manager-partners and a dozen employees. Two 12-hr. shifts. Profit sharing.	Manager-partners work closely with farmer shareholders, who provide significant share of raw product and capital. Alliance with another processor. Widely dispersed international market.	Founding partners formerly employees of multinational grain company. Investors mostly well-established local farmers who grew specialty crops.	Some directors have personal connections to local REDA board.	Founding partners used local network and customer base to raise capital and build business. Local bank provided credit. By-products fed or processed locally. Ship by rail and truck.
Inland terminal and condo storage	Joint venture between farmer-investors and a TNC grain company to build and operate grain terminal. Additional condominium storage space leased to area farmers.	Fourteen original investors took securities course to sell shares. Received commission. Recruited elevator agent from existing grain elevator.	Condominium storage (99-year lease) sold well due to attractive price and convenience. Operating agreement with TNC partner. All CAB grain consigned by terminal to grain company, which also has right of first refusal on non-CAB grains.	Organizers called public meeting, attended by 350. Class A shares sold to fund feasibility study. Class B shares sold to finance terminal. Corporate partner recruited. Provided loan and took minority equity position (Class C Shares).	Securities commission held monies in trust until threshold minimum of $1.3 million sold, and other conditions met. Learned from/ modelled on similar terminal projects.	Founding board: established farmers, many with university/ business experience. Area supports many of co-operative and community activities. Access to CN and CP lines means when contract with one rail company expires, can potentially switch.

Era and Enterprise Mix. The Classical Mixed Farm (CMF) was the numerically predominant form of farming from the beginning of European settlement in the 1880s, until approximately 1950. The typical CMF started fairly small (by today's standards) but expanded and became more specialized on its way to becoming a Modern Specialized Farm (MSF). Social, political, and economic developments—including wartime mobilization, investment, and postwar reconstruction—helped to spur the transition to a more capital-intensive, specialized agriculture in Saskatchewan. Through the 1950s and 1960s, Saskatchewan farms shed their self-provisioning attributes and internally integrated processes.

At the beginning of the transition, specialized farms kept many of the subsidiary enterprises of the earlier days. By the 1950s, however, the modal form was an MSF with a narrow mix of products. Not coincidently, the MSF provided new markets for agribusiness as there was increased investment in technologies and, along with increased product specialization, increased *process* specialization (i.e., fewer steps in the production process were carried out on the particular farm, and more inputs and specialized services were purchased). In the late 1980s, problems associated with intense specialization encouraged farmers, communities, and governments to reemphasize diversification of farms and rural economies. One outcome was the Modern Diversified Farm (MDF). This exists in many sizes, but most are large operations.

The typical CMF was a diversified crop and livestock farm. Its MDF counterpart may or may not include livestock, and where animals are part of the farming system, generally only one type of livestock enterprise is present in large numbers. For some this is a herd or flock of traditional livestock such as beef cattle, hogs, dairy cattle, or broiler chickens. For others it is some species of exotic livestock (bison, emu, ostrich, fallow deer, elk, wild boar, fish, rabbits, etc.). Moving from the MSF to the MDF model typically has meant adding one or two more specialities to the specialized cropping mix. Because of this, the modern diversified farm (MDF) might also be very appropriately labelled a "*modern multiple specialty farm*" or a "*modern diversified specialty farm*."

Primary Design Criteria. In terms of the fundamental principals guiding choices with respect to farming systems, the traditional mixed farming system could be characterized as resource driven. Adoption of a generalist strategy (Levins 1968, cited in Anosike and Coughenour 1990) allowed the farm household to make full use of available labour and capital, as well as land resources, which could be quite variable in terms of agronomic characteristics. The MDF tends to be, first and foremost, market driven. While cropping systems and production strategies continue to reflect basic ecological conditions and resource endowments, these can be modified with investments in agrochemicals, specialized livestock facilities, irrigation, and other sophisticated technologies. Within limits, the crop mix and the production system are adjusted in response to external market signals.

Product and Process Specialization. The CMF was a relatively integrated operation. There were strong links among the various enterprises and the household in terms of inputs and outputs. By contrast, the MDF is specialized as to commodities but also with respect to intermediate products. Process specialization takes place alongside product specialization (White and Irwin 1972). Calves may be sold or transferred to feedlots for fattening, hog operations may specialize in one stage of animal production. Feed may be purchased along with other supplies and custom services. In this respect, the MDF reflects a radical reorganization of agriculture that has taken place over several decades. While many land-based and labour-intensive activities remain a part of farming, other processes or activities have been supplanted or taken over by processors and by firms providing inputs and services to farmers. Activities that were formerly part of the farm sector economy, including some that involved adding value at intermediate or final stages of production, have been appropriated by nonfarm firms (Goodman and Redclift 1991).

In this sense, the MDF may be more specialized than the counterpart MSF operation of earlier decades, not to mention the CMF, which was more diversified in all respects. Compared to the MSF, with its reduced set of traditional crop and livestock commodities, the MDF may be

engaged in the production of more kinds of crops, and perhaps more exotic forms of livestock. On the other hand, many aspects of process specialization have continued to transform the character of farming.

The CMF had different implications for diversity and biodiversity at the field, farm, and landscape levels. The CMF frequently included mixed stands of tame hay or feed grains. Combined with smaller fields and less use of chemical pest control agents, this reduced negative impacts on wildlife and beneficial predator populations. The MDF, like the MSF, is likely to feature pure stands of specialty crops on a fairly large scale, (e.g., alfalfa for export). Where livestock is present, it is more likely to be an intensive form of animal agriculture, on a large scale. These developments involve a loss of diversity at the field and farm level, and may increase ecological risks and impacts.[1]

Process specialization implies increased reliance on nonfarm resources and technology. MDF operators depend on a wide variety of technological and informational innovations, and are tied into networks that transcend or bypass their local communities, commodity groups, and farm organizations. Producers need to be able to negotiate with government and business bureaucracies in order to access project-specific sources of capital. The cumulative effect of this change in the human capital necessary for the successful MDF operation is to hasten the demise of apprenticeship models as a way to gain farming skills and entry into farming. Producers now need advanced education—indeed, a broad education and nonfarm work experience is one route to successful diversification.

