SASKATCHEWAN DRAINAGE ENHANCEMENT NETWORK (DEN)

-- DRAFT FOR DISCUSSION --

We are developing a "Made in SK" approach to Ag Water Management. Water management silos exist across this province. Collaboration within the province and across our borders will benefit everyone.

MISSION: Develop a Saskatchewan Drainage Extension Network to **connect** landowners, agricultural organizations, industry, and researchers to share and improve knowledge on progressive drainage practices in Saskatchewan to support soil health, crop management and healthy working landscapes.

OBJECTIVES:

- To promote partnerships and collaboration among stakeholders interested in drainage, soil and crop management, and environmental quality within agricultural landscapes.
- To provide technical information and economic analysis to government and policy makers to expand and support agriculture drainage in SK.
- To develop outreach educational programs, events, workshops and materials.
- To maximize efficiency and viability of existing and potential agriculture acres in SK.

BACKGROUND:

1. **Responsible agriculture drainage is a critical business risk management (BRM) tool on the farm.** In many areas, it may be the most important BRM tool, providing the biggest return on investment (>$85/ac). We need more resources and information sharing and collaboration on drainage within SK hence the DEN proposal – modelled after the YEN Concept. **Better results through sharing data and collaboration!**
    a. YEN CONCEPT - The Yield Enhancement Network – or YEN – connects agricultural organizations and farmers who are striving to improve crop performance. It is a global series of regional networks that help local farmers better understand their actual and potential yields and learn what is limiting that potential. It is an opportunity to share and improve knowledge and datasets. To help farmers work with their peers to bring greater benefit to their farms, their farming practices, and their bottom line.

2. **Saskatchewan is made for crop production.** Drainage is essential for crop production.
   a. SK hosts 44% of Canadian farmland
   b. Agriculture is the main economic driver of the Saskatchewan Provincial GDP
   c. Of the 161,087,998 acres of land in Saskatchewan:
      - 24% of those acres are in annual crop production
      - 2% are in perennial forage and pasture
      - 13% are habitat acres hosted by farmers (wetlands, uplands, native pasture)
   d. Saskatchewan farmers rely on agriculture drainage and irrigation to be competitive and survive.
      - 150,000 + quarters benefit from drainage = 24 million acres (all land relies on proper drainage)
      - 10-year plan to irrigate up to 500,000 acres of land in west-central and southern Saskatchewan
      - For irrigation acres to be highly productive, they also require a proper drainage system
      - Focus on managing and maximizing crop production acres within AG production zones / working landscapes

3. **Efficiency gains are required for SK agriculture** in the areas of overall productivity, economics and sustainability to maintain global competitiveness.
   - Enhanced crop production and yields through management and technology
   - Improve soil health and conservation
   - Improve ag water drainage and understandings of water resource utilization on farm
   - Evaluation of risk management and average net income of SK farm
   - Viability of the farm for the next generation
   - AG is a foundational pillar of the SK Growth Plan

4. There is a larger environmental / conservation movement to protect habitat and preserve water quality in SK. **We require more public awareness of agriculture practices (especially responsible drainage)**, and to **change the narrative** to the positive role that farmers have in role in preserving soil health, water health, habitat and the health of their environment / farm business.

5. **Saskatchewan's Growth Plan** 2030 targets for agriculture:
   - Increase crop production to 45 million metric tonnes (MMT) by 2030
   - Grow Saskatchewan's agri-food exports to $20 billion
   - Increase agriculture value-added revenue to $10 billion.
   - Crush 75 per cent of the canola Saskatchewan produces in Saskatchewan.
   - Process 50 per cent of the pulse crops Saskatchewan produces in Saskatchewan.
   - Double meat processing and animal feed value-added revenue to more than $1 billion.
   - Increase the value of exports by 50 per cent.
   - Grow the number of international markets to which Saskatchewan exports more than $1 billion.
   - Expand irrigation in Saskatchewan.

