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AI Applications in North Dakota Agriculture

Artificial Intelligence (AI) is expected to become an increasingly common part of agricultural equipment, software, and business management. Many new tractors, sprayers, livestock systems, financial tools, and agronomic platforms now incorporate AI-assisted features by default. As adoption increases, questions extend beyond productivity to issues such as data ownership, liability, market competition, workforce needs, and producer control over business decisions.

EXAMPLES OF CURRENT AGRICULTURAL APPLICATIONS

- **Image-Based Scouting:** Drones, satellites, and computer vision can help detect crop stress, weeds, disease, and insects, allowing producers to prioritize scouting and treatment across large fields.
- **Targeted & Variable-Rate Inputs:** AI-assisted sprayers and prescription tools can support more targeted application of seed, fertilizer, and crop protection products.
- **Irrigation & Water Management:** Sensors and models can help producers make more informed irrigation decisions where irrigation is used.
- **Livestock Monitoring:** Sensors and cameras can track behavior, movement, feed intake, and other health indicators, helping producers identify potential issues earlier.
- **Farm Management & Decision Tools:** AI-assisted platforms can help with yield estimates, risk assessment, marketing decisions, financial analysis, recordkeeping, and timing recommendations.

POTENTIAL BENEFITS FROM ADOPTION

- **Improved Efficiency:** AI tools may help producers make faster decisions, reduce time spent on routine monitoring, and better prioritize labor.
- **More Targeted Input Use:** Targeted spraying and variable-rate systems may reduce unnecessary input application while maintaining crop protection and production goals.
- **Earlier Detection:** Crop and livestock monitoring systems may help identify problems earlier, allowing producers to respond more quickly.
- **Better Information for Decision-Making:** AI can organize large amounts of field, livestock, weather, and financial data into information producers can use in day-to-day management.

PRODUCER CONCERNS ABOUT ADOPTION

- **Cost:** New equipment, software subscriptions, upgrades, and technical support can be significant investments, especially for small and mid-size operations.
- **Producer Control:** Producers may be concerned about becoming too dependent on software, outside platforms, or company recommendations.
- **Data Ownership and Privacy:** Connected equipment generates farm-specific data, raising questions about who owns it, who can access it, and how it may be used.
- **Equipment Compatibility, Support, and Connectivity:** AI tools may be less useful if they do not work well with existing equipment and rural areas without cellular coverage or if reliable local support and training are limited.

CONSIDERATIONS AND PUBLIC POLICY OPTIONS

- **North Dakota Context:** North Dakota's large fields, livestock sectors, labor challenges, and rural connectivity gaps may affect how useful AI tools are for producers.
- **Farm Data Protection:** AI-enabled equipment collects farm-specific data, raising questions about ownership, consent, privacy, cybersecurity, and unauthorized use.
- **Technology Marketplace:** As AI becomes part of equipment and software, producers may face concerns related to competition, right to repair, service access, subscriptions, and data portability.
- **Infrastructure and Training:** Broadband, cellular service, technical education, Extension support, and North Dakota-based research may influence whether AI tools are practical.
- **Public Policy Options:** Potential approaches include stronger transparency requirements for how AI models use farm data, clear consent mechanisms for data sharing, voluntary or mandatory codes of conduct for ag technology providers, and support for open interoperability standards.

QUESTIONS TO CONSIDER

NDFB policy already touches on several issues connected to AI; however, the current policy does not specifically address AI in agriculture.

- ▶ What ways, if any, have you used AI or AI-assisted technology in your farm or ranch operation?
- ▶ Should NDFB take part in the discussion around artificial intelligence in agriculture? If so, what concerns or opportunities should guide that discussion?