For the CMF, self-provisioning was important in the selection of crops and livestock. Larger households and limited incomes encouraged home production and consumption. Self-

[1]Sometimes these impacts are second and third order effects from changing farm practices due to specialization and increasing scale. For example, many herbicides used today carry a label warning that crop residues from sprayed crops, e.g., straw and chaff, should not be fed to livestock. As a result, farmers should not bale crop residues produced using expensive fertilizers, nor should they let cattle out in the field after combining—a practice which allowed cattle to forage for lost grain and missed swaths, and graze in grass-filled potholes. This practice of gleaning also meant that farmers would leave crop stubble standing over winter, which trapped snow and helped prevent soil erosion from wind and spring run-off.

provisioning also meant that a significant proportion of farm production was consumed or used in other parts of farm production processes. The CMF supplied many of its own inputs, capturing the value that was added in the process. Milk cows provided dairy products for the farm household, and for local markets, while skim milk—which farmers today buy commercially in feeder pig rations—was fed to pigs. Dockage from grains was fed to chickens. Poultry provided meat and eggs, as well as cash income for some members of the household. Horses might be sold but were raised primarily as draft animals. Grains and fodder crops were fed to farm livestock or marketed directly. Animals could be butchered for household use or shipped to regional markets.

Alternative production pathways and end-uses provided some flexibility as market and agronomic conditions changed. Changes in the relative prices of livestock and feed grains, for example, could be met by changes in feeding regime or livestock numbers. Wheat was the key cash crop for most farmers and remained the lynchpin of the farming system. The self-provisioning farm had implications for other parts of the production system. Fewer inputs had to be manufactured, financed, and transported to the farm, and the need for "middlemen" and marketing was also more limited.

Technology, Flexibility, and Control. The technology of the CMF could be characterized as low input and relatively low tech. The MSF moved to a higher level of input use involving a mix of low- and higher-tech products. The MDF is also a high-input regime, and there is much more emphasis on high tech and very high tech, i.e., advanced microelectronics, computers, biotechnology, and specialized equipment. The cost of inputs accounts for a very large part of the total cash flow, and many of these industrial inputs come to the farm as "black boxes." Farmers may have little direct knowledge of their mode of action or their engineering, and little ability to fix, to modify, or to evaluate the formulations and machine components involved.

The MDF involves both gains and losses with respect to flexibility. Machines, chemicals, and specialized genetic materials alter the parameters of production. New crops give the farmer more choice and ability to modify traditional rotations. On the other hand, investments in

specialized equipment or facilities may preclude easy shifting of resources as market conditions change. As has increasingly been the case in the MSF, the cost of these capital inputs may also force the farmer to concentrate on one or two commodities that promise a more favourable return (Gertler 1992). In these aspects, the MDF may be rendered less flexible than earlier diversified forms.

Whereas the MSF depended upon government services, universities, and input suppliers for production advice, the MDF operator relies upon additional sources of information. Processors, brokers, and specialty business groups provide knowledge and technical support for specialized products and processes. Processors and input suppliers may also have greater control over on-farm production as a result of contracting, licensing, and other forms of vertical integration with MDFs.

Business Strategies and Sources of Capital. CMF operators were innovative out of necessity, modifying or building their own machines, or adapting production practices to particular circumstances. Yet the CMF operator was also typically conservative with respect to investment in new products or adoption of new approaches. The orientation was more towards risk-minimization than profit-maximization. The emphasis was on security of tenure and income rather than on growth and expansion. Strategies for survival and for reproducing the CMF focused more on persistence and flexibility at the same scale, than on growth. When growth was achieved, the pattern was typically one of purchasing or renting additional farmland without making important changes in terms of production processes or capital inputs. This can be contrasted with the MSF, whose relatively rapid expansion brought with it greater specialization, which then encouraged even more expansion. This strategy of specialization and extensification was designed to capture the returns generated by increasing scale in the context of declining profit margins.

The CMF had little or no access to credit for large expenditures such as land. To finance expansion or intensification, farmers had to build up their own capital pools or had to borrow from family, friends, or neighbours. Another alternative was co-operating to reduce capital costs, for example, through formal or informal machinery-sharing arrangements.

Credit has a crucial role in the development of the MDF, as it did for the MSF. The MDF farmer has relatively easy access to credit, and credit decisions made by financial agencies and institutions are increasingly based on formal criteria concerning specific projects. Funding for capital-intensive MDF ventures may also come from special-purpose lenders and special-purpose funds designed to encourage diversification. The MDF operator is more likely to borrow and to undertake investments in pursuit of profitable enterprise options. Markets and capital permitting, the pattern of the MDF is one of expansion and intensification. Output and capital resources are increased, but with a new mix of production factors and products.

Sometimes, diversification is a way of intensifying and increasing cash flow without increasing the land base. MDF operators may acquire resources through joint ventures with nonfarm business firms. Like the MSF, the MDF may be enlarged by renting land or by purchasing additional acreage. The latter normally involves securing a mortgage with a commercial lender. Where land is leased, cash rental is increasingly supplanting crop-share arrangements. This frees the farmer from restrictions that the landlord might place on his crop mix. However, short-term cash rent rates are typically volatile, and thus may increase pressures on the farmer to find a crop that will ensure a good return.

Markets. The CMF produced a broad range of products for farm use, for local markets, and for export commodity markets. The MSF generally sold a narrow range of products into state-regulated general commodity markets. In the context of globalization, deregulation, and free trade, the MDF is more likely to be selling in open markets or under contract in vertically integrated and co-ordinated markets. Specialty crops and specialized livestock are bought and sold via specialized marketing channels, many of which have the characteristics of niche markets. These markets may offer higher returns but, with increased production and competition, may also become over-supplied, or may collapse altogether due to lack of appropriate processing facilities or final markets. The farmer then faces the problem of finding new outlets or finding new uses for specialized machinery and facilities.

On the MDF, relatively little is produced for direct consumption. Farm families are smaller. The range of products produced is narrower, and the quantities are too great to be consumed effectively on-farm. Grocery stores are accessible. Tastes have changed. Preparation and processing skills have been forgotten or put aside. While some still retain these activities as a sideline, there is little tolerance for the drudgery that accompanied many of these labour-intensive processes. Expectations with respect to standards of consumption are higher. People are busy with the management of diversified, capital-intensive farms, with off-farm employment, and with other activities such as formal education or recreation.

Farm Household Characteristics and Social Economy. Historically, the CMF was closely linked to a set of social objectives ranging from provision of a dignified retirement for the older generation, to establishment of new farm operations for maturing sons. The MDF is also socially embedded, although some of the strands have been loosened. The farm may be viewed more as a business and somewhat less as a way of life. Economic rationality figures more heavily in day-to-day operations and in long-range plans. Resources such as land become part of an intergenerational business plan. Children may or may not return to the farm, but they may still gain equity in it. Those children without responsibility for production may develop landlord-like relationships with those left on the farm. The farm is passed on to the next generation, but the lifestyle is transformed.

