What about N credits from peas?

Manitoba farmers have been harvesting some respectable to fantastic pea crops this fall. And with those peas comes some nitrogen (N) contribution to following crops. Many may wish to estimate a N credit for following cereal, corn or canola crops. Or is it better to just take a later fall soil nitrate test? Or simply consider any N contribution a bonus?

Manitoba's N credits following peas are generally modest versus some other jurisdictions.

- North Dakota = 40 lb N/ac credit
- Saskatchewan = ½ to 1 lb N per bu peas produced.
- Manitoba = 25 lb N/ac credit

The above guideline is based on studies conducted in 1998-2000 with results in Table 1.

Table 1. Apparent nitrogen contribution to wheat from previous pea crops[1].

Location	Pea yield bu/ac	Total N credit lb/ac
Carman 2000	53	0 (due to low following wheat yield)
Carman 1999	43	26
Carman 1998	28	15
Brandon 2000	23	16

So the variability in N contribution is large, and it would seem rather inappropriate to scale-up credits with some of our pea yields approaching 80 bu/ac in some fields this year. With those high yields, expect much of the N to have been harvested with the combine.

Prior to this study, we generally considered pulse N contributions as a yield and protein bonus in successive crops[2], and suggested that N rates be based on soil test and expected cereal yield potential.

Other studies[3] have evaluated N release from pea crop residue, and found rapid mineralization in the 4-5 weeks after harvest and residue placement on soil. So if the agronomist simply waits until later in the fall to soil sample these fields, they will capture much of the available N.

So a suggestion is to firstly soil sample cereal fields, which have rather static N levels through the fall, and let your pea residue mineralize so you can measure that portion of the N contribution with the soil test in late October.

References :

[1] Przednowek, D. W. A., Entz, M. H., Irvine, B., Flaten, D. N. and Thiessen Martens, J. R. 2004. Rotational yield and apparent N benefits of grain legumes in southern Manitoba. Can. J. Plant Sci. 84: 1093–1096.
[2] Soper, R.J., and M.R. Grenier. 1987. Fertility value of annual legume in a crop rotation. p. 7–12. *In* Manitoba agronomy forum—Winnipeg. Manitoba Inst. of Agrologists, Winnipeg, MB, Canada.
[3] Lupwayi, N. Z. and Soon, Y. K. 2009. Nitrogen release from field pea residues and soil inorganic N in a pea-wheat crop rotation in northwestern Canada. Can. J. Plant Sci. 89: 239_246.