Meadowfoam Industry Update*

Gary D. Jolliff and George D. Hoffman

It might seem impossible to create a new business in an unfamiliar industry that requires a large group of independent-minded investors to work cooperatively for success, yet it can be done and is being done (Brown 2001)

INTRODUCTION

Meadowfoam (Limnanthes alba, Limnanthaceae) was domesticated and commercialized in Oregon under a series of circumstances that allowed local grower participation before the first commercial sale of product. Growers had the opportunity to organize and to transfer skills, knowledge, and germplasm (Fletcher 2002) from Oregon State University (OSU) to their farms. They also had the opportunity and the responsibility to gain skills and knowledge on corporate governance, commercial production, processing, and marketing of meadowfoam oil. This paper is a case study about that process, which includes one re-organization of the growers. Importantly, there is significant history concerning the course of events and associated strategy of grower involvement (CAST 1984; Jolliff 1990, 1999); and, evidence is presented that a second industry reorganization to a New Generation Cooperative (NGC) may be needed as a defensive strategy to deal more effectively with free riders (Merrett and Walzer 2001).

Economic Theory

Economic theory predicts under-investment in agricultural research because it is too easy for “free riders” to benefit from investments while the investor(s) may not realize acceptable rates of return (Alston et al. 1994). A free rider is someone who gets or tries to [get] benefit – at another’s expense or without cost to or effort by the one benefiting (Webster’s Third International Dictionary 1981). Thus, public funding of US agricultural research has been the norm for more than a century. Research, development, and commercialization of new crops are even higher-risk and longer-term than many other kinds of agricultural research. It is also very difficult to get funding for research and development (R&D). Competition for public funding in the political arena is fierce among many powerful organizations in agriculture. New-crops research has neither an established and stable national policy for support nor a national voice in the policy-setting arena. These are some of the many reasons why new-crops R&D and commercialization in the US have been limited for decades. There have been many calls for change in national policy to advance R&D of profitable new-crop options for US farmers (Jolliff 1999).

The Challenge

US agriculture has been the envy of many nations. Yet industrialization, technological advances, high yields, and large crop area operations have left much of rural America sliding into bankruptcy. History underscores that unbridled production of a non-subsidized new crop would be foolish from a rural economic development perspective. More than a century of hope for international markets to absorb agriculture’s national and global excess production capacity has been repeatedly dashed. Surplus production frequently drives crop prices below the cost of production. Without reasonable rates of return on investment, rural Americans will continue to lose economic footing. The approach to meadowfoam commercialization was an attempt to collaborate with farmers who were willing to invest, take risks, be on “the ground floor” of a new industry, and thus share in the profit potential. Therefore, meadowfoam grower options for supply management, risk protection, value-adding, and vertical integration through marketing represented important needs, challenges, and opportunities. This problem has been well stated by Fletcher (2002): New crop participants in different positions in the supply chain can vary markedly in their exposure to risk and the level of protection possible. The primary producer is particularly vulnerable and there is little opportunity for him/her to externalize risk. As

well, substantial numbers of primary producers are often required so that critical mass in terms of production can be achieved; late arrivals [free riders] can take advantage of the contributions of earlier pioneers. Participants in other stages of the supply chain are more capable of protecting themselves, at least for the short run.

This paper presents and discusses several matters related to the development of a meadowfoam grower alliance that is now operating a vertically integrated, value-added, embryonic industry. The farmers organized to collaborate with OSU in the establishment of a new industry originating in Western Oregon; and now the original grower industry includes formal international collaboration with other growers. The first 18 years have been difficult for several reasons, some of which are presented below. The reader is encouraged to carefully consider the principles presented by Fletcher (2002) and in Merrett and Walzer (2001) when attempting to understand the complexities of new-crop development in US agriculture.

CROP HISTORY

The Crop

Basics. Meadowfoam is a winter-spring annual forb native to the Mediterranean climates of the Pacific Coastal regions of North America. The “seed” (nutlet) contains unique and virtually pure long-chain triglycerides that are very stable against oxidation. The oil was discovered in response to a 1950s Congressional request for the USDA to search for useful native plant products as potential crop alternatives to surplus agricultural crop commodities (Wolff and Jones 1958; Earle et al 1959; Gentry and Miller 1965).

