

CORN PLANTING

DEPTH CONSIDERATIONS

TO MAXIMIZE STANDABILITY
AND POTENTIAL YIELD

In regions that are prone to storms during the crop growing season, such as northwest Louisiana, planting corn at the correct depth is crucial for uniform seed emergence and reduced lodging. Farmers begin to plant corn mid- to late-March in northwest Louisiana, when soil temperatures have reached 50 F and field conditions are optimum. In April or early May, storms with straight line wind speeds of 60 mph or greater can cause severe damage to corn. Growth stage at this time typically ranges from V3 to V5 depending on planting date. As early as the V3 growth stage, a corn planting depth of 1.5 inches or less is highly susceptible to lodging, which can lead to stand loss and potential negative yield impact. Beyond lodging susceptibility, various studies have shown that planting corn at shallow depths less than 1.5 inches results in poor root development, smaller stalks and ears and yield reduction.

Given that Louisiana is prone to spring storms producing winds that could negatively affect corn population and subsequent yield, this research evaluated the effect of seeding depth on susceptibility to lodging. The study

was conducted at the LSU AgCenter Red River Research Station near Bossier City in 2024. Corn hybrid Progeny 9114VT2P was planted on April 5 at seeding depths of 1.5 inches, 1.75 inches and 2 inches in conventional tillage systems in sandy and clay soils. At six days after planting (DAP), seedling emergence was noted in corn planted at 1.5 inches while seed planted at 1.75 or 2 inches required 10 days to fully emerge. On April 28, a storm impacted Bossier City and other parts of northwest Louisiana with wind speeds as great as 60 mph. Lodged corn plants (V3 growth stage) were counted a day after the storm from a 10-foot long transect on each plot. Lodged plants were expressed as a percentage of emerged plants. Results indicated that corn planted at an average depth of 1.5 inches was more susceptible to lodging (Figure 1a) than that seeded at 1.75 inches or 2 inches (Figure 1b). Within the context of this publication, the definition of lodging is that which was induced by wind from heavy storms thus termed wind-induced lodging. Corn was considered lodged if it is displaced from its vertical position and almost laid flat to the soil surface. Depending on the severity, a wind-induced lodged plant may not recover to its normal state.



Figure 1a. Severe lodging at 1.5-inch planting depth.



Figure 1b. Minimal lodging at 2-inch planting depth.

Percentage of Lodged Plants

In sandy soil, corn plant population at a 1.5-inch depth experienced a 6.1% lodged stands compared to 4.8% in clay soil. At the 2-inch soil depth in sandy soil, 1% of lodged stands was recorded while in clay soil 0.5% (Table 1). Findings indicated a quick recovery (the ability of the plant righting itself) from lodging in corn planted at 1.75-inch or 2-inch soil depths compared to 1.5 inches where most of the population did not recover fully. In

clay soil, the trend was similar with the 1.75-inch and 2-inch planting depths less susceptible to wind impacts. In clay soil, when planting at a depth of 2 inches, growers should consider the effects of soil surface sealing arising from heavy rainfall during the germination period that could lead to reduced and uneven emergence (Figure 2). This is evident in the clay soil where there was reduced corn emergence (Table 1).

Table 1. Corn population lodged in response to planting depth and wind impact at V3 growth stage.

Avg. planting depth (inches)	Plants/ha	N [†]	Avg. lodged plants	% of lodged plants
Sandy soil				
1.5	84,723	53	3.25	6.1
1.75	83,915	52	1.75	3.4
2	83,915	52	0.75	1.0
Clay soil				
1.5	83,915	52	2.5	4.8
1.75	83,109	51	0.75	1.5
2	73,427	46	0.25	0.5

● *N[†] corresponds to the average number of plants from a 10-foot (≈3 meter) section of the two center rows in which plants were counted.*



● *Figure 2. Uneven emergence and leafing out below ground at 2-inch planting depth in clay soil followed by heavy rainfall.*

While the ideal corn planting depth depends primarily on soil moisture and temperature, it is also important to consider the likelihood of rain events during the germination period particularly in clay soils hindering seedling emergence planted at 2-inch depths. Overall, the results obtained from this study reveal that corn planted at 1.75 or 2 inches in sandy soil had good stand establishment that was able to fully recover from the

lodging resulting from storm winds. In clay soil, beyond adequate soil moisture and temperature, and in the absence of imminent heavy rain events following planting, a target planting depth of between 1.75 or 2 inches would be the ideal planting depth to maximize standability. It is also important to check seed depth in various sections of the field during planting to ensure uniform planting depth and even emergence.

● *Photos by Peters Egbedi*

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P3984 (online) 02/25

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