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2016 Virginia On-Farm Corn Test Plots



A summary of replicated research and demonstration plots conducted by Virginia Cooperative Extension in cooperation with local producers and agribusinesses

2016 Virginia On-Farm Corn Test Plots

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The research and demonstration plots discussed in this publication are a cooperative effort by nine Virginia Cooperative Extension employees, a faculty member at Virginia State University, numerous producers, and many members of the agribusiness community. The field work and printing of this publication are mainly supported by the Virginia Corn Check-Off Fund through the Virginia Corn Board. Anyone who would like a copy should contact their local extension agent, who can request a copy from the Essex County Extension office.

This is the twenty-fifth year of this multi-county cooperative project. Further work is planned for 2017.

The authors wish to thank the many producers and agribusinesses that participated in these research and demonstration plots.

Disclaimer: Commercial products are named in this publication for informational purposes only. Virginia Cooperative Extension does not endorse these products and does not intend discrimination against other products which also may be suitable.

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General Summary

These demonstration and replicated studies provide information that can be used by Virginia corn growers to make better management decisions on their farms. Refer to individual results for more details.

Corn hybrid selection continues to be challenging. With more seed companies and more GMO options and seed treatment packages than ever before, hybrid selection can be a difficult decision. We evaluated early maturity hybrids (107 day RM or less) at 2 locations, medium maturity hybrids (108-112 day RM) at 4 locations and full season hybrids (113 day RM or more) at 2 locations. The Ag-Expo location in Dinwiddie County had hybrids in all three maturity groups, and as a group the early, medium, and full season hybrids yielded 132, 150, and 159 bushels per acre, respectively. At the Virginia State University site, the medium hybrids averaged 176 bushels per acre, and the full hybrids averaged 178 bushels per acre. Farmers should continue to plant hybrids of multiple maturities to help spread production risk. In fields with very good soil types and/or irrigation, farmers should consider medium or full season hybrids.

In follow up work to 2015, we evaluated uniform stand emergence in several locations. Emergence was checked and flagged for 3 straight days or more at the same time each day as soon as corn began spiking the ground. Ears from the forty foot section of row were hand harvested and weighed at the end of the season and yields were calculated. Below are average yields from five studies at Virginia State University, Virginia Beach, and Westmoreland Counties. Refer to individual results in this publication for more details.

| Day of Emergence | Yield (bus./acre @ 15.5%)* |
|---|-----------------------------------|
| Day 1 | 193 |
| Day 2 | 173 |
| Day 3 | 142 |
| After Day 3 Unknown (3 studies only) | 146 |

Uniform emergence is critical for obtaining maximum yields and farmers should pay close attention to planter speed, strive for uniform planting depth, make sure the planting slot is closed, replace worn planter parts, and be sure to plant hybrids with good stress emergence, especially when planting early into cold and wet soils.

We continued to evaluate legume cover crop species in corn production. Our work continues to show that these species can provide significant nitrogen to the subsequent corn crop. Hairy vetch, in particular, shows great promise in helping to increase corn yields.

The increased yield potential of today's corn hybrids requires evaluating current nitrogen fertilizer recommendations. There is interest in applying nitrogen to corn at tasseling in an effort to increase yields. We evaluated this practice at five locations. Yields were very good to excellent in all locations. Over the five locations, the late season nitrogen application increased yields almost six bushels per acre, but the difference was statistically significant in one location and there was not difference in two locations.

A summary of the results of 202 tissue samples is provided. These samples were taken as part of fertility plots and troubleshooting production problems over the past six years.

King and Queen Early Maturity Hybrid Comparison

| | |
|------------------------------|---|
| Cooperators: | Producer: Craig Leggett Extension: David Moore, VCE-Middlesex Industry: Participating Companies |
| Previous Crop: | Soybeans |
| Soil Type: | Emporia Sandy Loam |
| Plant Date: | April 27, 2016 |
| Row Space/Population: | 30 inch rows/27,700 |
| Check Hybrid: | Pioneer P0604AM |
| Crop Protection: | Glyphosate +2,4-D +Lambda Cy+ Atrazine + Simazine + Corvus |
| Fertilization: | 18-39-60 Broadcast 50-0-0 with Pesticides 100-0-0 Sidedress |
| Harvest Date: | September 13, 2016 |

| Company | Hybrid | Moisture | TW | Yield at 15.5% |
|-----------------------|----------------|----------|------|----------------|
| Augusta | 2956 | 15.4 | 56 | 170.6 |
| Check (P0604) | | 15.3 | 58 | 182.9 |
| Channel | 201-00DGVT2P | 15.1 | 58.5 | 167.7 |
| Check | | 15.4 | | 189.1 |
| Dekalb | DKC 57-92RIB | 15.3 | 57 | 171.6 |
| Check | | 15.5 | | 184.2 |
| Doebler's | 564HRQ | 15.4 | 57 | 167.1 |
| Check | | 15.5 | | 190.2 |
| Dyna-Gro | 44VC36 | 15.4 | 59 | 184.4 |
| Check | | 15.5 | 58 | 168.2 |
| Hubner | H4359RC2P | 15.6 | 56.5 | 160.3 |
| Check | | 15.6 | | 188.7 |
| Pioneer | P0339AM | 15.5 | 57 | 176.0 |
| Check | | 15.7 | | 182.5 |
| Seed Consultants | SCS 10HR43 | 15.7 | 56.5 | 150.0 |
| Check | | 15.8 | 58 | 172.4 |
| Syngenta Seeds | NK-N66V-3000GT | 16.0 | 56 | 180.9 |
| | | | | |
| Average Hybrid | | | | 169.8 |
| Average Check | | | | 182.3 |

Discussion: This location had decent rain all summer. Very sandy ground. Use this and other Virginia Tech on-farm corn plot information when making planting decisions for 2017.

