Nebraska On-Farm Research Network

Years:	2013
Title:	Mid Season Nitrogen (Small Plot Research) - East Field
Crop:	Corn
County:	Nemaha
Study ID:	072127201301
Objective:	To determine & document the effect of Mid-Season Nitrogen on the profitability of corn production. Check
Treatments:	39 lbs (46-0-0) 59 lbs (46-0-0) 79 lbs (46-0-0)

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Information: 2013 Mid Season Nitrogen

MID SEASON NITROGEN APPLICATION

Under certain environmental conditions, corn may show significant nitrogen deficiencies in the growing season during a critical period of development (R1-R6). This may be due to exceptionally wet soil conditions which cause nitrogen losses from the soil from leaching or saturated soils which leads to denitrification. Nitrogen can also be lost from runoff when applied on top of the soil surface. Sometimes corn can show nitrogen deficiency symptoms when supplemental nitrogen is unable to be applied due to wet soil conditions or the corn becoming too tall for side-dressing.

Previous on-farm research conducted in Missouri indicates mid-season nitrogen application may be economically feasible. In Northwest Missouri in 2013, local ag suppliers were flying on urea to nitrogen deficient corn fields. This experiment was conducted to test the feasibility of this management practice.

Experiments were initiated during the summer of 2013. Two experiments were conducted in the two fields on a farm north east of Auburn in Nemaha County. This document deals with the East field.

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Information: 2013 Mid Season Nitrogen

MID SEASON NITROGEN APPLICATION (Continued)

This experiment was repeated in two fields northeast of Auburn in Nemaha County. This document deals witht the East field in the experiment. Nitrogen was applied at the rates of 0, 39, 59 and 79 lbs N/ac. These rates were used because it was initially thought the farmer farmed in 30" rows and the fertilizer quantities had already been weighed out for each plot, but when it was discovered he farms in 38" rows and each plot was 25' x 12.67' (4-38"), rates were recalculated and applied to the plots.
At harvest time, (October 8 -15), 15' of the 2 middle rows were hand-harvested. Corn was shelled, tested for moisture and yields were calculated on a 15.5% moisture basis.

NOTE: 35 lbs nitrogen applied at planting. Due to equipment failure and weather interuption the window for side dressing 75 lbs addtional nitrogen did not occur on the entire field. Aerial application of nitrogen was unavailable due to fungicide applications.
Where the crop did get a side dress application the corn averaged 150-160 bu/acre.

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Results: 2013

	Mid Season Nitrogen Yield-East	Cost/A	Gross Income	Net Income
Check	113.1 B	--	--	--
39 lbs N	146.6 A	$27.29	$140.70	$113.41
59 lbs N	155.7 A	$33.59	$178.92	$145.33
79 lbs N	147.4 A	$39.89	$144.06	$104.17
Prob>/T/	0.0110**			

Costs with N at $0.315/lb & $15/ac application - Applied 7/26/13 (46-0-0) - R1 stage of growth

Pioneer 32T84 29,800 5/11/2013 @ 2", P 10-34-0 30 lbs P w Planter

Prior Crop: Soybeans - 2012, N 28-0-0 35 lbs N 2x2 Side dress. Marginal income values based upon $4.20 price/ bushel.

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Extension is a Division of the Institute of Agriculture and Natural Resources at the University of Nebraska–Lincoln cooperating with the Counties and the United States Department of Agriculture.

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Summary: Mid Season Nitrogen

This experiment showed a significant increase in yield when nitrogen was applied mid-season to nitrogen deficient corn. It appears there may be some differences in how different hybrids respond to mid-season nitrogen application, but the hybrid used responded to even low levels of mid-season nitrogen application. At current corn prices this practice was economically viable and shows promise. Success of mid-season surface applied nitrogen application is dependent upon sufficient rainfall after nitrogen application. Future on-farm research experiments will be conducted if nitrogen deficient corn fields are identified to evaluate the feasibility of mid-season nitrogen application.

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