

Pulse Agronomy Network ~ *Partnership in Industry*



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Seed Placed Fertilizer for Field Pea

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A 50 bushel field pea crop requires 153 lbs/acre of actual nitrogen, 43 lbs/acre of phosphorus (P_2O_5), 137 lbs/acre of potassium (K_2O) and 13 lbs/acre of sulfur.

Seed Bed Utilization (SBU), which is the seed row spread divided by the row spacing, determines the volume of soil in which the seed and fertilizer is placed. The larger the seed row spread over any given row spacing, the higher the SBU and the more fertilizer that can be safely placed with the seed.

Higher soil moisture, heavier textured soils (i.e. clays) and soils with higher organic matter allow more fertilizer to be placed with the seed before there is stand reduction and yield loss.

A properly inoculated field pea does not require additional nitrogen and therefore much of the concern around nitrogen fertilizers placed with the seed (like ammonia toxicity) is not applicable to field pea. However, the use of 21-0-0-24 as a source of sulfate may be a concern because of the high salt index of this fertilizer.

In regards to phosphorus placed with the seed, when comparing research results (reported as actual P) and phosphorus sold as fertilizer product (P_2O_5) one must use the conversion factor of 2.3. That is, 10 lbs/acre of P is equal to 23 lbs/acre of P_2O_5 . 23 lbs of P_2O_5 is equivalent to 45 lbs/acre of 11-51-0.

In Saskatchewan, Henry, J.L., Slinkard, A.E. and Hogg T.J, looked at the effect of phosphorus fertilizer seed placed versus side banded on the establishment, yield, and quality of pea, lentil, and fababeen. 11-51-0 was used and SBU was 13% for the seed placed trials. The results for field pea were; **1)** plant counts were higher for side banded phosphorus as compared to seed placed phosphorus. Seed placed phosphorus reduced plant stand by 50% at 44 kg P ha⁻¹ (90 lbs/acre of P_2O_5 or 176 lbs/acre of 11-51-0). **2)** seed yields were higher for side banded phosphorus. At Saskatoon, increasing rates of phosphorus resulted in significant yield increases up to 15 kg P ha⁻¹ (30 lbs/acre of P_2O_5 or 60 lbs/acre of 11-51-0). However, at Melfort and Outlook seed yield reduction occurred at rates beyond 15 kg P ha⁻¹.

In Alberta, McKenzie, R.H. et al, looked at the response of pea to rate and placement of phosphate fertilizer. 52 field trials using triple superphosphate (TSP, 0-45-0) at five rates, (0, 15, 30, 45, 60 kg P_2O_5 /ha) (0, 14, 27, 41, 54 lbs P_2O_5 /acre or 0, 27, 53, 80, 106 lbs/acre of 11-51-0) both seed placed and side banded using Carneval field pea were examined. SBU was 9% for the seed placed trials. There was no difference in yields between seed placed and banded phosphorus treatments. Phosphorus fertilizer resulted in significant yield increases in about one-half of the sites with soil test P of less than 27 lb/ac in the top six inches of soil. The researchers concluded the minimal impact of seed placed phosphorus was likely due to the less damaging effects of 0-45-0 as compared to 11-51-0.

Although field pea uses substantial amounts of potassium and some sulfur there are few documented cases of responses to the addition of these nutrients in Alberta. If these nutrients are not normally added, concerns around fertilizer applied with the seed may not be large. However, as farmers push the yield barrier, deficiencies in these two nutrients may show up and field pea crops must be closely monitored.

Link for "Pea Nutrient Requirement in Alberta" factsheet at AAFRD's "Ropin the Web" site;
[http://www1.agric.gov.ab.ca/\\$department/deptdocs.nsf/all/agdex4650?opendocument](http://www1.agric.gov.ab.ca/$department/deptdocs.nsf/all/agdex4650?opendocument)