2016 Dinwiddie Corn Maturity Corn Hybrid Demonstration Plot (VA Ag Expo)

Cooperators: Producer: Billy Bain
Extension: Mike Parrish, Dinwiddie

Soil Type: Mattaponi Sandy Loam
Tillage: Strip-till
Previous Crop: Soybeans
Planting Date: April 18, 2016 Population: 28,500/acre
Fertilizer: Broadcast 600lbs 5-10-30
55 gals Liquid Nitrogen 24%

Crop Protection: Burndown: Roundup – 1qt Layby: Halex – 3.5pt
Atrazine – 1qt Atrazine – 1pt
Aim – 1oz

Harvest Date: September 14, 2016

| Hybrid | Maturity | % Moisture | Yield (bu./A @15.5%) |
|--------------------------------|----------|------------|----------------------|
| Check/Pioneer P1319YHR | Early | 15.5 | 137.1 |
| Augusta 2956 | Early | 15.2 | 122.5 |
| Channel 201-00DGVT2P | Early | 14.4 | 112.5 |
| Dekalb DKC57-92RIB | Early | 14.7 | 128.0 |
| Doebler's 564HRQ | Early | 14.3 | 129.1 |
| Dyna-Gro 44VC36 | Early | 14.7 | 131.8 |
| Hubner H4359RC2P | Early | 14.7 | 140.0 |
| Pioneer 0339AM | Early | 15 | 146.7 |
| SC, Inc. SCS 10HR43 | Early | 14.9 | 132.0 |
| Syngenta Seed – NK N66V-3000GT | Early | 16.1 | 146.2 |
| Providence AXC6112 | Early | 16 | 145.9 |
| Check/Pion P1319YHR | Mid | 19 | 154.4 |
| Augusta 5062 | Mid | 16.8 | 173.6 |
| Channel 211-00DGVT2P | Mid | 14.4 | 131.3 |
| Dekalb DKC62-08RIB | Mid | 15.8 | 137.3 |
| Doebler's 5015AMX | Mid | 16.5 | 161.1 |
| Dyna-Gro D52VC91 | Mid | 15.1 | 137.9 |
| Hubner H6624RCSS | Mid | 14.5 | 160.6 |
| Pioneer 1197AM | Mid | 16.3 | 185.5 |
| SC, Inc. SCS1131YHR | Mid | 16.4 | 139.6 |
| SC, Inc. SC11AQ15 | Mid | 15.5 | 137.3 |
| Syngenta –NK N74L3010 | Full | 15.6 | 134.3 |
| Check/Pion P1319YHR | Full | 15.8 | 153.2 |

| | | | |
|-------------------------|------|-------|-------|
| Augusta 7766 | Full | 14.13 | 128.8 |
| Channel 217-92VT2P | Full | 14.8 | 168.7 |
| Dekalb DKC64-87RIB | Full | 14.7 | 146.7 |
| Doebler's 747AM | Full | 16 | 166.8 |
| Dyna-Gro 57VP51 | Full | 14.7 | 147.2 |
| Hubner H6663RCSS | Full | 15.3 | 151.0 |
| Pioneer 1637 | Full | 15.1 | 178.1 |
| Mycogen(Dow) 2C786 | Full | 13.7 | 140.7 |
| SC, Inc. SCS11HR63 | Full | 16 | 188.6 |
| SC, Inc. SC11AGT74 | Full | 18 | 168.4 |
| Providence AXC6118 | Full | 18.4 | 171.7 |
| Syngenta-NK N83D-3000GT | Full | 17.9 | 164.9 |
| Check/Pion P1319YHR | Full | 16.6 | 165.1 |

Discussion: Use this and other Virginia Tech on-farm corn plot information when making planting decisions for 2017.

2016 Westmoreland County Mid-Maturity Corn Hybrid Plot

| | |
|-------------------------|---|
| Cooperators: | Producer: F.F. Chandler, Jr. and Louis Chandler Extension: Stephanie Romelczyk, ANR – Westmoreland Keith Balderson, ANR – Essex Agribusiness: Participating Seed Company Representatives |
| Soil Type: | Suffolk sandy loam |
| Tillage: | No-till |
| Previous Crop: | Soybeans |
| Planting Date: | April 22, 2016 |
| Fertilizer: | Broadcast: 40 lbs N/A + 60 lbs K/A Starter: 33 lbs N/A + 33 lbs P/A + 4.4 lbs S/A + 0.25 lb B/A + 0.5 lb Zn/A Sidedress: 100 lbs N/A + 12.5 lbs S/A + Agrotain |
| Crop Protection: | Burndown: Gramoxone 3 pt/A Preplant: Acuron 1.5 qt/A Princep 1.5 pt/A Tombstone 2 oz/A Postemergence: Halex 3.6 pt/A Atrazine 1 qt/A Radiate 2 oz/A |
| Harvest Date: | October 5, 2016 |

| Hybrid | Pop. | % Moisture | Yield (bu./A @15.5%) |
|----------------------|--------|------------|----------------------|
| SCS1131YHR | 28,000 | 18.5 | 224 |
| DynaGro 52VC91 | 27,333 | 18.8 | 221 |
| Dekalb DKC62-08RIB | 31,333 | 18.9 | 220 |
| Pioneer P1197AM | 28,333 | 18.4 | 218 |
| SC11AQ15 | 30,333 | 20.6 | 218 |
| Hubner H6624RCSS | 31,000 | 18.9 | 213 |
| Augusta 5062 | 32,333 | 18.5 | 204 |
| Doeblers 5015AMX | 30,000 | 19.5 | 200 |
| Channel 211-00DGV2P | 29,333 | 20.9 | 193 |
| Syngenta NK N74L3010 | 29,333 | 19.5 | 184 |
| AVERAGE | | | 209 |

Discussion: Excellent mid-maturity corn hybrid demonstration plot! Use this and other Virginia Tech on-farm corn plot information when making planting decisions for 2017.

