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Notes on using MMP in Alberta
16-May-2005 for the newest version 0.2.0.1

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Background Information:

This Alberta Manure Management Planner (MMP) is a customized version from Purdue University's MMP software program. The user enters information about the operation's fields, crops, storage, animals, and application equipment. MMP helps the user allocate manure (where, when and how much) on a monthly basis for the length of the plan (1-10 years). This allocation process helps determine if the current operation has sufficient crop acreage, seasonal land availability, manure storage capacity, and application equipment to manage the manure produced in an environmentally responsible manner.

Another program called Spatial Nutrient Management Planner (SNMP) is used in the United States as the "front end" of the MMP program. SNMP helps to lay out an operation's fields and setback areas spatially and let its GIS automatically determine for each field: total field size, setback area acres, spreadable acres (total acres less any setback areas within a field), and soil types. Currently in Alberta, this GIS interface is not set-up with Alberta MMP. Therefore the information contained within section 3 of the attached Getting Started with Manure Management Planner guide is not useful for the current Alberta MMP version. But this will be included in the next phase of development and will provide the same services as SNMP.

Alberta Specific Notes:

(1) You **can install both** the Alberta and U.S. versions of MMP on the same computer.

If the **program version number is the same** for both installers (e.g., 0.19), make sure you install them to the same folder. If the release number (e.g., 0.1.9.2) is the same for both installers, the order in which you install them is not important. If the release numbers are different (e.g., 0.1.9.1 and 0.1.9.2), be sure to install the one with the higher release number last. To determine an installer's release number, right-click the SetupMMP.exe or SetupMMP_Alberta.exe file in Windows Explorer and select Properties. In the Properties dialog, click the Version tab to display the file version. The file version corresponds to the program release number displayed in parentheses in MMP's About box.

Note that when both versions are installed to the same folder, uninstalling one of them uninstalls both of them. When this happens, simply re-install the version that you want to use.

If the **program version number is different** for the two installers (e.g., 0.19 and 0.20), install them to different folders. Note that the shortcuts on the Windows desktop and Start Programs menu will launch only the last-installed version. To run the other version, double-click its mmp.exe file in Windows Explorer (or create your own shortcut to its mmp.exe file).

When different versions are installed on the same computer, uninstalling one of them may remove the MMP shortcut from the Windows desktop. If this happens, simply run the remaining version's uninstaller using Add/Remove Programs on the Windows Control Panel and choose Repair in the Select Uninstall Method dialog to restore the MMP shortcut.

To install the MMP program off of the CD onto your computer's harddrive:

a. Click on the Install Program button on the CD screen menu. This will then launch the MMP Alberta setup program, which will install the Alberta MMP program onto your computer.

b. Follow the instructions on each window panel display in the MMP Alberta setup program

c. Please copy the CD's ReadMe folder into your C:\ProgramFiles\MMP0.20 folder. This folder contains the User's Guide and the Alberta Notes files which are in PDF formats.

To install the MMP program off of the .exe file (downloaded from Ropin the Web Internet website)

Simply follow the instructions on the installation windows in which the program will install on your computer's hard drive as: C:\ProgramFiles\MMP0.20 folder. If you downloaded the MMP files off of AAFRD's Ropin the Web website in the 5 sections, then launch the batch file which will create the MMP.exe file for you.

(2) At a minimum, be sure to enter the following soil test data for each field: **P**, **K**, **NO$_3$-N**, and **EC**. If the P and K values are in ppm, be sure to leave the Levels Are In Lb/A box unchecked. For phosphorus and potassium, the manure management planner defaults to a maximum P$_2$O$_5$ and K$_2$O recommendation minus the calibrated soil test level.

(3) MMP assumes that the nitrate soil test value is the average nitrate level for a 24" sample. In Alberta, soil test nitrate is recommended for each individual soil depth (0-15, 15-30 and 30-60 cm or 0-6, 6-12, and 12-24 inches) that will produce a total sum for the soil. Enter all soil nitrate values in the NO$_3$-N columns on the Soil Test Nitrate calculator panel. This panel is new for the 0.2.0.1 version of the MMP program. Depths units can be entered either as inches or centimeters. When you have finished entering in the values, you need to click on the calculate button, for the computer to derive a single nitrate value and then click the accept and close buttons. Or you can use this equation to average the three nitrate values. Note that the nitrate values **must** be in ppm.

[0-6" depth nitrates + 6-12" depth nitrates + (12-24" depth nitrates) x 2] / 4

MMP multiplies the NO$_3$-N value you enter by 8 to get the nitrate credit in Lb/A.

Tip: If you have NO$_3$-N values in Lb/A, divide each value by 8 to get ppm.