Sometimes CMF household members worked off-farm to supplement returns from farming, but off-farm employment was not typically a major source of revenue. Employment for women was normally as teachers, clerks, or domestic workers, and for men was on the railroads or other farms. Whether working in homes or on farms, it was fairly common to receive payment in the form of commodities or finished products, such as clothing, material, meat, or seed.

The CMF utilized the capacities of all members of the household. Women and children, the elderly, and even those with disabilities were integrated into the productive activities of field, farmyard, and home. Families responded to the requirement of daily chores as well as to seasonal peaks in demand for labour around planting, haying, and harvesting. This often involved some

coercion and exploitation, and some family members would, no doubt, have welcomed relief from their daily and seasonal chores. On the other hand, as farming systems evolved towards the MSF and MDF models, the integration of all family members into productive involvements with the farm enterprise became less certain, and often more problematic. The activities that have been shed by the farm, or appropriated by the nonfarm sector, have often been those in which women, children, and the elderly had important roles—processing, poultry and livestock raising, and household provisioning activities.

Specialization has intensified seasonal labour demands. Like an electric utility, farmers must equip themselves to meet these peak demands. This has meant greater investment in machinery and continued use of seasonal/hired labour.[2] During the rest of the production cycle, labour requirements are relatively low and can be met, for the most part, by one operator. This has contributed to the tendency by farm youth and farm women to seek off-farm employment. It is also the context in which women have taken initiatives to start farm- or home-based businesses. The first objective may be income to meet family needs. The second objective may be to have employment near the home in light of the long distances many rural people have to commute for off-farm work. There is frequently, however, a third social factor: women seek to reclaim their rightful place in the household and community as "producers," "operators," and "managers."

In some instances, women have been actively recruited back into farming activities, given the high cost of hired labour and the absence of the younger generation, who are now more likely to be working or studying in an urban centre. Moreover, the skills and dedication needed to manage contemporary diversified (specialty) operations (MDFs) make it much more difficult to rely on nonfamily hired labour.[3]

[2] These intense seasonal labour needs are accompanied by the use of the full complement of the farm's machinery. Because there is a short time to harvest in order to ensure the highest possible yield and grade, and to avoid bad weather, MSF farmers are generally adverse to sharing equipment. Thus each farmer buys a complete set of equipment, and must be able to make this investment pay off.

[3] Since 1991, the Census of Agriculture has recognized that many farms have more than one "operator,"

Networks and Community Dynamics. On the MDF, new production processes and technologies, new relations with suppliers and processors, and new marketing arrangements all have implications for the social dynamics of farm households, entrepreurial networks, and local communities. Although multihousehold enterprises are more common for the MDF than for the other categories of farm in this typology, specialized products and production processes may reduce opportunities for sharing or mutual assistance among farmers who are not direct business partners. Membership in specialized commodity organizations provides contacts beyond the locality, but may also diminish the intensity of local community life. The political implications may be considerable where allegiances and focus shift from general farm organizations and mainline commodity groups to specialty-product business associations. In general, a shift to narrower, more competitive niche markets could be expected to lead farmers to view each other more as potential competitors and less as producers with common interests and circumstances. In some contexts, however, farmers producing nontraditional crops without established markets may band together to accumulate needed volume, to set standards, to share information, to finance processing facilities, or to counteract predatory pricing practices.

There are additional implications as more control over markets and technologies shifts to specialized middlemen. The archetypical CMF was involved in open or regulated commodity markets in which there was relatively widespread sharing of price and product information. Publicly supported development of breeding materials was typical. The MDF operator may sell into markets that are relatively closed, secretive, and unregulated. Likewise, the farmer may be beholden to suppliers for technical support or specialized breed stock, or closely tied to a processor—as in the case of pregnant mare urine (PMU) producers. While there may be new opportunities for profit, there are greater risks of predatory business practices, and of loss of autonomy. Processors, brokers, or suppliers may assert control over aspects of farming and farm

i.e., "those persons responsible for the day-to-day management decisions made in the operation of a census farm or agricultural operation." In 1996, 28 percent of Saskatchewan farms reported two or more operators.

life that farmers would normally have considered their own prerogative, e.g., production practices or deciding with whom to share information.

The MDF operator produces high-value commodities, and may also sell inputs or services to other farmers. Neighbours may be viewed as potential customers or clients, or as competitors. This, likewise, has the potential to modify the character of social relations and to reinforce a privatized "mind your own business" approach to life. Commoditized exchange helps to generalize and to "naturalize" business practices and relations as primary, normal, and basic constituents of all forms of social interaction. Involvement in other forms of social action and community organization may be increasingly neglected.

If successful, the MDF entrepreneur may have capital with which to make other investments. However, successes in business development may not provide a groundwork on which to address broader community economic development issues. The social effects of the MDF model may include differing interests, divergent world-views, and greater social distance. Given time constraints and personal orientations, successful entrepreneurs may or may not take an interest in community development. Where they do, social and economic inequalities may inhibit broad-based mobilization on aspects of development that cannot be addressed through private initiative. Social stratification is generally not conducive to community cohesion and collective action (Flora et al. 1992). It is predictable that this fracturing of interests and social cohesion will translate into a reduced ability to affect farm policies or to organize for greater market power.

3.0 TRENDS IN DIVERSIFICATION

WHILE THE TYPICAL SASKATCHEWAN FARM of the 1930s and 1940s had wheat as its primary cash crop, it also produced an array of other crops and livestock products, including milk. Today, there are more crops and livestock alternatives available to Saskatchewan farmers, but most farms have become highly specialized as to enterprise type and are also much larger than their predecessors. The diversity that exists today appears to be concentrated in a relatively limited number of farms: the minority that are producing a fairly large number of different crops and/or livestock.

