

YEAR ONE OF TILLAGE AND CROP ROTATION TRIAL

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The objective of this research was to evaluate the efficacy of tillage and crop rotations achieve the highest yield and soil health.

MATERIALS AND METHODS

A field trial was conducted at Prosper, ND in 2021. The experimental design was a strip block with four replicates. Field plots comprised of six 30-foot long rows spaced 22 inches apart. Plots were planted on 1 May with corn (DKC37-86RIB) and soybean (AG09XF0). Corn seeds were planted at a population of 35,000 seeds per acre while soybean seed was planted at a rate of 175,000 seeds per acre. Weeds were controlled with herbicide applications (Zidua @ 3 fl oz per acre) on 14 May, (Roundup Powermax @ 32 fl oz; Amsol @ 1% v/v; Interlock @ 4 fl oz per acre) on 1 June and (Roundup Powermax @ 32 fl oz; Outlook @ 12 fl oz; Amsol @ 1% v/v; Interlock @ 4 fl oz per acre) on 14 June as well as hand weeding throughout the summer. Govern (2 pint per acre) was applied on 27 July to control insects.

Strip tillage and conventional tillage was conducted in both the fall of 2020 and prior to planting on 11 May. 156 pounds of 46-0-0 was spread on the conventional tillage plots to be planted to corn on 11 May. 156 pounds of 46-0-0- was spread on the strip tillage and no tillage plots planted to corn on 19 May prior to rainfall.

Soybeans were harvested with a plot combine on 27 September and corn was harvested by Almaco plot combine on 18 October. Soybean analysis was conducted by the Plant Science department at North Dakota State University. Corn analysis was conducted by a Dickey John moisture and protein reader. The data analysis was performed with the ANOVA procedure of the Agriculture Research Manager, version 2019.4 software package (Gylling Data Management Inc., Brookings, South Dakota). The least significant difference (LSD) test was used to compare treatments when the F-test for treatments was significant.

RESULTS AND DISCUSSIONS