KING AND QUEEN MID MATURITY CORN PLOT

Cooperators: Producer: Bruce Taylor
 Extension: Keith Balderson, VCE-Essex
 MacKenzie Moore, VCE Summer Intern
 Industry: Participating Companies
Previous Crop: Soybeans
Soil Type: Tetotum fine sandy loam
Plant Date: April 14, 2016
Check Hybrid: Dyna-Gro 52VC91
Tillage/Population: No-Till/See Below
Fertilization: Broadcast: 60-20-120-5S and Sidedress: 100-0-0-12.6S
Crop Protection: Burndown: Gramoxone Pre-emergence: Atrazine and Princep
 Post-emergence: Roundup and Atrazine
 Insecticide: Sniper in-furrow and Tombstone in burndown and pre-emergence herbicides
 Fungicide and Insecticide: Quilt and Tombstone-aerial July 9th
Harvest Date: October 13, 2016

| Hybrid | M% | POPULATION | Yield @ 15.5% |
|------------------------------|------|------------|---------------|
| Augusta 5062 | 18 | 27,500 | 204 |
| Check | 17.2 | 27,500 | 214 |
| Channel 211-00DGVT2P | 16 | 26,500 | 199 |
| Check | 17 | 26,000 | 211 |
| Dekalb DKC 62-08RIB | 15.8 | 27,000 | 210 |
| Check | 17 | 27,000 | 223 |
| Doebler's 5015 AMX | 15.7 | 27,000 | 212 |
| Check | 16.8 | 25,000 | 218 |
| Dyna-Gro52VC91 | 16.7 | 27,500 | 221 |
| Check | 16.7 | 26,500 | 231 |
| Hubner H6624RcSS | 16.5 | 28,000 | 199 |
| Check | 16.6 | 27,000 | 235 |
| Pioneer 1197AM | 15.2 | 27,000 | 216 |
| Check | 16.6 | 27,000 | 222 |
| Seed Consultants SCS 1131YHR | 16.3 | 26,500 | 213 |
| Check | 16.6 | 29,000 | 221 |
| Seed Consultants SC 11AQ15 | 16.9 | 26,000 | 203 |
| Check | 16.5 | 28,000 | 233 |
| NK N74L-3010 | 14.8 | 26,000 | 212 |
| Check | 16.3 | 26,000 | 214 |
| Average All Hybrids | | | 209 |
| Average Check | | | 222 |

Discussion: Another excellent mid-maturity corn hybrid demonstration plot! Use this and other Virginia Tech on-farm corn plot information when making planting decisions for 2017.

2016 Virginia State University Mid & Late Corn Hybrid Comparison

Cooperators: Ruddy Grammar and Mack West, VSU-Randolph Farm
Glenn F. Chappell, II, Virginia State University

Previous Crop: Full Season Soybeans

Soil Type: Tetotum & Colfax

Planting Date: April 20, 2016

Plant Population: 29,403

Fertilizer: Broadcast: 30-60-90 Granular - April 18, 2016, Broadcast: 30-0-0 – April 22, 2016, Sidedress: 145-0-0 - June 1, 2016

Crop Protection: 2qt Bicep II Mag. + 1qt Simizine + 1qt Gramoxone SL 2.0 – April 22nd

Harvest Date: October 4, 2016

Harvest Equipment: John Deere 9560 STS

| Hybrid | Maturity | Traits | % Moisture | Yield | % of Check* |
|----------------------------------|----------|---------------------|------------|-------|-------------|
| Hubner H14G153 | F | GENDGVT2PRIB | 19.0 | 173.1 | ----- |
| Dekalb DKC62-08RIB | M | GENSSRIB | 17.7 | 154.4 | 85.5 |
| Dekalb DKC64-87RIB | F | GENSSRIB | 17.3 | 172.4 | 95.4 |
| Seed Consultants SCS1131YHR | M | RR2, HX1, LL, YGCB | 17.9 | 169.5 | 93.8 |
| Seed Consultants SCS11HR63 | F | RR2, HX1, LL | 18.2 | 161.0 | 89.1 |
| Syngenta Seeds NK N83-3000GT | F | Agrisure GTCB/LLRW | 18.7 | 159.6 | 88.3 |
| Syngenta Seeds NK N74L-3010 | M | Agrisure GTCB/LL RW | 18.5 | 156.1 | 86.4 |
| Seed Consultants SC 11AQ15** | M | Agrisure 3000GT | 18.0 | ** | |
| Seed Consultants SC 11AGT74** | F | Agrisure GTCBLL | 17.0 | ** | |
| Channel 217-92VT2P** | F | VT2P | 18.4 | ** | |
| Hubner H6663RCSS | F | Smart Stax BIB | 16.5 | 178.2 | 98.6 |
| Channel 211- 00DGVT2P | M | DGVT2P | 17.8 | 178.2 | 98.6 |
| Hubner H14G153 | F | GENDGVT2PRIB | 19.0 | 188.3 | ----- |
| Hubner H6624RCSS | M | Smart Stax RIB | 17.2 | 177.3 | 92.2 |
| Augusta 7766 | F | VT2PRO | 16.9 | 192.3 | 100.0 |
| Augusta 5062 | M | GT | 16.5 | 190.0 | 98.7 |
| Pioneer 1637 | F | VYHR | 17.4 | 180.9 | 94.0 |
| Pioneer 1197AM | M | HX1 Acre Max | 17.3 | 187.3 | 97.4 |
| Doebler's 747AM | F | RIB/HX/YGCB/RR2/LL | 17.5 | 181.5 | 94.3 |
| Doebler's 5015AMX | M | RIB/HX/YGCB/RR2/LL | 16.7 | 178.9 | 93.0 |

| | | | | | |
|-----------------------------|---|---------------|------|-------|-------|
| Mycogen Seed (Dow) 2C786 | F | Smart Stax | 18.3 | 170.9 | 88.8 |
| Dyna-Gro 52VC91 | M | VT Double Pro | 17.4 | 195.0 | 101.3 |
| Dyna-Gro 57VP51 | F | VT Triple Pro | 16.6 | 208.8 | 108.6 |
| Hubner H14G153 | F | GENDGVT2PRIB | 15.1 | 196.5 | ----- |
| PLOT AVERAGE: | | | | | |
| Mid Hybrids | | | 17.5 | 176 | |
| Late Hybrids | | | 17.6 | 178 | |

Discussion: No irrigation was applied and rainfall data was not recorded. Use this and other Virginia Tech on-farm corn plot information when making planting decisions for 2017.