Diversification and specialization can be measured several ways. One estimate of diversification can be made using an entropy index, a measure of dispersion, uncertainty, and dividedness (Theil 1972). It is mathematically expressed as:

$$H = \sum_{i=1}^{n} p_i \log (1/p_i)$$

where

p_i = proportion of i^{th} category

log = natural logarithm

n = number of categories

In this case, we use the entropy index to measure the relative diversification or specialization (over time) of field crop and livestock production respectively, in Saskatchewan. The entropy index for field crops was calculated based upon the acres planted to each category, or type of crop, according to the Census of Agriculture. The entropy index for livestock was calculated using "Livestock Equivalent Units" or LEUs. Horses, and dairy and beef cattle were each weighted as 1 LEU; sheep and lambs were weighted as 0.1 LEU; pigs were weighted as 0.25 LEU; and poultry was assigned the weight of 0.005 LEU. Entropy index scores could fall between 0 and

1, with 1 being absolute diversification given the constraints of the production environment, and 0 being absolute specialization of enterprises. Home gardens were not included in this calculation.

There are those who argue that Saskatchewan agriculture has become more diversified at the provincial level, even as individual farms have become more specialized (White 1994). As can be seen in Figure 3-1 (all figures are to be found in the Appendix), over the long term, Saskatchewan has become more diversified in terms of the mix of field crops planted. The first half of the century was marked by a limited mix of field crops, such as spring wheat, oats, barley, rye, tame hay, and flaxseed. There were also small amounts of potatoes, and very modest quantities of turnips, peas, buckwheat, and fababeans. The 1940s saw the introduction of canola and durum wheat, but also the virtual disappearance of peas, fababeans, buckwheat, and turnips as market crops. Several of these latter crops were to return again in the early 1970s as new specialty crops. Led by public investment in research and extension, an important effort was mounted in the 1980s to develop a broader range of specialty crops. The result has been a more diversified provincial commodity mix represented by index scores above 0.6 throughout the 1980s and 1990s. The LIFT (Lower Inventories for Tomorrow) Program of 1971 had a dramatic short-term impact on diversification by reducing the amount of acreage planted in wheat.

The situation is significantly different for livestock. Indeed, although a provincial-level entropy index is not sensitive to questions of spatial distribution or concentration, one might reasonably conclude that the overall reduction in farm-level diversity must be significantly due to the effect of specialization and concentration in the livestock sector. As can be seen in Figure 3-2, the province was quite diversified in regards to livestock for the first half of the century. After a peak in 1943, the province began to get more specialized, with significant declines in many types of livestock in the 1950s and 1960s. Some of this decline is accounted for by the substitution of mechanical traction for draft animals. More important, however, is the rise in the importance of beef cattle vis-a-vis other livestock, and the decline in the number of milk cows,

which occurred with the introduction of industrial dairies and milk quotas. The effect of herd and flock consolidation (and reductions) in sheep and poultry also helped to reduce the diversification of livestock production, though the impact on the entropy index was relatively modest.

The process of provincial specialization in livestock is revealed in trends related to the number and percentage of farms with different kinds of livestock. As shown in Figure 3-3, the average number of cattle and calves per farm reporting this type of livestock rose from 58 to 108 head between 1971 and 1996, while during the same period the average number of pigs per farm reporting pigs increased by a factor of 6, from just over 40 to 266 (Statistics Canada 1998). The total number and share of farms with livestock has been steadily declining, however, as shown in Figures 3-4 and 3-5. In 1996, just over 40 percent of Saskatchewan farms had cattle or calves, down from 59 percent in 1976. Only 5 percent of farms had pigs in 1996, as compared to approximately 34 percent in 1976. In the context of an overall decline in the number of farms, the result was an even faster decline in the total number of herds.

A custom analysis of the 1981, 1986, and 1991 Agricultural Census was undertaken in order to examine the relationships between (on-farm) agricultural diversification in Saskatchewan and a variety of social, demographic, and economic factors. Diversification, in this instance, was defined as the number of enterprise types present on a given farm. Wheat of any kind; other cereals including oats, barley, rye, mixed grains, and triticale; fodder crops; pulses; oilseeds; other specialty crops; horticultural crops; dairy cattle; beef cattle; pigs; poultry; sheep; horses; goats; rabbits; mink and fox; other livestock; and bees were each considered a single enterprise. For example, a farm was considered to have one enterprise if only spring wheat or beef cattle were present. If both were present, the farm was counted as having two enterprises. If wheat of any kind, oilseeds, and pulses were grown in the particular census year, the farm was credited with three enterprises.

Overall, the analysis of farms by number of enterprises shows a progression to greater specialization between 1981 and 1991.[4] In the following sections we present bivariate results (only two variables at a time) for selected social and economic (i.e., structural) characteristics of Saskatchewan farms, and the number of enterprise types (a measure for specialization or diversification) over three census periods: 1981, 1986, and 1991.

Age and Gender. The age of the farm operator was found to have a fairly strong relationship with level of diversification.[5] As shown in Figures 3-6a, 3-6b, and 3-6c, the youngest and the oldest farmers tend to be involved in the most specialized operations. Although these census data do not allow us to follow individual farms over time, it seems likely that farmers gradually add additional enterprises as they reach middle age (and accumulate more land and capital). As other researchers have observed, the family cycle, which leads to increased availability of family labour as children become old enough to contribute, the growing need for income, and the presence of potential heirs, all contribute to expansion and diversification in the middle years. As farmers approach retirement age, their farms may again tend to become more specialized—even more specialized than the operations of beginning farmers.

It is important to note that this effect appears to intensify over time. All the age categories show increased specialization as we move from 1981 to 1991. The subset of farmers in the two youngest categories (<25 years and 25–29 years) became more specialized between 1981 and 1991. Older farmers also appeared to begin the transition to specialization at an earlier age in 1991 than in 1981.[6]

[4] This trend appears to continue in the 1996 census despite on-going diversification in crop production.

[5] Not until the 1991 Census of Agriculture was there any provision for reporting >1 operator.

[6] It is important to note that many of the other bivariate relationships analyzed may be confounded by the age of the operator—or by other factors such as farm size. The only way to get a precise measure of the absolute effect and relative importance of each of these separate independent variables (factors) would be to undertake a multivariate analysis on the whole range of variables simultaneously (allowing one to "control" for the effects of all the other independent variables and to partial out the effect of the particular variable of interest). Research of this nature requires access to complete census forms for actual farms, rather than aggregated data for particular variables. Such research would be quite expensive and typically requires working on-site at Statistics Canada after having been duly sworn to uphold the confidentiality of individual census respondents.

Given the large disparity in numbers between male and female operators, it is difficult to make valid comparisons or to draw conclusions as to the effect of gender of (principal) operator on diversification. As shown in Figures 3-7a, 3-7b, and 3-7c, only 2.2 percent of farms in 1981, 3.1 percent in 1986, and 4.4 percent of farms in 1991 are classified as being operated by women. It appears, however, that female-operated farms were less diversified than those operated by men. In these census years, female farm operators were on average older, and operated smaller farms, than males. These are both conditions associated with higher levels of specialization.