Fit in Western Oregon Agriculture. Interest in meadowfoam as a potential alternate crop in western Oregon in the 1960s and 1970s was based on its adaptation to the climate and vernally saturated soils of the Willamette Valley used extensively for grass seed production. Growers without summer irrigation rely on winter rains and have few alternatives to grass seed production in these areas. Meadowfoam is a superb rotation crop in the grass seed production cycle, allowing for the control of grassy weeds in grass seed fields. Some growers claim above average grass seed field establishment and seed yield following meadowfoam.

Early Funding of Research and Development

Meadowfoam research at OSU began in 1966, with very little experience, staffing, funding, organizational structure, or outside support. However, during 1966–1981 significant preliminary progress was made in both agronomic and cultivar development (Jolliff et al. 1981). From the outset, the prime objective was to develop profitable meadowfoam yields for farmers. It was not until about 1988–1989 that other activities began that created grower problems by the mid 1990s. Most of those details will not be discussed here.

Seed retention and canopy uprightness were needed for mechanized harvest. Weed control, nitrogen fertility management, and lodging resistance were high priorities because of their impact on seed yield through factors such as competition, lodging, pollination, disease, timing and uniformity of maturity and harvest. Several other topics were later studied and evaluated during domestication and commercialization (Jolliff 1989). Much of that information has been published. Some of the topics, such as seedbed variables, planting dates, seeding rates, pest control, and harvest methods are still being re-evaluated.

Environmental concerns over open-field burning of grass seed crop residue for pest control precipitated State legislation in the early 1980s mandating the funding of research on alternatives to field burning. Meadowfoam was a candidate crop for meeting this need. The Oregon Department of Environmental Quality (DEQ) managed research projects funded from fees charged grass seed growers for burning-related activities. DEQ funding helped support the development of agronomic information and cultivar improvement (1979–1989) for meadowfoam commercialization, even though funding for the first three years was extremely modest. An inquiry in 1982 from a potential industrial buyer about the purchase of meadowfoam oil spurred interest in increasing funding for meadowfoam R&D via both DEQ and Oregon legislative funding through the Oregon Agricultural Experiment Station. Increased funding levels in 1983–1989 allowed the establishment of one small productive research project that conducted a range of agronomic and cultivar development activities in addition to assisting in the launching of the meadowfoam industry in 1984. Maximum experimental seed yields in test plots near Corvallis, Oregon exceeded 2000 kg/ha/yr during 1982–1983 through
Trends in New Crops and New Uses

1989–1990 (Jolliff and Seddigh unpubl. annu. rpt.). However, there were still many gaps in the research needed for commercial production.

Ongoing Efforts. Pest and fertility management practices have been prime advances for grower benefit in meadowfoam production during the past 11–13 years. Extensive delays by the grower industry in acknowledging the need to monitor a tiny insect pest, the Meadowfoam Fly (MFF) (*Scaptomyza apicalis*), and to be prepared to apply appropriate control measures, have been especially costly for several, if not most, growers. Much of this management problem stemmed from disputes about the existence and seriousness of the problem, and how it should be addressed. The absence of expertise and information about the pest damaged the industry. Furthermore, commercial fields generally were not monitored in an organized fashion to identify, report, assess, and confirm the successes and failures of commercial production operations. This left numerous informational voids that were quickly filled with speculation and rumors. No information about the MFF, or specimen, was found in the State of Oregon prior to collecting specimens from meadowfoam. It was difficult to locate a taxonomist within the US to positively identify the pest. Virtually nothing was known about MFF biology. This underscores an important point made by Fletcher (2002): *When skills are not available from anywhere else in the world, commercializing new crop products is more demanding intellectually (requiring more time and money) and needs a much higher level of collaboration and cooperation.*

In August 1989 smoke from an escaped grass seed field residue burn caused a tragic vehicle pileup on Interstate Highway 5 near Albany, Oregon. Ironically, the accident resulted in a moratorium on field burning, and thus the elimination of DEQ funds to continue current and future research on meadowfoam. Meadowfoam R&D and commercialization were severely impacted. Funding during 1991–2002 became extremely political and controversial; these details are outside the scope of this paper.

Industry Startup

Industry Interest. In 1982 a Japanese firm expressed interest in purchasing meadowfoam oil from Oregon for the personal care products industry. At that time there was no known established system for meadowfoam oil production, processing, refining, and delivery. The majority of all meadowfoam research and development for cultivar improvement and commercial-scale production practices had been centered at OSU in collaboration with Oregon farmers. The challenge was to explore opportunities for Oregon growers to participate in this venture, and at the same time deal with the history of public releases of cultivars and the negative impact to be expected from free riders.

