

III. Executive Summary (limited to one page)

Public concern has emerged over potential expansion of North Dakota's confined livestock industry, in spite of development of a strategic plan for North Dakota agriculture which calls for expansion of animal enterprises. However, both dairy and swine expansion can occur on the northern high plains consistent with sound agronomic principles and environmental health practice. To do so will require use of precision application technologies which augment capable management of these farms. This proposed 3-year initiative expands the program of the Dakota Center for Technology-Optimized Agriculture, consistent with its original design, by addressing the need to harness emerging data-based site-specific control technologies to agronomic knowledge of soil profiles, crop need, and use of manure nutrients. Since towed-hose manure slurry application tools are used by dairy and swine producers in North Dakota, this initiative proposes to couple site-specific data and controllers to these knifing technologies, thereby precisely placing manure in soil zones with the most productive capacity, and retarding application where soil is unfit for normal production or within areas which constitute buffers, watersheds, set-asides, or other fragile acreages. Additionally, this initiative proposes to develop a prototypical manure injection tool, additional site-specific control technology, new data capture capability, educational modules which dairy, swine, and other livestock producers could access at any time when engaged in year-to-year strategic planning of their enterprises, and incentives for job growth and development through licensing, franchising, and allied entity creation. En-route, scientifically valid experimental data will be analyzed, required reports will be provided, the DCTOA's Steering Committee will convene, educational modules will be placed on an e-college backbone, licensing/franchising options with DCTOA partners and other entities shall be explored and deployed, and legislatively-mandated accountability measures will be compiled.

Attachment #1 – Proposed Budget – Matching Funds

DCTOA partners have committed \$843,400 in matching funds of various types. Briefly summarized, these partners are committed in the following manner (detail in Attachment # 7):

Public Sector:

Lake Region State College

Cash match	\$ 50,000
In-kind use of LRSC farm, answer farms, etc.	14,400
Federal Resources	248,000

Private Sector:

Agri ImaGIS Technologies, Inc

In-Lieu of Cash	60,000
In-Kind	90,000

AGVISE Laboratories (Destroyed by tornado on 08/26/07) (Staff will monitor project!)

Airborne Data Systems, Inc.

In-Lieu of Cash	50,000
In-Kind	210,000

Farmers Edge Precision Consulting, Inc.

In-Lieu of Cash	21,000
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Packet Digital, LLC.

In-Lieu of Cash	10,000
In-Kind	10,000

Verdi-Plus

In-Lieu of Cash	30,000
In-Kind	<u>50,000</u>

TOTAL \$843,400

Attachment # 1 – Proposed Budget – Projected Expenditures

Objective 1: Injection tool fabrication in year 01:

Staff Salaries, Fringe, etc.	\$ 31,000
Equipment Components	39,000

Objective 2: High-resolution aerial stereographic imagery camera development, image acquisition, archiving, and data manipulation software development in year 01:

Staff Salaries, Fringe, etc.	100,000
Equipment Components	50,000

Objective 3: Design and development of remotely transmitting nutrient sensors and on-board machine controllers in year 02:

Staff Salaries, Fringe, etc.	30,000
Equipment Components	11,000

Objective 4: Answer farm 2-year trial in years 02-03:

Staff Salaries, Fringe, etc.	45,000
Answer Farm Cost to Modify Manure Application	24,000

Objective 5: Design and field test of educational modules in year 03-04:

Staff Salaries, Fringe, etc.	43,000
Beta Tests of Modules on the e-College Frame	9,000

Assessment of Content Reliability, Validity, &

Livestock Producer Ease of Use	12,000
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Objective 6: Data Management, progress reports, and scientific journal entries in years 01-04:

Staff Salaries, Fringe, etc.	<u>6,000</u>
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TOTAL \$400,000