Land Area and Tenure. The relationship between total farm area and diversification is similar for the three census years analyzed (see Figures 3-8a, 3-8b, and 3-8c). Generally speaking, the larger the farm, the more diversified in terms of numbers of enterprises. This relationship appears to hold up to approximately 3,500 acres, at which point the trend starts to reverse. The share of farms in any size category that is highly specialized is significantly higher in 1991 than in 1981. In 1981, approximately 43 percent of small farms in the 70–239 acre range had only one enterprise. By 1991, that figure had jumped to 50 percent for this size category. In 1981, approximately 30 percent of farms in the 240–399 acre range, and nearly 20 percent of farms in the 400–559 acre range, had only one enterprise. The relevant statistics in 1991 were close to 37 percent, and nearly 23 percent, respectively. In 1981, just over 10 percent of farms in the 560–759 acre range had only one enterprise. In 1991, the corresponding figure was approaching 20 percent. The 1986 figures indicate that the progression to specialization in every size class was advancing steadily between 1981 and 1991. It also appears that the rate of increase in diversification flattens out once farms get quite large, in the range of 1,600 acres (2 1/2 sections) and above.

Over time there has been a trend to increased rental of land—more farm operations include at least some rented land, and a greater percentage of the total farmland in the province is rented as opposed to owner-operated. This rental category includes both land that is farmed under cropshare agreements and land that is rented for a straight cash payment (and the latter form has gradually increased in popularity at the expense of the former). In all three census years

analyzed, as shown in Figures 3-9a, 3-9b, and 3-9c, it was those farms at either end of the spectrum that were least diversified: those with no rental land and those operating farms in the 91–100 percent rented category. Although multivariate analysis would be necessary to confirm this supposition, it seems likely that the effect here is, in part, related to age. Young farmers tend to start with rented land, and older farmers more often operate farms that are 100 percent owned as opposed to rented. The relationship between renting and specialization is fairly flat across all the middle categories.

In essence, there appear to be three separate situations and related strategies represented in this data. Those with no rental land would appear to have less need/opportunity for diversification. Those with only rental land may also face constraints on diversification. In between, it seems to matter less whether the farm is mostly in the rental or mostly in the owned category. Perhaps other factors intervene. This is an issue for further investigation.

Farm Receipts and Farm Capital. As seen in Tables 3-10a, 3-10b, and 3-10c, in all three census years analyzed, the most diversified farms are those that have the highest total farm receipts. Total receipts and number of enterprises appear to be strongly correlated across all categories. This is to be expected, as somewhat larger farms tend to be more diversified, and because many of the commodities that would be counted as additional enterprises generate, on average, higher returns per acre than traditional cereal grains. In each of the census years studied, over half the farms have total farm receipts below $50,000, and these farms tend to be specialized, i.e., to report agricultural commodities belonging to just one or two enterprise categories as we have defined them here.

Farms with higher levels of total capital are apt to be more diversified than their smaller neighbours, as is shown in Figures 3-11a, 3-11b, and 3-11c. An exception to this trend is found among farms valued at over $1.5 million in 1991—a category that comprised only 2.1 percent of Saskatchewan farms in that year. These farms were slightly more likely than farms in the next smaller category to have only one or two enterprises. Between 1981 and 1991, the average farm in

all but the highest categories of capitalization—generally above $500,000—became much more specialized. As with the relationship between farm size (expressed in acres) and diversification, the effect of increased capital tapers off after a certain point—after about $500,000 total capitalization. Given the capital-intensive character of farming in Saskatchewan, adding more enterprises may requires a significant investment of capital. This also relates to our observation that diversification today often involves multiple specializations.

Farms with no debt were also the least diversified in 1986 and 1991, as shown in Figures 3-12a and 3-12b (these data were not collected in 1981). A moderate amount of debt seems to be associated with diversification. As farms/farmers become highly leveraged, surpassing a debt-to-equity ratio of 60 percent, diversification decreases. Debt has a complex relationship to diversification, and this relationship likely interacts with other factors such as age of operator, size of farm, and off-farm employment. One possible scenario would be a farm with little debt, low total capital, low farm receipts, and little diversification. Another scenario might be a larger farm that has taken on considerable debt both to expand acreage and to add additional kinds of production to the mix.

Types of Farm Organization. Hutterite colonies are by far the most diversified type of farm organization. Over 90 percent of Hutterite colonies (farms) reported agricultural activities corresponding to 8 or more of our enterprise types in 1991. With the exception of the "other" category, which includes trusts, estates, and co-operatives, Hutterite colonies are the only type of farm organization to become more diversified between 1981–1991 (see Figures 3-13a, 3-13b, and 3-13c). It is important to note that these Hutterite farms also occupy the highest categories in terms of "farm receipts" and "total farm capital."

Institutions, such as prison farms, university farms, and research stations, have a bimodal character—they are either very specialized or very diversified. Not surprisingly, the least diversified type is the community pasture. Among all the other kinds of farm business organization, family corporations and verbal partnerships reported the largest number of different enterprises

(according to our schema). Written partnerships follow close behind. The presence of multiple operators appears, in general, to be positively correlated with diversification. In spite of their relatively large size and capitalization, however, nonfamily corporations were the most specialized type of farm business organization.

Farm Type. As shown in Figures 3-14a, 3-14b, and 3-14c, all types of farms (as classified by principal product) became less diversified between 1981 and 1991. The principal type of product produced by a farm, however, was strongly associated with the level of diversification or specialization.[7] With the exception of poultry operations (0.2 percent of farms), farms with livestock tend to be among the most diversified, especially farms reporting beef cattle (15.4 percent), dairy cattle (1.3 percent), or mixed livestock (2.4 percent). This is not surprising, as most farms with livestock have tended to also raise crops. In some instances, beef cattle are counted as part of a farm enterprise even if they are always kept on a provincial or federal community pasture. "Other small grain farms" (24.2 percent) are also among the most diversified. Wheat farms (50.8 percent) are moderately specialized, with approximately 30 percent of farms having one, and 30 percent having two enterprises each. Specialty farms (1.6 percent), often heralded in the 1990s for adding diversity to Saskatchewan's product mix, are among the least diversified, along with farms classified as "other field crops" (1.6 percent).