DRAINAGE EXTENSION RESOURCES - Professional and academic outreach services designed to provide businesses, farmers, agency personnel and other stakeholders with the highest quality expertise and assistance.

- SK – SaskFSA, membership and network – www.saskfsa.ca
- Michigan State University - Agricultural Drainage - Agriculture (msu.edu)
- Iowa State University - Extension Program | Ag Water Management (iastate.edu)
- Perdue University - Agricultural Drainage (purdue.edu)
- Virginia State University - Factors-when-Considering-an-Agricultural-Drainage-System.pdf (vt.edu)
- North Dakota State University - Dr. Thomas F. Scherer | Agricultural and Biosystems Engineering | NDSU
- Drainage Contractor - https://www.drainagecontractor.com/
- Water Table Podcast - https://podcasts.apple.com/ca/podcast/the-water-table/id1538507698
- Agriculture Drainage Management Coalition - https://admcoalition.com/
- Transforming Drainage - https://transformingdrainage.org/
- Ontario - Cropland Drainage (gov.on.ca)
- Ontario drainage guide and BMP series documents - Best Management Practices Series (gov.on.ca)
- Manitoba Drainage BMPs - Drainage Management | Manitoba Agriculture | Province of Manitoba (gov.mb.ca)
- Don Flaten - University of Manitoba - Faculty of Agricultural and Food Sciences - Dept of Soil Science - Dr. Don Flaten (umanitoba.ca)

RESOURCE LINKS:

Saskatchewan Soil Information System
https://sksis.usask.ca/#/map

AB, SK, MB Online Soil Maps: Soil Series, Soil texture, Soil pH, Ag Capability Maps - GIS4AG
https://soils.gis4ag.com/

Understanding the Economics of Tile Drainage - Iowa State University Extension and Outreach
(NOTE - Farmland Tile Drainage Investment Calculator – excel file located on right page margin)
https://www.extension.iastate.edu/agdm/wholefarm/html/c2-90.html

Determining if Drainage is Right for You - University of Minnesota
https://extension.umn.edu/agricultural-drainage/subsurface-drainage-red-river-valley

Guide to Drainage - University of Minnesota
https://extension.umn.edu/crop-production/agricultural-drainage

Technical, Planning, and Design - University of Minnesota Extension
http://apps.extension.umn.edu/agriculture/water/planning/

Drainage Spacing Calculators - to address common drainage questions - http://www.igrowdrainage.org/#/

Beneficial Management Practices for Agricultural Tile Drainage in Manitoba
http://pami.ca/beneficial-management-practices-for-agricultural-tile-drainage-in-manitoba/

Agricultural BMP Handbook for Minnesota 2017 - University of Minnesota
https://bbe.umn.edu/sites/bbe.umn.edu/files/agricultural-best-management-practices-handbook-for-minnesota-second-edition.pdf

Transforming Drainage - is a collaborative field research and synthesis effort that brings together historic and current agronomic, hydrologic, and climate data
https://transformingdrainage.org/

Drainage Water Management Training Videos – A series of videos was developed by US Extension engineers at land-grant universities across the Midwest to provide instruction on drainage water management practices.
https://transformingdrainage.org/videos/videos/

Sodic Soil Gypsum Project - Ag Vise
https://www.agvise.com/wp-content/uploads/2012/07/John-AGVISESodium-GypsumProject07-11.pdf

Irrigation Crop Diversification Corporation (ICDC)
http://irrigationsaskatchewan.com/icdc/

Reclamation of a Saline Irrigated Field using Subsurface Drainage - Canada-Saskatchewan Irrigation Diversification Centre (CSIDC)
http://www.agr.gc.ca/eng/about-us/offices-and-locations/canada-saskatchewan-irrigation-diversification-centre/archived-content-canada-saskatchewan-irrigation-diversification-centre-publications/archived-content-reclamation-of-a-saline-irrigated-field-using-subsurface-drainage/?id=1193663850063

Stewart & Kantrud Wetland Classification System -
https://pubs.usgs.gov/rp/092/report.pdf