* % of Check is calculated by dividing an individual hybrid's yield by the average of the two closest check hybrids and multiplying by 100.

** Saturated soils were a factor contributing to the lower yields in this section of the field and yields for these hybrids were not reported.

| 2016 Virginia Cooperative Extension On-Farm Corn Hybrid Plot Yield Summary (bu./Acre @ 15.5%) | | | | | | |
|--|--------------------------|--------------------|--------------------|---------------------|------------|-------------|
| Early Hybrids (107 Day RM or Less) | | | | | | |
| Hybrid | Ag Expo-Dinwiddie | K & Q 1 | | | | Ave. |
| Augusta 2956GT3111 | 123 | 171 | | | | 147 |
| Channel 201-00DGVT2P | 113 | 168 | | | | 141 |
| Dekalb DKC 57-92RIB | 128 | 172 | | | | 150 |
| Doebler's 564HRQ HXX/RR2/LL | 129 | 167 | | | | 148 |
| Dyna-Gro 44VC36 VT Double Pro | 132 | 184 | | | | 158 |
| Hubner H4359RC2P VT2PRIB | 140 | 160 | | | | 150 |
| Pioneer 0339AM HX1 Acre Max | 147 | 176 | | | | 162 |
| Supreme EX SCS 10HR43 RR2/HX1/LL | 132 | 150 | | | | 141 |
| Syngenta Seeds N66V-3000GT | 146 | 181 | | | | 164 |
| Average | 132 | 170 | | | | 151 |
| Medium Hybrids (108-112 Day RM) | | | | | | |
| Hybrid | Ag Expo-Dinwiddie | | K & Q 2 | Westmoreland | VSU | Ave. |
| Augusta 5062 GT | 174 | | 204 | 204 | 190 | 193 |
| Channel 211-00DGVT2P | 131 | | 199 | 193 | 178 | 175 |
| Dekalb DKC 62-08 GENSSRIB | 137 | | 210 | 220 | 154 | 180 |
| Doebler's 5015AMX | 161 | | 212 | 200 | 179 | 188 |
| Dyna-Gro 52VC91 Smart Stax RIB | 138 | | 221 | 221 | 195 | 194 |
| Hubner H6624RCSS Smart Stax RIB | 161 | | 199 | 213 | 177 | 188 |
| Pioneer 1197AM HX1 Acre Max | 186 | | 216 | 218 | 187 | 202 |
| Supreme EX SCS 1131YHR | 140 | | 213 | 224 | 170 | 187 |
| Seed Consultants SC 11AQ15 3000GT | 137 | | 203 | 218 | ** | |
| Syngenta Seeds N74L-3010 | 134 | | 212 | 184 | 156 | 172 |
| Average | 150 | | 209 | 210 | 176 | 187 |
| **Not reported due to reduced yield caused by wet soil conditions | | | | | | |
| Full Hybrids (113 Day RM or more) | | | | | | |
| Hybrid | Ag Expo-Dinwiddie | | | | VSU | Ave. |
| Augusta 7766 | 129 | | | | 192 | 161 |
| Channel 217-92VT2P | 169 | | | | ** | |
| Dekalb DKC 64-87RIB | 147 | | | | 172 | 160 |
| Doebler's 747AM | 167 | | | | 182 | 175 |
| Dyna-Gro 57VP51 | 147 | | | | 209 | 178 |
| Hubner H6663RCSS | 151 | | | | 178 | 165 |
| Mycogen 2C786 | 141 | | | | 171 | 156 |
| Pioneer 1637 | 178 | | | | 181 | 180 |
| Supreme EX SCS 11HR63 | 189 | | | | 161 | 175 |
| Seed Consultants SC 11AGT74 | 168 | | | | ** | |
| Syngenta Seeds N83D-3000GT | 165 | | | | 160 | 163 |
| Average | 159 | | | | 178 | 168 |
| **Not reported due to reduced yield caused by wet soil conditions | | | | | | |
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2016 PRINCE GEORGE CORN HYBRID CHALLENGE PLOT

Cooperators: **Producer:** George Reiter
Extension: Scott Reiter, Prince George
Industry: Jason Lipinski, Axis Seeds
Previous Crop: Wheat-Double Crop Soybeans
Soil Type: Aycock silt loam
Tillage: KMC No-till subsoiler in-row
Planting Date: April 16, 2016
Hybrid: See Below
Seeding Rate/Row Spacing: 26,000 seed/A, 30-inch row
Fertilization: 25-50-150-15S broadcast granular pre-plant, 30-30-0-6S starter, 50-0-0 broadcast UAN at planting with herbicides, 80-0-0-10S sidedress = Total = 185-80-150-31S
Crop Protection: 2 quarts Harness Xtra 5.6 + 1 quart Roundup WeatherMax + 1 pint 2,4-D at planting
Harvest Date: September 16, 2016
Harvest Equipment: John Deere 9660 with 8 row head

| Hybrid | Test Weight | Moisture% | Yield (bu/A at 15.5%) |
|----------------------|-------------|-----------|-----------------------|
| Pioneer 1197 YHR | 58.1 | 15.2 | 217.7 |
| Axis 66T27 RIB | 59.1 | 15.7 | 219.2 |
| Axis 64K24 RIB VT 2B | 59.2 | 15.1 | 230.0 |
| Pioneer 1197 YHR | 58.8 | 14.9 | 215.8 |

Discussion: This was an awesome dryland corn plot for Prince George. There is interest among producers to evaluate offerings from new players in the seed corn market. Use this along with other trials for 2017 hybrid selections.