Labour, Wages, and Work. The availability of labour and the opportunity cost of labour could be expected to have impacts on farming strategies pertaining to specialization or diversification. Indeed, the census data for the three periods under study shows some strong and consistent relationships between off-farm employment (for the operator) and level of diversification. In 1991, as in the other years studied, there is a negative relationship between high levels of off-

[7] According to the Census of Agriculture, type of farm is determined by estimating the potential receipts from the inventories of crops and livestock reported. "The commodity or group of commodities which accounts for 51 percent or more of the total potential receipts determines the farm type. For example, a census farm with derived total potential receipts of 60 percent in dairy, 20 percent in beef cattle, and 20 percent in small grains, would be classified as a dairy farm" (Statistics Canada 1992: 108). For the purposes of our own study, this farm would be categorized as a dairy farm with three enterprises.

farm work and on-farm diversification (Figures 3-15a, 3-15b, and 3-15c). Significant involvement in off-farm work seems to be associated with simplified farming systems that require less management. Interestingly, the relationship between days worked off-farm and number of enterprises (diversification) remains fairly flat across the first three categories reported (i.e., up to 60 days worked off-farm). If anything, there is initially a slight increase in diversification as one moves from zero days worked off-farm, to 1–19 and 20–59 days worked off-farm. In other words, modest amounts of off-farm work seem to have little effect on levels of diversification of the farm operation in the Saskatchewan context.

The use of hired farm labour is strongly linked to level of diversification (Figures 3-16a, 3-16b, and 3-16c). Hired labour (family or nonfamily) is positively associated with the number of enterprises. Farms that hired labour also tended to be more diversified. In the Saskatchewan context, more diversified (and larger) operations would tend to have greater need for, and greater capacity to, hire labour. One strategy that may account for specialization among the farms without paid labour, is a focus on highly mechanized cereal production. In 1981, slightly over 30 percent of farms reported hired labour. This increased to 45 percent in 1986, and then declined slightly, to 43 percent, in 1991. Although the relationship is less consistent, the total weeks of paid labour also tends to be positively related to diversification in all three census years studied.

The connection between nonfamily wages paid and diversification is not so clear-cut (Figures 3-17a and 3-17b). Less than one-third of Saskatchewan farms pay nonfamily wages. While moderate amounts of nonfamily wages are associated with additional diversification, after $25,000 the relationship becomes more indeterminate and may even reverse. Higher levels of nonfamily wages are sometimes associated with simpler, more specialized, farming systems.

The relationship between diversification and the amount of family wages paid appears stronger than any link between the amount of nonfamily wages paid and the number of kinds of enterprises reported (Figures 3-18a, 3-18b, 3-18c). As shown in Figures 3-19a and 3-19b, it appears that farms that paid significant amounts of family wages tend to be the most diversified. This

may reflect, in some instances, a self-reinforcing dynamic. Family labour allows farms to expand and diversify, and diversification creates more opportunities to involve family members on a paid basis. The payment of wages based on expanded returns encourages greater participation by family members.

4.0 CASE STUDIES IN DIVERSIFICATION

4.1 Introduction and Methodology

THIS SECTION presents and discusses twenty-five case studies in agricultural diversification. The cases are summarized in table form in order to preserve the anonymity of producer-informants.[8] Potential cases were identified by various methods: stories in the farm press, referrals from professionals in the sector, and recommendations by producers and managers we interviewed. Several criteria were used for selection of the enterprises that were ultimately included in this study. We sought a representative range of situations and businesses, but focused on the more common forms of agricultural diversification in Saskatchewan. We wanted to capture much of the diversity (in diversification), but generally excluded operations that were very unique and unlikely to be reproducible.

The projects selected reflect various scales of operation and levels of complexity. We also considered geographic distribution and type of organizational arrangement. Our objective was to include an array of cases that would allow us to study how social relationships and organizational innovations impact on diversification. The cases highlight challenges and frustrations, as well as achievements and success.

Table 4.1 begins with diversified farms and farm-based businesses. The operations in this category have diversified into various livestock or speciality crops, or are directly involved in processing or specialized marketing of agricultural commodities. The farm-based businesses are directed at sectors ranging from tourism to manufacturing. As we move towards the latter half of

[8] On-site interviews were conducted with managers of each enterprise between April 1995 and February 1996. The semistructured interviews typically took 1 ½ to 2 ½ hours and included a tour of the enterprise. Additional information was gathered from reports, articles, and company documents. Further background information was provided by officials in local government and development agencies.

Table 4.1, the enterprises tend to get bigger (by rural Saskatchewan standards) and more organizationally complex. These agriculturally based joint ventures typically involve multiple partners, some of whom may not have direct connections to farming.

Table 4.1 highlights significant social, economic, and organizational features of the profiled enterprises. Column one uses key words to identify and describe the particular diversification enterprise. Column two describes the "Business Form" or organizational structure under which the enterprise operates. "Household and Labour Relations" directs attention to the critical links between family labour and enterprise; between ownership, management, and labour; and between farm and off-farm activities. The fourth column highlights "Organizational Innovations." This category includes technical and social innovations that range from new products and processes, to new forms of collaboration and co-operation.

Key aspects of the "History and Context" of each enterprise are summarized in column five. This category documents the circumstances, conditions, attributes, and motivations that have contributed to the particular diversification initiative. "Public Agency and Industry Links" lists the most important external connections to capital and information. These include relationships with government agencies and connections to other organizations and associations. The final column on "Local Linkages and Challenges" draws attention to local and regional factors that have supported or challenged the particular enterprise. The factors include local resources and networks, and various impediments to market access.

One could say that each farm and business in the province arises out of unique circumstances: a particular mix of resources, opportunities, capacities, and preferences, which combine with factors such as location, climate zone, familial cycle, land tenure, and local community connections. The twenty-five farms and businesses documented in our sample exhibit distinctive features that resist easy categorization. Roughly half of the operations sampled could be classified as diversified farms or as farms with an allied business related to agriculture. This includes several farms involved in specialty crop and/or livestock production. Many of the diversified

farms were also involved in processing in order to gain access to new markets, and to capture a greater proportion of the final market value. Several of the farms were involved in direct marketing to consumers.

Other entrepreneurs in our sample have used the farm as a launch pad for entry into other kinds of business such as manufacturing, tourism and hospitality, or specialized producer services. In some instances, the add-on activity has become more important than the original farming enterprise. Some ventures are joint projects with neighbours or other partners, and have not substantially altered the character of the home farm operation(s). Such facilities may be located at an off-farm site, even in a town or smaller city, in order to make possible expanded operations, access to transportation, and sharing of facilities. Off-farm diversification ventures may or may not involve a large proportion of the capital and labour time of the farmer investors. In some cases, the investment is made indirectly, via a farm organization.