Oregon Meadowfoam Growers Association (OMGA). In 1984, before any meadowfoam had been grown for sale, 15 grass seed growers in the Willamette Valley of Oregon organized the nonprofit Oregon Meadowfoam Growers Association (OMGA) (Jolliff 1989). This action was taken to position local farmers for significant control of decision-making, risk management, and sharing value-added profits in a potential new industry. The timing of the creation of OMGA was directly related to the decision-making by OSU regarding the first-ever release of a meadowfoam cultivar. This is discussed under Cultivar Release below.

Willamette Valley Grass Seed Growers. The grass seed farmers of the Willamette Valley represent much independent entrepreneurial history. Relatively few of them grow crops with traditional government subsidies. Many of them have value-added their grass seed crops for years via individual seed processing, bagging, warehousing, and shipping facilities. Additionally, many growers have some degree of involvement in direct marketing, and possibly niche marketing of grass seeds, through which government supports for marketing may play varying roles. Grass seed growers in the Willamette Valley of Oregon are arguably the best in the world.

Cultivar Release and Protection

History of Public Releases. Throughout much of the history of US Agricultural Experiment Stations and Land Grant Universities, improved crop cultivars developed by these organizations were released to the public for anyone to grow. This worked well for some crops. However, when commercialization of a new cultivar of a new crop required a significant financial investment for marketing and other expenses, a public release could easily be a barrier sufficient to prevent commercialization. An investor would have no protection for recuperating a reasonable financial return.
Exclusive Licensing. The stimulus to recommend that the first improved meadowfoam cultivar be released exclusively to producers was the result of a national task force study on the development of new crops (CAST 1984 p. 25) where several options were discussed. The first released cultivar (‘Mermaid’) was developed (1973–1983) by the New-Crops Research Project at OSU, primarily with State of Oregon funding (Jolliff 1989).

Public Hearing. The Department of Crop Science held a public hearing April 3, 1984 “to advise the Department of Crop Science regarding (1) the advisability of release of selection 703A meadowfoam, and (2) the type of release…recommendations from this meeting will be used to formulate a proposal to be presented to the Director of the [Oregon] Ag Experiment Station” (Department of Crop Science 1984). The Department faced the issue of: (1) what type of release was appropriate? (2) When released, should the release be public or exclusive? Advantages and disadvantages of each type of release were explained. Input was received from several sources. “Dave Nelson, representing the Oregon Meadowfoam Growers Association (OMGA), being organized as a nonprofit Oregon corporation, explained its purpose. They were organized to encourage development of production and marketing of meadowfoam as a [crop] commodity by as broad a range of growers as is compatible with the market. They didn’t want the seed to go to a foreign company or domestic firm that could shelve it. Since a portion of the research dollars that helped develop meadowfoam had come from the Oregon seed industry, they felt it should be developed to benefit Oregon. Any grower could be a member of the association. The OMGA recognized many of the hazards of new crops and sought to develop the new cultivar in an orderly fashion, increase availability of the cultivar to many growers through marketing [of the oil], and release production rights to primarily favor growers in Western Oregon and secondarily other Oregon growers” (Department of Crop Science 1984).

There was widespread support for the exclusive release of the cultivar, with plant variety protection (PVP), to the Oregon Meadowfoam Growers Association. A proposal for plant variety protection and exclusive release was submitted to the Director of the Oregon Agricultural Experiment Station (OAES). The OAES issued a formal request for proposals from all parties interested in exclusive licensing the meadowfoam cultivar. Applicants (e.g. a farmer organization) needed to have the capabilities and commitment to simultaneously develop the meadowfoam oil market and commercially produce the oil supply. Applications were received by OAES. The first meadowfoam PVP application was prepared and submitted, via Oregon State University, for the State of Oregon System of Higher Education, for the meadowfoam experimental line 703A. The cultivar named ‘Mermaid’ was released under an exclusive license to the OMGA and plant variety protected (Certificate #8500166). The first commercial crop for oil sales was produced in 1984. The first commercial oil sale occurred in 1986. ‘Mermaid’ was not registered in the scientific journal Crop Science so as to avoid the obligation to provide seed of the improved cultivar as breeding materials for competitors. The primary objective was risk-protection for growers. The oil market was small, and easily flooded. This strategy was intended to provide growers the opportunity to exercise production control decisions to minimize surpluses in an effort to avoid creating artificially low prices for meadowfoam oil. There was no prospect of meadowfoam production gaining federal subsidies, thus it was critical to have wise meadowfoam supply management from the outset of commercialization.