2016 Prince George Invigor-8-Zn Seed Treatment Comparison

| | |
|-----------------------------|--|
| Cooperators: | Producer: Calvin Clements Extension: Scott Reiter, Prince George |
| Soil Type: | Wickham fine sandy loam |
| Previous Crop: | Soybeans |
| Tillage/Row Spacing: | No-till, 30 inch, Kinze 3600 |
| Population: | 24,000 |
| Planting Date: | April 11, 2016 |
| Treatment: | invigor 8 + Zinc seed treatment |
| Hybrid: | NK 78C |
| Fertilization: | 140-60-120 per acre |
| Crop Protection: | 1.5 pints Parazone + 2 quarts Trizmet + 1 pint Atrazine + 10 ounces Asset @ planting; 4 pounds Counter 20G in-furrow |
| Harvest Date: | September 9, 2016 |
| Harvest Equipment: | John Deere S660 with 6 row head |

| Treatment | Replication | Moisture% | Test Weight (wet) | Yield @ 15.5% |
|----------------|-------------|-----------|-------------------|---------------|
| invigor 8 + Zn | 1 | 22.3 | 49.1 | 160.7 |
| Untreated | 1 | 21.2 | 50.1 | 172.7 |
| invigor 8 + Zn | 2 | 21.3 | 49.9 | 172.4 |
| Untreated | 2 | 20.6 | 50.4 | 153.8 |
| invigor 8 + Zn | 3 | 21.3 | 50.8 | 169.4 |
| Untreated | 3 | 22.3 | 49.9 | 132.1 |
| | | | | |
| invigor 8 + Zn | Average | 21.6 | 49.9 | 167.5 |
| Untreated | Average | 21.4 | 50.1 | 152.9 |
| | | | | |
| | Difference | 0.3 | -0.2 | 14.6 |
| | | | | |
| | LSD (0.1) | | | NS (42.0 bu) |

Discussion: The invigor 8 + Zn treatment includes phosphorus, potassium, and zinc as a seed treatment according to the product label. The use is to increase seedling vigor, emergence speed, and uniformity. Based on the average difference, the invigor 8 + Zinc produced a 14.6 bushel per acre advantage over the untreated control. This is a real attention getter. However, when you apply statistical analysis this difference is not significant (NS). To be sure the difference is real with 90% confidence, we need a 42 bushel/acre difference in treatments. The reason for this is wide variation in yield across plots and the untreated plot in Rep 1 having the highest yield of all the plots. Additional replications may have helped smooth out the variation. The difference deserves further evaluation in another season. The split planter approach works fine and yield monitor data across more strips could be used to evaluate on a larger scale.

Virginia State University Corn Emergence Study

Hybrid: Hubner H14G153

Planting Date: April 20, 2016

Population: 29,403

| Planter Unit Number 1 | | | | |
|------------------------------|----------------------------|---|------------------|---|
| Day of Emergence | # of Plants Emerged | Average Wt. of Ears at Harvest (Oz.) | % of Ears | Yield (bus./acre @ 29,403 ears per acre at 15.5%)* |
| Day 1 | 38 | 5.8 | 56.7 | 148.1 |
| Day 2 | 26 | 5.3 | 38.8 | 135.4 |
| Day 3 | 2 | 4.2 | 3.0 | 107.3 |
| After Day 3 Unknown | 1 | 4.9 | 1.5 | 125.1 |
| | 67 Ears Total | 5.5 Weighted Average | 100 Total | 142 Weighted Ave. Yield |

| Planter Unit Number 2 | | | | |
|------------------------------|----------------------------|---|------------------|---|
| Day of Emergence | # of Plants Emerged | Average Wt. of Ears at Harvest (Oz.) | % of Ears | Yield (bus./acre @ 29,403 ears per acre at 15.5%)* |
| Day 1 | 54 | 5.9 | 79.4 | 150.7 |
| Day 2 | 13 | 5.6 | 19.1 | 143.0 |
| Day 3 | 1 | 3.3 | 1.5 | 84.3 |
| After Day 3 Unknown | 0 | 0 | 0 | N/A |
| | 68 Ears Total | 5.8 Weighted Average | 100 Total | 148 Weighted Ave. Yield |

CORN EMERGENCE EVALUATION

Roy Flanagan, VCE, Virginia Beach

WP Vaughan Farms **Virginia Beach, Virginia**
Row Spacing: **30 Inches**
Plant Population: **32,000 Plants per Acre**
Variety: **Hubner 14G153**

With all the emphasis placed on the importance of stand uniformity and emergence in producing high yielding corn, stand uniformity and emergence should play vital roles when upgrades and replacement of farm machinery are considered. In the following two tables you will see the importance that plant emergence plays in determining yield. In 2016, in work supported by check-off funds provided by the Virginia Corn Board, we flagged off two forty foot sections of row in two corn fields.

