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Don Lobb
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Dear Don?

Garry Hunter sent me a copy of their Background and Design Guide for Controlled Drainage and Subirrigation in Ontario. He asked me to review it and make comments. The project is much too big for me to spend much unpaid time on.

These two practices are ones I have examined from time to time over 50 years and was never enthusiastic about the possible success of either. The closest success was a project on the Holland Marsh - Even a wet area needed additional water.

Metro Sass, who unfortunately died this past week, developed a reversible pump scheme in Dover Township with some success for very large areas, but it was marginal to the Hunter design. I am not aware of any successful substantial field applications in Ontario, except on the Holland Marsh..

I have made a cursory read of the report and make a few observations - some are quite minor and the answers may have been included had I looked deeper..

Comment 1.

The audience for this report is not apparent. If it is the audience listed in the Drainage Guide then I doubt they would have the capacity to design such a system from the information in this report.

Comment 2.

P. 18 Fig. 1.12 - for Ontario conditions the Y-axis should be cut off at 2.5 m or less.

For any selected depth the upward flux is shown to be insensitive. So designs are basically the same? To compare with Fig 1.13 and 1.14 the units are different and hard to compare.

Comment 3

P. 31 - Water deficit vs crop yield.

An Ontario source for such information is the 20 year Ontario Crop Insurance Yield Response as included on the LICO website in general terms. These data could be re-analyzed to include years of precipitation deficit and also by county to get a measure of the soil response. Some counties have a predominant soil type for the major farmed areas.. Sid Vander Veen has these data.

Comment 4

P. 39, Section 3.0 - it would be much clearer if a graph was developed, like the original developed for Windsor by Marie Sanderson years ago. The same type graph for Guelph is on page 11 of Pub. 73 Handbook of Drainage Principles. The average graph could be reworked for specific years, although history does not tell us the future. Note that the deficiency occurs late in the year. Is water important to a crop at this stage of development? Most farmers know that rainfall distribution is far more important than rainfall amount or depth, rainfall averages don't tell the crop yield story.

Comment 5

P. 42 - Section 3.6 **most important.** The cost of land today is very high and most farmers can not afford to devote sizeable areas to a pond which will require added labour to operate and may not be used every year. In my experience the trapping of water and holding for a season seldom works. Evaporation and leakage means there is seldom water when it is needed. Crop response will not pay for the non-productive land.

Comment 6

Fig. 3.1 etc. how are these monthly flows data used? Summarize what they are to show?

Comment 7

P. 41 Sec 3.3 and Table 2.4.1 re Good - Fair - Poor cropland

Peter Chisholm and I presented a paper to ASAE on Ontario soils productivity in 1984. Tom Pridham (now with R.J. Burnside Ltd, Orangeville) did research on this and we printed a report in 1988 on Productivity of Drained and Undrained Soil. Report is in U of G library. I haven't compared the data in this report with our data.. It may not matter as I don't see where it is used later.

Comment 8

4.6 Storage pond size. See my comment 5. This is always where subirrigation hangs up in practical terms.

Comment 9

4.9 I am dead sure LICO will not agree with this responsibility. It needs clarification. In the Drainage Guide we took pains to ensure that the contractor is responsible that the works he constructs are according to the Guide and best practices. The onus is on the farmer to ensure his soil will drain, or buy technical help for such a decision. The contractor cannot be expected to have a knowledge of the soil of a specific site, or to guarantee the system will actually work. That is, will water actually enter the drain.

Comment 10

Who is to use the this report? Who has the time to obtain the needed data and make into a plan. Where can the date be found? What crops can support such a system cost?

Need an example or two for an area where the practice may be feasible to show how the data included in this report is used. to obtain a satisfactory design.

Respectively



cc. Garry T. Hunter