The proposal was uncommon, if not unique. A native wild forb with unique oil had been domesticated for commercialization. The first improved cultivar was plant variety protected for exclusive licensing to a grower organization before the first commercial sale of the new product. All ownership rights to the seed remained with Oregon State University. The plant-variety-protected seed was never intended for open commerce. The grower organization rights were limited to producing the seed for oil production. Farmers would not own the seed. Neither the grower organization nor any of its members or subcontract growers would have any rights to distribute or use the seed or plants except for producing seed for delivery to the association for oil extraction.

This proposal was a shock to the system of many Land Grant University and USDA traditionalists. Growers could see the opportunity to participate more fully in the development of this new industry. The Capper-Volstead Act of 1922 explicitly exempted farmer co-ops from antitrust legislation (Williams and Merrett 2001). Yet some “brokers” saw the meadowfoam exclusive licensing as a restraint of trade, while it was considered by the grower alliance as a means to protect themselves from attempts by free riders to obtain a profit from the
Risk capital of growers. Some public employees viewed this as a roadblock to some kinds of freewheeling globalized bartering, brokering, and other kinds of activities that in the past may have led to major advances in agricultural production, but have simultaneously sent much of rural American communities into economic decline. Since the Bayh-Dole Act of 1980 took effect in July 1981 (USDA 1982), private businesses have routinely obtained exclusive licenses for technologies from Land Grant Universities and the USDA. There may be compelling rationale for farmer cooperatives to gain greater access to these technologies (Leonard 2002).

INDUSTRY DEVELOPMENT

Historical

The amount of land area used to produce a crop is often considered a reflection of the crop market growth. That approach has not been a very good indicator of the year-to-year growth of the meadowfoam oil market in the short run over the first 18 years because: (1) meadowfoam oil processing requires a minimal amount of seed for the extraction process, depending on the size of the extraction facility being used, (2) if production includes intentional inventory buildup, then sufficient seed may be produced to store for multiple extraction “batches,” that may be marketed over an extended period, and (3) production of excess meadowfoam was mandated to the growers (explained below) for three years (1996–1997 through 1998–1999). The unfamiliar reader might interpret the rapid increase in meadowfoam production reported for 1996, 1997, and 1998 (Knapp and Crane 1999) as evidence of the real time status of development of the meadowfoam industry. Instead, history suggests the rapid expansion of production in those years was the result of wishful thinking by one or several entrepreneurs. This kind of activity is common in new-crops development (Fletcher 2002); and, it is a serious risk exposure, from which growers need protection.

Overproduction. OMGA did very limited formal marketing of oil during the 1980s. In 1992 the grower organization negotiated an exclusive worldwide marketing rights contract for meadowfoam oil with a marketing firm. Clients for meadowfoam oil were established worldwide in the personal care products industry. Since then, worldwide sales of meadowfoam oil have continued, and industry buyers have found they can depend on product supply and quality. But, by contractual obligations, OMGA was obligated during 1996–1999 to produce meadowfoam to meet marketing forecasts that did not materialize. Crop area increased nearly 400% from 1996 to 1997. OMGA paid growers premiums to produce meadowfoam in those years because competing grass seed prices were very high. This was a large departure from the meadowfoam oil market growth rate, which caused serious economic hardship for OMGA and was an important factor prompting the subsequent reorganization of OMGA (see below).

Huge economic losses to growers have resulted (and continue) from that surplus production. Internal financial stress to some growers has been severe (if not catastrophic). The cost of storage plus interest on capital investment associated with this surplus inventory has also seriously limited the ability of the grower organization to make short-term investments in much-needed research, development, and marketing. Some growers have waited, in turn, for payment for 3 to 5 years or more for their production to be sold.

Reorganization. Fortunately, in this case, OMGA had sufficient legal protection to at least partially control the financial losses that resulted. In 1996 OMGA decided they had to act to save their industry. The Oregon Meadowfoam Growers Association (OMGA) was reorganized during 1997–1998 into OMG Meadowfoam Oil Seed Growers Cooperative Corporation (OMG) to strengthen the position of the growers for bargaining and for grower industry development. OMG is an open-enrollment cooperative corporation, with a wholly owned subsidiary NPP (Natural Plant Products, LLC; < www.meadowfoam.com >) that purchases the seed from OMG and then extracts, refines, and markets the oil worldwide through a network of wholesale distributors. The worldwide marketing rights were retrieved by the grower alliance, OMG/NPP. The price of the oil was sustained, and markets continued to grow in spite of significant efforts, from multiple directions, to force oil prices down. OMG/NPP is now rapidly paying off its bank loans and expects to soon accelerate payments to growers for production pools in storage. Few individual growers would have the financial positioning to single-handedly challenge this kind of free rider threat to profit margins.