At this location, the hybrid was Hubner 14G153 planted with a John Deere Max-Emerge planter at a planter setting population of 32,000 plants per acre in 30 inch rows. Emergence was checked and flagged for five straight days at the same time each day as corn began spiking the ground. We only saw corn spiking for three days after emergence began. All ears from the one 40 foot section of row were pulled and weighed when the corn was at approximately 25% moisture. Based on the number of ears pulled in that forty foot section of row, the plant population was calculated to be 31,800 plants per acre. Using this information and a harvest moisture of 25% and dry corn weight of 56 pounds per bushel, yields were also estimated. Below are the results. See pictures also.

| Day/Date of Emergence | # of Plants | % of Ears | Lbs. Shelled Corn Total | Yield (bu./acre @ 31,800 plants per acre at 15.5%) |
|-----------------------|-------------|-------------|-------------------------|--|
| Day 1 | 65 | 89.04 | 32.54 | 255.03 |
| Day 2 | 6 | 8.22 | 2.23 | 189.27 |
| Day 3 | 2 | 2.74 | .67 | 170.64 |
| TOTALS | 73 | 100% | 35.44 | 247.3072 bu./acre |

Dawley Farms **Virginia Beach, Virginia**
Row Spacing: **36 Inches**
Plant Population: **28,000 Plants per Acre**
Variety: **Hubner 14G153**

At this location, the hybrid was Hubner 14G153 planted with a JD Max-Emerge vacuum planter mounted on a KMC strip-till at a planter setting population of 28,000 plants per acre in 36 inch rows. Emergence was checked and flagged for five straight days at the same time each day as corn began spiking the ground. We only saw corn spiking for four days after emergence began. All ears from the one 40 foot section of row were pulled and weighed when the corn was at approximately 25% moisture.

Based on the number of ears pulled in that forty foot section of row, the plant population was calculated to be 26,500 plants per acre. Using this information and a harvest moisture of 25% and dry corn weight of 56 pounds per bushel, yields were also estimated. Below are the results.

| Day/Date of Emergence | # of Plants | % of Ears | Lbs. Shelled Corn Total | Yield (bu./acre @ 26,500 plants per acre at 15.5%) |
|-----------------------|-------------|-------------|-------------------------|--|
| Day 1 | 54 | 73.97 | 27.74 | 218.65 |
| Day 2 | 11 | 15.07 | 5.5 | 212.82 |
| Day 3 | 4 | 5.48 | 1.89 | 201.11 |
| Day 4 | 4 | 5.48 | 2.01 | 213.88 |
| TOTALS | 73 | 100% | 37.14 | 216.5458 bu./acre |



Figure 1. Picture taken of ears harvested, emergence day 1 (red flags) at WP Vaughan Site.



Figure 2: Picture taken of ears harvested, emergence day 2 (blue flags) at WP Vaughan Site.



Figure 3. Picture taken of ears harvested, emergence day 3 (yellow flags) at WP Vaughan Site.

CORN EMERGENCE EVALUATION
Watson Lawrence, Senior Extension Agent, ANR, Chesapeake

This evaluation looked at how corn emergence in a conventional planted corn field affected yield. Seedling vigor and days to maturity start when seeds are placed in soil capable of inducing germination. From there it is a foot race for plants to utilize available nutrients, sunlight, and moisture in a field that will be harvested collectively. This evaluation asked the question, will seeds that germinate sooner yield more?

In 2016, in work supported by check-off funds provided by the Virginia Corn Board, two separate test plots were set up at two separate farms. At each site, a forty foot section of row was flagged off immediately after planting. Those forty foot sections were checked each day between 11 AM and 1 PM for the next ten days. Beginning on the first day of emergence (defined as coleoptile visible above the soil line) and each day thereafter, a colored flag was placed beside each seedling. A red flag for 1st day, a blue flag for 2nd day, and a yellow flag for seedlings on or after the 3rd day. Planting conditions at these two sites were excellent in 2016. Warm temperatures and a gentle rain the day after planting provided excellent soil moisture and quick germination of seeds in the plots.

On August 30th, ears were hand-harvested, segregated by color and shelled with an old-time crank style single ear sheller. Corn from all red flags, blue flags and yellow flags were counted and weighed. Average weights per ear were calculated for each grouping.

At these two separate farms using different production practices, varieties, equipment, soils and dates of planting, results were the same. Corn seedlings emerging on day 1 had more weight per ear than corn emerging on day 2. Corn emerging on day 2 had more weight per ear than corn emerging after day 3. Visual observance also showed more ear uniformity and ear size for day 1 seedlings vs. subsequent seedlings.

Frank Williams Farm Chesapeake, Virginia
Row Spacing: 20 Inches
Plant Population: 30,000 Plants Per Acre
Variety: Pioneer P0604

| Day/Date of Emergence | # of Plants | % of Plants | Lbs. Shelled Corn Total | Average Wt. lbs. /Harvestable Ear |
|---|-------------|-------------|-------------------------|-----------------------------------|
| Day 1 April 23 rd | 43 | 89.58 | 18.47 | .4295 |
| Day 2 April 24 th | 2 | 4.17 | .75 | .3750 |
| Day 3 And After April 25 th | 0 | 0 | 0 | |
| Barren Plants (no ears produced) | 3 | 6.25 | 0 | |
| TOTALS | 48 | 100% | 19.22 | |

Heath Cutrell Farm: Chesapeake, Virginia
Row Spacing: 30 Inches
Plant Population: 35,000 Plants Per Acre
Variety: Dekalb 62-08

| Day/Date of Emergence | # of Plants | % of Plants | Lbs. Shelled Corn Total | Average Wt. lbs. /Harvestable Ear |
|---|-------------|-------------|-------------------------|-----------------------------------|
| Day 1 April 23 rd | 44 | 55.00 | 21.79 | .4952 |
| Day 2 April 24 th | 21 | 26.25 | 10.05 | .4785 |
| Day 3 And After April 25 th | 12 | 15.00 | 4.90 | .4083 |
| Barren Plants (no ears produced) | 3 | 3.75 | 0 | |
| TOTALS | 80 | 100 | 36.74 | |



Figure 1: Picture taken on day 2 at Heath Cutrell site had 44 plants emerge day 1 (red flags) and 21 plants emerge day 2 (blue flags). The following day 3, 12 plants emerged and were marked with yellow flags.