If you do not have all three nitrate soil test values, then use these equations to estimate the missing nitrate soil test values:

For non-irrigated fields:
o   For 0-15 cm soil samples
$STN_{(mean)\ ppm} = (STN_{(0-15)\ ppm} * 1.84)/4$

o   For 0-15 and 15-30 cm soil samples
$STN_{(mean)\ ppm} = ((STN_{(0-15)\ ppm} + STN_{(15-30)\ ppm}) * 1.20)/4$

o   For 0-15, 15-30 and 30-60 cm soil samples
$STN_{(mean)\ ppm} = (STN_{(0-15)\ ppm} + STN_{(15-30)\ ppm} + (STN_{(30-60)\ ppm} * 2))/4$

o   For 0-30 cm soil samples
$STN_{(mean)\ ppm} = (STN_{(0-30)\ ppm} * 1.20)/4$

o   For 0-30 and 30-60 cm soil samples
$STN_{(mean)\ ppm} = (STN_{(0-30)\ ppm} + STN_{(30-60)\ ppm})/4$

For irrigated fields:
o   For 0-15 cm soil samples
$STN_{(mean)\ ppm} = (STN_{(0-15)\ ppm} * 3.03)/4$

o   For 0-15 and 15-30 cm soil samples
$STN_{(mean)\ ppm} = ((STN_{(0-15)\ ppm} + STN_{(15-30)\ ppm}) * 1.67)/4$

o   For 0-15, 15-30 and 30-60 cm soil samples
$STN_{(mean)\ ppm} = (STN_{(0-15)\ ppm} + STN_{(15-30)\ ppm} + (STN_{(30-60)\ ppm} * 2))/4$

o   For 0-30 cm soil samples
$STN_{(mean)\ ppm} = (STN_{(0-30)\ ppm} * 1.67)/4$

o   For 0-30 and 30-60 cm soil samples
$STN_{(mean)\ ppm} = (STN_{(0-30)\ ppm} + STN_{(30-60)\ ppm})/4$

(4)   The Manure Management Planner makes use of crop target yields to estimate nitrogen requirements. These crops include:
- HRS Wheat (non-irrigated and irrigated)
- Soft Wheat (non-irrigated and irrigated)

- Durum Wheat (non-irrigated and irrigated)
- Utility Wheat (non-irrigated and irrigated)
- CPS Wheat (non-irrigated and irrigated)
- Feed Barley (non-irrigated and irrigated)
- Malt Barley (non-irrigated and irrigated)
- Hulless Barley (non-irrigated and irrigated)
- Triticale (non-irrigated and irrigated)
- Oats (non-irrigated and irrigated)
- Grain Corn (irrigated)
- Silage Corn (irrigated)
- Canola (non-irrigated and irrigated)
- Flax (irrigated)
- Sunflowers (irrigated)

For those crops without yield equations, the manure management planner defaults to a maximum nitrogen requirement based on the soil group or irrigation and legume content minus the soil test nitrogen level. Changing the target yield will have no effect on the nitrogen recommended.

(5) If a field is irrigated, be sure to check its **Irrigated With Water** box on the Fields panel.

(6) Enter your own manure lab analysis or book values on the **Analysis** panel to override MMP's excretion-based estimate. If you do so, be sure also to enter your own estimate of annual manure production in the **Measured Manure Production** column on the Analysis panel.

(7) Note that in Alberta, gallons refer to **imperial gallons** (1 imperial gallon = 1.201 U.S. gallons).

(8) The new version of MMP (version 0.2.0.1) has an all-new **Assessment panel** for supporting external risk assessment tools. This new panel has columns for entering each field's distance to water, water type, slope length, buffer width, drainage type, and water, wind, irrigation, gully and ephemeral erosion. In general, MMP does not use very much of this data itself, but passes the data on to external programs such as RUSLE2 and to other programs.

(9) Clicking the Soil Info button on the Fields panel generates the **Information About Soils** report for the current plan's county. The values in three of the report columns need some explanation:

Drainage indicates the soil's drainage class, as follows: 1=very rapidly, 2=rapidly, 3=well, 4=moderately well, 5=imperfectly, 6=poorly, 7=very poorly.

MiscA contains the soil group, as follows: 1=Brown, 2=Dk brown SW and Cypress Hills, 3=Dk brown NE, 4=Black SW, 5=Black NE, 6=Dk grey SW, 7=Dk grey NE, 8=Peace.

MiscB indicates whether the soil has a restricting layer, as follows: 1=soil is limited due to impervious layer, 2=soil has no limitation due to impervious layer. This is used in lieu of Bedrock Depth, which is blank for all soils.

(10) The SNMP-MMP standalone converter (for use with Missouri's SNMP GIS) does not support Alberta and is not included with the Alberta version of MMP. However, **MMP does support the importing of data** into an Alberta plan from a standard dBASE field data import file. In general, the import data specifications are the same as what's documented in **ImportDbfSpec.doc** (located in the TechDocs folder), except for the following differences:
  - The COUNTY column (if present in the .dbf import file) should be C6 and contain the 3-digit Alberta province code (101) followed by the county's 3-digit soil survey ID.
  - The SOIL1, SOIL2, and SOIL3 columns (if present in the .dbf import file) should be C18 to accommodate Alberta's longer soil map unit symbols.
  - The ACRES and SPRD_ACRE columns can be used to import field sizes in hectares with metric-unit plans, despite the column names.