Table 2.1: Comparison of Farming Systems in Saskatchewan

Farming System	Classical Mixed Farm (CMF)	Modern Specialized Farm (MSF)	Modern Diversified Farm (MDF)
Era	1880–1950	1950–1990	1990–
Enterprise Mix	Diversified Crop & Livestock Farm	Specialized Crop and/or Livestock Production	Multiple Specialties: May Include Specialty Crops & Exotic Livestock
Primary Design Criteria	Resource Driven: Full Use of Production Factors	Market Driven: Specialization & Expansion	Market Driven: Diversification & Expansion
Product & Process Specialization	Diversified & Integrated Products & Processes	Product & Process Specialization	Specialty Products, Processes & Markets
Flexibility	Flexible Allocation of Production Resources & Intermediate Products	Limited Flexibility Due to Narrow Product Mix & Capital Constraints	Flexibility Constrained by Specialized Technology & Facilities
Technology	Low Input Low Tech	High Input High & Low Tech	High Input High Tech & More Tech
Knowledge & Technology Control	Producer Designed Production Process	Reliance on Extension & Input Suppliers for Production Advice	Processors, Brokers, Business Groups Provide Technical Support & Specialization. Increased Vertical Integration
Farm Size	Small	Medium to Large	Variable but Generally Larger
Tenure	Owned by Family	Cash Rent, Crop Share & Bank Mortgage	Cash Rent, Mortgage, Joint Ventures

Table 2.1: Comparison of Farming Systems in Saskatchewan (continued)

Farming System	Classical Mixed Farm (CMF)	Modern Specialized Farm (MSF)	Modern Diversified Farm (MDF)
Sources of Capital	Limited & Generated Through Family Network & Community Ties	Expanded Credit from Financial Agencies & Institutions	Expanded Capital: Project Specific Funding & Specialized Lenders
Markets	Allocation Among Self-Provisioning, Farm Use, Local Markets & General Commodity Markets	Regulated General Commodity Markets	Open Markets, Specialized Markets, Niche Markets. Vertical Integration
Value	Value Added for Farm & Household Use & Local Markets	Value Generated by Increased Scale in Context of Declining Margins	Value May be Added by Specialized Processing, Manufacturing, or Niche Marketing
Farm Household Organization	Large	Medium to Small	Small but Multihousehold Enterprise Now More Common
Social Economy	Family's Farm: Integration of Farm Household Members	Operator's Farm: Household Members as Paid or Unpaid Labor, or Absent	Partners' Farm: >1 Operator, Family as Paid Labour, or Absent
Networks & Community Dynamics	Community & General Farm Organizations	Commodity Groups & Specialized Community Groups	Specialty Product Associations, Business & Specialized Community Groups

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UNIVERSITY OF SASKATCHEWAN

BEYOND BEEF AND BARLEY

ORGANIZATIONAL INNOVATION AND SOCIAL FACTORS IN FARM DIVERSIFICATION AND SUSTAINABILITY

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EXECUTIVE SUMMARY

THIS STUDY COMBINES several approaches to investigate the phenomenon of agricultural diversification in Saskatchewan. The intent is to understand and to conceptualize diversification, and to assess the importance of social, organizational, and institutional factors.

We present an analysis of key developments in the evolution of Saskatchewan farming systems and a typography of three models of farming: the classical mixed farm, the modern specialized farm, and the modern diversified farm (or multiple specialty farm). Each of these is described and analyzed in terms of fundamental design criteria, level of product and process specialization, flexibility and technological control, business strategies and capital sources, markets, social relations and social logic, and links via networks and local communities. A key finding arising from this exercise is that technical, organizational, economic, and social changes fundamentally alter all these processes and relationships in contemporary diversified farms. This has both positive and negative implications for farm viability, ecological sustainability, and community cohesion.

To identify and quantify historical trends at the provincial level, we developed indexes of diversification (or specialization) for crops and livestock. These indexes cover most of the 1900s and reveal a long-term trend towards increased overall diversity in the province's crop production. There has been, however, a steep decline in the diversity of livestock enterprises measured at the provincial level. Most of this decline occurred between the mid-1940s and the mid-1970s.

These provincial indexes are complemented by an analysis of the relationship between the number of enterprise types (kinds of commodities) produced on farms, and selected social and structural variables. This required custom tabulations of the 1981, 1986, and 1991 Census of Agriculture. This analysis revealed a trend towards greater farm-level specialization between 1981 and 1991. The bivariate analysis also showed that specialization is greatest among farmers

who are either quite young or old. There was a positive relationship between farm size and farm-level diversification, though the rate of increase in diversification flattens out once farms get relatively large. There was a U-shaped relationship between land tenure and specialization such that farms with no rental land and those in the 91–100 percent rented category tended to be the most specialized. Moderate levels of debt were more commonly associated with diversification than either very high or very low levels of debt. Hutterite colonies were the most diversified type of farm organization. Family corporations and partnerships of various kinds also tended to be relatively diversified. The presence of multiple operators generally appears to be positively correlated with diversification. Nonfamily corporations, however, were the most specialized type of farm business. Farms with beef or dairy cattle tended to be relatively diversified. In general, farm enterprise diversification diminished with increased days worked off-farm. The payment of wages, however, especially to family labour, was positively associated with diversification.

The third approach we have used is a thematic analysis of twenty-five case studies in diversification. We interviewed key actors in each enterprise. The projects were selected to represent a range of locations, scales, organizational arrangements, and types of enterprise. The record of these interviews was combined with other information to create a summary profile of each establishment. To preserve anonymity, and to facilitate comparison, these case studies were profiled in table format under the following headings: business form, household and labour relations, organizational innovations, history and context, public agency and industry links, and local linkages and challenges.

The cases range in scale and complexity from diversified family farms to large processing and manufacturing facilities. The most successful projects demonstrate several forms of technical, economic, and social innovation. Partnerships, joint ventures, and other advanced forms of organization are common. Some farm diversification projects are organized specifically to provide opportunities for spouses or other family members. Sharing requires “people skills”

and appropriate organization. Various kinds of education and experience, including high-quality off-farm work, can be invaluable. Key employees may be crucial to success.