Figure 2. Sample of day 1 (red flags), day 2 (blue flags) and day 3 (yellow flags) corn ears.

CORN EMERGENCE EVALUATION

Keith Balderson, VCE, Essex County

There is much emphasis placed on the importance of stand uniformity and emergence in producing high yielding corn. Stand uniformity refers to spacing while uniformity of emergence refers to how even emergence is in the field. In 2016, we flagged off 2 forty foot sections of row in 2 corn fields that were planted on April 11th. At this location, the hybrid was Pioneer 06-04 planted with a John Deere 7000 Max-Emerge planter at a planter setting population of 25,800 plants per acre in 36 inch rows. Emergence was checked and flagged for 3 straight days at the same time each day for three days as soon as corn began spiking the ground. Ears from one row were pulled and weighed at one of the locations. Based on the number of ears pulled in that forty foot section of row, the plant population was calculated to be 26,136 plants per acre. Using this information and ear corn weights of 70 pounds per bushel, yields were also estimated. Below are the results.

| Day/Date of Emergence | # of Plants Emerged | Average Wt. of Ears at Harvest (Oz.) | % of Ears | Yield (bus./acre @ 26,136 ears per acre at 15.5%)* |
|-----------------------|---------------------|--------------------------------------|-----------|--|
| Day 1 | 48 | 8.16 | 66.7 | 190.4 |
| Day 2 | 14 | 7.91 | 19.4 | 184.6 |
| Day 3 | 5 | 6.34 | 6.95 | 147.9 |
| After Day 3 Unknown | 5 | 4.2 | 6.95 | 98.01 |
| | 72 Ears total | 7.85 Weighted Ave. | 100 Total | Weighted Ave. Yield 179.9 |



Fig. 1. Day 1 Ears.

Fig. 2. Day 2 Ears.

Fig. 3. Day 3 Ears.

Fig. 4. Day 4 Ears

Planting depth at this location was about one inch which most likely resulted in a significant percentage of the plants emerging late. A broken down pressure spring on the planter was the cause of the shallow planting depth, illustrating the importance of maintaining equipment for uniform emergence.

MIDDLESEX CORN EMERGENCE EVALUATION I 2016

| Row | April 20 red | April 21 yellow | April 22 orange | April 23 orange | Total 4 days |
|-----------------------------|-----------------|--------------------|--------------------|--------------------|--------------|
| Row # 1 | 17 | 11 | 6 | 3 | 37 |
| Row # 2 | 8 | 9 | 6 | 3 | 26 |
| *Yield @ 15.5% Row 1 | 256.6 | 234.2 | 142.4 | --- | |
| *Yield @ 15.5% Row 2 | 251.4 | 225.7 | 156.4 | --- | |

* Yield calculated using planting population, not actual emergence

Hybrid: Augusta 5658-Average to above average early vigor

Planted: April 4, 2016 into turbo-tilled soybean stubble

Planting Population: 29,000

Soil Type: Suffolk Fine Sandy Loam

43,560 sq. ft. divided by 2.5 ft. (row width) =17,424 ft. (length of 1 acre/row)

29,000 kernels per acre divided by 17,424 ft. =1.67 kernels per foot

1.67 kernels X 40 ft. (test area) = 66.8 possible plants per row in test area

At 90% germination=60.1 possible plants per row in test area

Notes: Temperatures after planting hit low to mid 20's and we had a dusting of snow on April 5th. Plants that were not emerged by April 23, never came up.

MIDDLESEX CORN EMERGENCE EVALUATION II 2016

| Row | April 21 red | April 22 yellow | April 23 orange | Total 3 day |
|-----------------------------|-----------------|--------------------|-----------------|-------------|
| Row # 1 | 50 | 13 | 4 | 67 |
| Row #2 | 51 | 11 | 2 | 64 |
| *Yield @ 15.5% Row 1 | 164.8 | 128.7 | 75.3 | |
| Yield @ 15.5% Row 2 | * | * | * | |

* Yield calculated using planting population, not actual emergence

Hybrid: Dekalb 52-62

Planted: April 7, 2016 no-till into soybean stubble

Planting Population: 29,000

Soil Type: Slagle Silt Loam

At 90% germination=60.1 possible plants per row in test area

Notes: * Supplier ran over Row 2 when applying nitrogen sidedress.

MIDDLESEX CORN EMERGENCE EVALUATION III 2016

| Row | April 29 | April 30 | May 1 | Total 3 Day |
|-----------------------------|--------------|--------------|--------------|-------------|
| Row #1 | 31 | 27 | 5 | 63 |
| Row #2 | 46 | 15 | 2 | 63 |
| *Yield @ 15.5% Row 1 | 173.3 | 159.0 | 116.3 | |
| *Yield @ 15.5% Row 2 | 169.1 | 177.9 | 119.4 | |

* Yield calculated using planting population, not actual emergence

Hybrid: Pioneer P1637

Planted: April 18, 2016 no-till into rye cover

Planting Population: 27,000

Soil Type: Suffolk Fine Sandy Loam

43,560 sq.ft. divided by 2.5 ft. (row width) = 17,424 ft.

27,700 kernels per acre divided by 17,424 ft. = 1.59 kernels per foot

1.59 kernels X 40 feet (test area) = 63.6 possible plants per row in test area

At 90% germ = 57.2 possible plants per row in test area.

Notes: Great emergence and stand. See related picture of ears.



Figure 1. Ears from day 1 (upper left hand), ears from day 2 (upper right hand), and ears from day 3 (lower) from Middlesex III site.