A blank template file in the proper import format (**ImportTemplate_AB.dbf**) can be found in the TechDocs folder. An example data file in the proper import format (**ImportExample_AB.dbf**) can be found in the Samples folder. Note that this example data file's field sizes are in acres and its yield goals are in bushels - don't import this file into a metric-unit plan.

(11) This new 0.2.0.1 version of the Alberta MMP now has the **optional custom tool files** referred to in the program. These tool files are new and were not included in prior versions of the Alberta MMP.

(12) Attached with the MMP program are these sample plans: Alberta_Beef1, Alberta_Beef1_Metric, and Alberta_Beef2. Below are some helpful notes for the Alberta_Beef1 and Alberta_Beef2 sample example plans:

Notes on Alberta_Beef1.mmp example plan:

(a) At any given time in the feedlot there is a mix of 1,300 finishers, 1,700 finishers, and 700 growers. This will produce about 5,700 tons of manure annually in the feedlot.
(b) Fields G, J, K, L in the operation are not available for manure application. Fields F1 and F3 have initial nitrate levels greater than 200 Lb/A.
(c) All of the field manure applications are based on crop N needs except the custom rate to field M2 in Oct 2005.
(d) 1000 cubic yards (about 540 tons) of composted manure are exported annually and that an annual clean-out occurs in each Sept and is exported off the farm in May. This is shown as a transfer of 540 tons from the feedlot pile to the compost pile and an export off-farm each May of 540 tons from the compost pile.
(e) 1000 cubic yards (about 540 tons) of feedlot manure is stockpiled during the winter months. This is shown as a transfer of 180 tons each Dec, Jan, and Feb from the feedlot pile to the field pile.
(f) Each May, about 800 to 1,000 tons of manure from the feedlot pile and the 540 tons from each field pile are applied.
(g) Each Sept, about 3,000 to 3,500 tons of manure from the feedlot pile are applied.

Notes on Alberta_Beef2.mmp sample plan:

(a) Only the crop portion of field SW30-47-1W4 receives manure, so it was split into two fields of 80 acres each, one with grass, and the other with corn silage.
(b) Only half of field NW 19-47-1 receives manure at a time, so it was split into two fields of 80 acres each, both with barley silage.
(c) All of the manure is hauled from the pens and is applied in Sept.
(d) 28-0-0 commercial N fertilizer is surface broadcasted to the grass fields each April and surface broadcasted with incorporation to the silage and barley fields each May.
(e) No K_2O is needed and since only 10 Lb/A of P_2O_5 are needed, therefore no commercial P_2O_5 or K_2O fertilizers are used.

(13) Several of the **frequently asked questions** (FAQs) in the program help do not apply to Alberta.

Ignore FAQ #5. MMP's Manure Application Recordkeeping Tool (MART) is not included with the Alberta version of MMP and the WinMax program does not support the Alberta version of MMP.

Ignore the reference to Import File Maker in FAQ #9 – this is a custom tool specific to U.S. soil testing labs and is not included with the Alberta version of MMP.

Ignore FAQ #10 about the USDA-NRCS Customer Service Toolkit.

In the last point of FAQ #22, MMP assumes in Alberta that manure applied to a forage crop will be utilized in the current year if applied through August, not September as in the U.S. The assumptions about manure applied to other crops are the same as in the U.S.

(14) **Ignore the FSA columns** on the Fields panel - these columns are for USDA Farm Service Agency (FSA) field identifiers.

(15) Since an Alberta plan can be in **all metric units** or **all imperial units**, but not in a mix of units, you may need to convert some of your input data if the data are in a mix of metric and imperial units:

To convert yields or application rates in tons/acre to tonnes/hectare, divide the tons/acre by 0.446. Multiply tonnes/hectare by 0.446 to get tons/acre.

To convert yields in bushels/acre to kg/hectare, divide the bushels/acre by appropriate factor depending on the bushel weight. Multiply kg/hectare by the factor to get bushels/acre.

60-pound bushel (wheat, soybeans, field beans, field peas, lentils, legume seed): 0.0149
56-pound bushel (corn, rye, flax): 0.0159
50-pound bushel (canola): 0.0178
48-pound bushel (barley): 0.0186
32-pound bushel (oats): 0.0279
14-pound bushel (grass seed): 0.0636

To convert yields or fertilizer recommendations in pounds/acre to kg/hectare, divide the pounds/acre by 0.892. Multiply kg/hectare by 0.892 to get pounds/acre.

To convert application rates in imperial gallons/acre to litres/hectare, divide the gallons/acre by 0.089. Multiply litres/hectare by 0.089 to get imperial gallons/acre.

To convert pounds to kilograms, divide the pounds by 2.205. Multiply kilograms by 2.205 to get pounds.

To convert imperial gallons to litres, divide the gallons by 0.22. Multiply litres by 0.22 to get imperial gallons.

To convert tons to tonnes, divide the tons by 1.102. Multiply tonnes by 1.102 to get tons.

To convert acres to hectares, divide the acres by 2.471. Multiply hectares by 2.471 to get acres.