Diversification springs from many roots. The starting point may be financial stress or financial success. In some instances the foundations were put in place by earlier generations. Most of the enterprises we studied have received some technical or financial help from a government agency. Some have benefited under multiple programs. Others report important assistance from civil servants. Entrepreneurs may gain skills in government employment or as members of public boards and committees. Many belong to industry organizations and are networked with suppliers, customers, and fellow producers.

The formation of diversification projects may depend on links through kin networks, local organizations, and cultural activities. These involve mutual knowledge, trust, and co-operation-enhancing ties that are elements of "social capital" and characteristics of stable communities. Personal and organizational connections are used to raise capital, to link with partners, to find suppliers and clients, to gain industry-specific knowledge, to recruit key employees, and for social support. Competitors may also be a network for exchanging information, inputs, and product; for negotiating with governments; and for funding joint ventures in research or marketing. For female entrepreneurs, the presence of other women as managers, business representatives, organization leaders, and professionals in public service, can be crucial.

Investing locally may be risky (as evidenced by the problems experienced by several of the profiled firms) and makes sense only if one has attachments to a place and confidence that others will also contribute. Diversification is often concentrated in clusters, which points both to the fact that diversification frequently leads to more diversification, and to the importance of appropriate infrastructure and supports, as well as a climate of confidence.

The complex mix of economic and social motivations and explanations for diversification have their obverse in the complex reasons why some individuals and households may not, or

cannot, pursue diversification. These conditions and factors are not easy to overcome. Nor is this always desirable. Much economic and managerial theory has focused on the advantage of concentrating on activities one does relatively well, rather than investing in risky long shots.

Diversification requires people willing and able to experiment. People provide the initiative, the meaning, and the measure of success. Diversification requires diversity in terms of vision, approach, organization, and contributions. Diversification requires co-operation and partnerships. Diversification requires communities of interest and of place, people who care enough about each other, and their collective future, to make the necessary investments. The organizational and social innovations required include appropriate policies and institutional arrangements, as well as suitable ways of collaborating in the household and in other contexts.

There is a need for integrated approaches that simultaneously address economic, social, and environmental goals. Diversification should be assessed in terms of its "multiplier effect" in each of these areas. There is a need for sustainable diversification at all levels rather than some form of perverse or pseudo-diversification that squanders resources, community, and long-term development.

1.0 INTRODUCTION

THIS STUDY EMPLOYS SEVERAL APPROACHES to explore, analyze, and conceptualize the importance of social and organizational factors in agriculturally-based diversification. The first exercise is an effort to categorize key dimensions in the evolution of farming systems. The resulting schema, or typology, allows us to consider the major historical transitions that have occurred, and how the interplay of economic, agronomic, technological, and social factors gave rise to mixed farming, to specialized farming and, more recently, to the modern diversified, or multiple specialty farm. This analytical approach also allows us to more systematically assess the potential social and systemic implications of such changes.

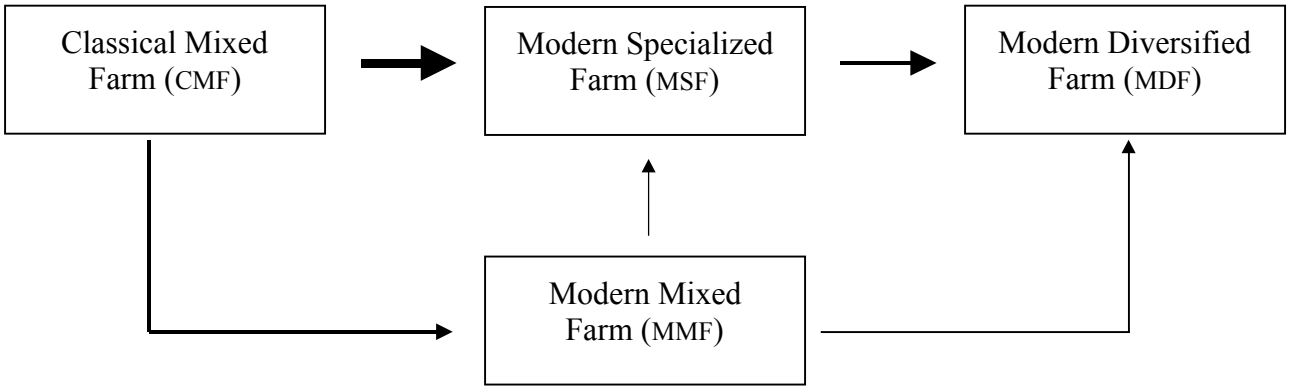
The second approach is a statistical and graphical analysis using custom tabulations from the 1981, 1986, and 1991 Census of Agriculture. These custom data are used to examine trends in the bivariate relationships between key structural variables and the levels of enterprise diversification on Saskatchewan farms. In conjunction with this research we present an analysis of data pertaining to the mix of crops and livestock produced in the Province, 1911–1999 (an Entropy index).

The third research approach is a set of twenty-five case studies of agricultural diversification. These are based on interviews with managers of each enterprise. The cases are presented in tabular form under categories dealing with organizational and human factors in the history and development of the project. The concluding section of the report presents some observations extracted from the three-pronged research strategy, particularly with respect to the development of diversification projects, and diversification as rural development.

2.0 A TYPOLOGY OF FARMING SYSTEMS

DIVERSIFIED FARMS OF THE 1990S exhibited agronomic, economic, and social characteristics that distinguished them qualitatively from more traditional mixed farms common in many parts of Saskatchewan in the first half of the century. They were, and are, likewise distinct from the specialized farms that have predominated in the province since approximately 1950. For analytical purposes, we can distinguish between the "classical mixed farm" (CMF), which has largely disappeared, and the "modern specialized farm" (MSF), which remains very important but which is being replaced, in some instances, by the "modern diversified farm" (MDF) (Fig. 2.1).

Figure 2.1: Developmental Pathways to Diversification



In a proposed typology of farming systems (Table 2.1), we focus on contrasts between the CMF and the MDF as "ideal typical" systems of farming. As an analytical device, the use of "ideal types" focuses attention on key changes and their potential ramifications. This should not be mistaken for advocacy, nor for an assertion that actual farms conform fully to these descriptive archetypes. In Saskatchewan, as elsewhere, the farm sector is heterogeneous in terms of the structure and organization of farm enterprises. This reflects differential resource endowments, the financial and family situations of operators, and personal philosophies with respect to "farming styles" (van der Ploeg 1993). While it would be a mistake to ignore this diversity, it is useful to investigate the emergence of new dominant or modal forms together with broad underlying developments that affect all kinds of farming.