Risk Protection. Experience has confirmed the need for meadowfoam growers to organize to protect
their risk position. Exclusive licensing of cultivars provided important protection. However, unauthorized distribution of seed and the subsequent unauthorized production in various parts of the world have caused the grower organization to suffer significant losses of capital, time, and business opportunities responding to, and policing, these kinds of consequences of free rider activity. OMG is not a New Generation Cooperative (NGC) but it may need to become one. Although a detailed discussion of this topic is outside the scope of this paper, a brief description of NGC’s and their potential relevance to OMG/NPP is presented below.

Current Problems

Non-exclusive Licensing. A non-exclusive release of a meadowfoam cultivar from OSU could seriously jeopardize the survival of the embryonic meadowfoam grower industry. It could essentially grant a huge incentive and advantage to free riders to compete with OMG by benefiting from all of OMG’s investments and risk-taking without having had to make those investments and without having to share any profits with OMG. Serious efforts in recent years to release the ‘Knowles’ cultivar non-exclusively have been rejected by OSU (as of 2001). Such a non-exclusive release would seriously damage, or destroy, much, if not all, of the OMG/NPP risk position protection. The likely damage from a non-exclusive release is the reason (Alston et al. 1994) that private industry does not invest in the fundamental development of new crops. Farmers have a problem when public scientists attempt to facilitate free riding, which would constitute an end run around the organization of growers who have done the risk-taking to get a new industry started. Concerns over this kind of problem are being expressed (Lacy 2000).

Cultivar Performance. One difficulty faced by growers of new crops is that the limited numbers of researchers studying the crop can lead to inadequate quality control of experiments, and review of data interpretation, conclusions, and recommendations. Breeders at OSU have obtained very different estimates of meadowfoam cultivar/line yields (Knapp and Crane 1999, G.D. Jolliff and G.D. Hoffman, unpubl.) because factors such as management of nitrogen fertility and MFF control in yield trials may differ. Major differences in both average yields and relative yields among cultivars/lines apparently is due, in part to the differential cultivar/line response to nitrogen fertilization. Some cultivars may also suffer more than others from damaging levels of the MFF, if the pest is not controlled. Yet, to realize dependable high yields, it would almost certainly require careful MFF management on all cultivars available to growers. Nitrogen fertilization rates have been shown to dramatically influence potential MFF damage in some years (Panasahatham et al.1999; Jolliff and Seddigh unpubl. Annu. Rpt.). There are no established yield trial protocols, and until recently, no independent comparisons of cultivars. The 2001–2002 growing season was the second year of independent trials. But resources to devote to these trials are scarce, and protocols are not well established. The fact that high seed yields by today’s standards (>2000 kg/ha) were reported, on an experimental basis, as long as 30 years ago (USDA 1969), suggests that establishing appropriate cultivar yield trial protocols is very important. The challenge is in prioritizing the use of scarce research funds.

A second cultivar, ‘Floral’, was developed (1978–1991) by the New Crops Research Project at OSU, plant variety protected (#920057) and licensed exclusively to the OMGA in 1993. ‘Floral’ was not registered in Crop Science, to protect growers’ risk capital. Funding for ‘Floral’ development was primarily from the State of Oregon, including the Oregon DEQ. The subsequent conflicting reports on yields of new lines versus ‘Floral’ has made it difficult for OMG to make the appropriate decisions to advance their industry. For example, when OMG had to decide on whether to seek rights to grow a new cultivar that might possibly be licensed, comprehensive yield information was unavailable.

Pollination. From the outset, the requirement for honeybee pollination was an unfamiliar and unwelcome hassle for researchers and growers, and a significant production expense. Assessment was made for the number of honeybee hives/ha required to pollinate the crop. Many growers had little experience with beekeepers, or with bee hive quality. Beekeepers had little experience with meadowfoam, and little interest in distributing hives strategically for the benefit of crop yield. Both researchers and growers thought it would be desirable to eliminate the pollination requirement, if yields and profits could be sustained. The “promise” of self-pollinating cultivar development has therefore been exploited to garner various aspects of public and private research funding since the late 1980s but a competitive, high yielding, self-pollinating cultivar has not yet been delivered to growers.
Trends in New Crops and New Uses

There are no known quantitative data to define the nature and degree of vulnerability of meadowfoam pollination to cool, rainy, windy weather. Such conditions can be a problem, but good yields from at least a few well-managed fields are harvested in most years. Therefore, selling the idea of self-pollinating cultivars as a major boost for the industry at this point in time, may have been premature, if not unrealistic. Thus, the pollination topic remains open to a wide array of opinions. But, it is clear that all facets of meadowfoam management need to be properly handled, and possibly in a cultivar-specific manner, to increase the probability of high seed yields, regardless of the cultivar being grown. If a yield-competitive, self-pollinated meadowfoam cultivar is ever developed, it probably will still require good production management.

