FINANCING AND SUPPLYING INPUTS TO THE 21ST CENTURY PRODUCER

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Preface

The U.S. agricultural industry is in the midst of major structural change — changes in product characteristics, in worldwide production and consumption, in technology, in size of operation, in geographic location. And the pace of change seems to be increasing. Production is changing from an industry dominated by family-based, small-scale, relatively independent firms to one of larger firms that are more tightly aligned across the production and distribution chain. And the input supply and product processing sectors are becoming more consolidated, more concentrated, more integrated.

Agriculture in the 21st century is likely to be characterized by: 1) adoption of manufacturing processes in production as well as processing, 2) a systems or food supply chain approach to production and distribution, 3) negotiated coordination replacing market coordination of the system, 4) a more important role for information, knowledge and other soft assets (in contrast to hard assets of machinery, equipment, facilities) in reducing cost and increasing responsiveness, and 5) increasing consolidation at all levels raising issues of market power and control.

These profound changes in the agricultural industry present new challenges and new opportunities that require new ideas and concepts to analyze and implement. They require new learning and thinking. Some of those new ideas and concepts are presented here, not as empirically verified truths, but as "thoughts" to stimulate different and better thinking. They have been developed based on observations, analysis and discussions with numerous managers and colleagues in agribusinesses in North America and Europe. This series focuses on Financing and Supplying Inputs to the 21st Century Producer; companion series are also available on Farming in the 21st Century (Staff Paper 99-9), and Value Chains in the Food Production and Distribution Industries (Staff Paper 99-10).

Our purpose in sharing these "thoughts" is to invite discussion, dialogue, disagreement — in general to encourage others to develop better "thoughts".

Keywords: technology platforms, agricultural finance, marketing strategy, input suppliers, grower segments, financial markets

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Biological and Mechanical Technology Platforms in Production Agriculture

Two technology platforms are expected to dominate production agriculture in the future: 1) the biological technology platform, and 2) the mechanical technology platform. In the past companies such as Deere and Case-IH have attempted to provide full line machinery services -- in essence to supply the full component set for the mechanical technology platform. This approach has not dominated the biological technology platform. Instead, the genetic, chemical, and nutritional dimensions of this platform have generally been provided by separate companies. But that is changing dramatically with mergers and acquisitions in the genetics and chemical industries in particular, thus resulting in a more integrated biological technology platform than in the past. In the future, individual producers will likely choose a prime supplier of their biological inputs and thus be committed to the full package of seed, chemicals and plant nutrition from a single source similar to what is common today in the choice of a particular machinery and equipment line. In essence, it may be increasingly more common for farmers to choose a specific biological technology platform and a specific mechanical technology platform to optimize productivity and efficiency.

An interesting issue in the future will be whether the biological technology and the mechanical technology platforms need to be integrated to obtain the highest performance — i.e. will certain biological platforms work better with selected mechanical platforms, or can the choice of a biological technology platform be made independent of the choice of a mechanical technology platform. This integration between the two technology platforms is not likely to occur with respect to tillage operations, nor would one expect that harvesting activities would require a unique integration of these technology platforms. But with the increased specificity that precision farming brings to seed, chemical and nutritional ingredient application and management, it is conceivable that in the future more integration will be needed between the biological technology platforms and the mechanical technology platforms in these dimensions or stages of crop production.

The potential implications of this increased integration is that a particular biological technology platform will only produce optimum yields if it is combined with the proper mechanical technology platform. Consequently, tighter alliances might be expected in those circumstances between biological technology companies such as Monsanto or Norvatis and mechanical technology companies such as Deere or Case-IH. And the important points of interface between these technologies would be in seeding, chemical application and nutritional applications rather than in tillage or harvesting. This would suggest that the tillage and harvesting activities could be more readily provided by a wider spectrum of both technologies and/or providers, as it is less critical for these activities to be a fully integrated part of the total production technology package.

If tillage and harvesting activities thus become less unique and specific to a total production technology package, they are not only more easily outsourced, but have the prospect of becoming commoditized. And with commoditization comes lower profit margins for these services and for the machinery and equipment that provide such services. The implication would be that the most unique mechanical technology services and thus the highest potential profit margins would be in planting, chemical and nutritional input applications rather than in tillage and harvesting activities. These former processes would also be the most critical points of potential power and control for mechanical technology companies to negotiate a stronger position with biological technology companies in the increasingly more tightly aligned supplier value chains in production agriculture.