Yield Variability. Extreme variation in meadowfoam grower yields has occurred in every year of commercial production. Very little research has been conducted on farmer fields using a well-established standard protocol. Very little comprehensive technical expertise exists for commercial meadowfoam production, and very little has been developed in the private sector, including the grower organization. This is a very strong indicator of the lack of an adequate system of production research, extension, and grower attention to management of this minor crop. Development of crop insurance would be an additional option to reduce grower risk.

NEW GENERATION COOPERATIVES

The history of many traditional cooperative ventures (like OMG) indicates that free riders likely will be a serious threat to the development of a cooperative endeavor to advance meadowfoam as a new industry (Ostrom 2000; Fulton 2001; Fletcher 2002). Based on hindsight, it is obvious that free riding—by individuals inside and outside the cooperative—has been extremely costly for the meadowfoam grower organizations (OMGA, then OMG/NPP). The literature is quite clear regarding the cause, effects and remedies for free riding (Alston et al. 1994; Tilley and Crowley 1999; Ostrom 2000; Crespi 2001; Fulton 2001; Fletcher 2002). It may become necessary for OMG to reorganize into a NGC in a defensive effort to reduce the impact of free riders (Ruttan and Hayami 1984).

The name NGC has been given to “roughly 200 value-added processing, closed membership co-ops that have emerged during the past decade, first in North Dakota and Minnesota and more recently in neighboring states and provinces. The NGCs are being formed by producers involved in emerging niche markets, such as bison, Tilapia fish, and edible beans, as well as producers of traditional commodities, such as dairy, corn, and durum wheat” (Fulton 2001). “The reasons behind the formation of NGCs are as diverse as the markets in which they operate…two elements distinguish NGCs from traditional co-ops: (1) delivery shares and (2) restricted membership.” (Fulton 2001). Waner (2001) has summarized reasons stimulating NGCs, obstacles to their formation, and factors contributing to their success. Excellent overviews of NGCs and their management practices (Merrett and Walzer 2001), and NGC case studies (Holmes et al. 2001) are available.

Importantly, NGCs seem to provide an organizational structure that reduces the probability of having free riders as members, and apparently, NGCs may be less vulnerable to external free riders than are traditional co-operatives. Further, NGCs seem to have an increased probability of being adequately capitalized compared to traditional co-ops. Adequate capitalization may mean staffing and budgeting to more appropriately litigate free riders if necessary.

SUMMARY

Meadowfoam commercialization was launched in Western Oregon by an open enrollment grower organization (OMGA). Growers manage the production, processing, and marketing of meadowfoam oil to the personal care products industry worldwide. The learning curve for everyone involved with meadowfoam commercialization has been quite steep. The exclusive licensing of cultivars has been a key to risk protection for the grower-investor organization. Exclusive licensing restriction has also highlighted the importance of dealing with free riders that make moves outside the authorized system in an effort to benefit from past investments made by someone else. As with all new crops, scarcity of resources for research, development, and marketing has been a challenge, coupled with disparate views and motives on priorities for use of those scarce funds. Power politics have impacted most facets of this embryonic industry. Grower-investors are very talented. They are refining their system of corporate governance and can be expected to seek to constantly
Industrial Oilseeds

improve their competitiveness while maintaining a reasonable profit margin. The organizational structure, operation and management of the OMG Meadowfoam Oil Seed Growers Cooperative along with their subsidiary the Natural Plant Products LLC (OMG/NPP) represent a major advance during 1998–2002 for the meadowfoam industry. They have established formal international collaborative relationships with other growers. The organized growers are ready to increase production in accord with profitable market growth. NPP markets meadowfoam oil worldwide to customers who have come to depend on the consistent product supply and quality. OMG/NPP seek to expand R&D to improve all aspects of the new industry. As with most field crops throughout history, it would probably be impossible to accurately predict the economic future of meadowfoam.

REFERENCES