KING & QUEEN CORN EMERGENCE EVALUATION I 2016

| Row | May 6 | May 7 | May 9 | Total 3 Day |
|-----------------------------|--------------|--------------|--------------|-------------|
| Row #1 | 19 | 12 | 22 | 53 |
| Row #2 | 38 | 13 | 10 | 61 |
| *Yield @ 15.5% Row 1 | 220.7 | 211.0 | 193.3 | |
| *Yield @ 15.5% Row 2 | 218.7 | 226.1 | 188.7 | |

***Yield calculated using planting population, not actual emergence**

Hybrid: Pioneer P0604AM

Planted: April 27, 2016 no-till into soybean stubble

Planting Population: 27,700

Soil Type: Emporia Sandy Loam

100% emergence=63.5 seedlings

Notes: Corn emerged in less than 10 days opposed to almost 3 weeks in the Middlesex I plot. Good emergence and stand. Good soil moisture all season. See related picture of ears.

2016 Evaluation of Sidedress Nitrogen on Corn Following Hairy Vetch Cover Crop

| | |
|-------------------------|---|
| Cooperators: | Producer: Keith Balderson Extension: Keith Balderson, VCE-Essex |
| Soil Type: | Suffolk sandy loam |
| Hybrid: | Augusta 5658 |
| Tillage: | Continuous No-Tillage |
| Previous Crop: | Soybeans |
| Planting Date: | April 15, 2016 |
| Fertilizer: | Broadcast: 60-60-60 per acre Sidedress: 60-0-0-7.5 per acre vs. 90-0-0-7.5 per acre Hopper Box: Wolftrax Zinc |
| Crop Protection: | Burndown: Gramoxone and 2,4-D Pre-emergence: Bicep and Princep Post-emergence: Halex GT and atrazine |
| Harvest Date: | September 14, 2016 |

| Treatment | Replication | % Moisture | Yield (bu./A @15.5%) |
|---------------------------------|-------------|------------|----------------------|
| 70 lbs. N per acre | 1 | 17.4 | 158 |
| 100 lbs. N per acre | 1 | 17.5 | 168 |
| 70 lbs. N per acre | 2 | 18.5 | 163 |
| 100 lbs. N per acre | 2 | 18.5 | 163 |
| 70 lbs. N per acre | 3 | 18.4 | 164 |
| 100 lbs. N per acre | 3 | 18.7 | 167 |
| Ave. 70 lbs. N per acre | | 18.1 | 162 |
| Ave. 100 lbs. N per acre | | 18.2 | 166 |
| LSD (0.10) | | ns | ns |

Discussion:

The purpose of this plot was to evaluate nitrogen sidedressing rates on corn planted following a hairy vetch cover crop. Due to concerns about dry conditions, the cover crop was terminated about 2 weeks earlier than normal. Based on the growth of the hairy vetch and past experience, it was estimated that the cover crop would supply about 35 pounds of nitrogen for the corn plot. The entire plot area received 60 pounds of nitrogen in a pre-plant broadcast application. At sidedressing, nitrogen rates of 70 pounds per acre and 100 pounds per acre were compared. Plant tissue tests taken just after pollination showed nitrogen content in the plots receiving 100 pounds per acre was 3.02% and 2.92% in the plots receiving 70 pounds of sidedress nitrogen. Both levels are considered sufficient. The additional nitrogen tended to increase yields, but the difference was not statistically significant.

2016 Corn Demonstration Plot Following Legume Cover Crop Species

| | |
|-------------------------|--|
| Cooperators: | Producer: Midway Farms, Inc. |
| | Agency: Keith Balderson, VCE, Essex County Danny Withers, Northern Neck SWCD |
| | Agribusiness: Featherstone Farm Seed, Juan Whittington Pennington Seed, Chris Agee Southern States Coop., Jim Riddell and Dan Kossler |
| Soil Type: | State fine sandy loam |
| Tillage: | No-till |
| Previous Crop: | Corn |
| Planting Date: | April 27, 2016 |
| Fertilizer: | 70-0-60-12S |
| Crop Protection: | Burndown: Gramoxone and 2,4-D Pre-emergence: Keystone and Instigate Insecticide: Lorsban in burndown herbicides |
| Harvest Date: | September 26, 2016 |

| Cover Crop Treatment | Replication | % Moisture | Yield (bu./A @15.5%) |
|--|-------------|------------|----------------------|
| Hairy Vetch with no Sidedress Nitrogen | 1 | 15.9 | 149 |
| Hairy Vetch + 80 lbs. Sidedress N/acre | 1 | 16.4 | 155 |
| Fallow (Corn Residue) + 80 lbs. Sidedress N/acre | 1 | 15.7 | 140 |
| Hairy Vetch with no Sidedress Nitrogen | 2 | 15.9 | 156 |
| Hairy Vetch + 80 lbs. Sidedress N/acre | 2 | 16.8 | 170 |
| Crimson Clover + 80 lbs. Sidedress N/acre | 1 | 16.7 | 154 |
| Crimson Clover + 80 lbs. Sidedress N/acre | 2 | 16.1 | 154 |
| Crimson Clover with no Sidedress N | 1 | 16.1 | 118 |
| Austrian Winter Pea + 80 lbs. Sidedress N/acre | 1 | 16.3 | 160 |
| Austrian Winter Peas with no Sidedress N | 1 | 15.8 | 143 |
| Fallow (Corn Residue) + 80 lbs. Sidedress N/acre | 2 | 15.8 | 137 |

| | | | |
|--|-----------|------|-------|
| Hairy Vetch + 80 lbs. Sidedress N/acre AVE. | (2 reps.) | 16.6 | 162.5 |
| Fallow (Corn Residue) + 80 lbs. Sidedress N/acre AVE. | (2 reps.) | 15.8 | 138.5 |
| Hairy Vetch with no Sidedress N | (2 reps.) | 15.9 | 152.5 |
| Crimson Clover + 80 lbs. Sidedress N/acre AVE. | (2 reps.) | 16.4 | 154 |
| Crimson Clover with no Sideress N | (1 rep.) | 16.1 | 118 |
| Austrian Winter Pea + 80 lbs. Sidedress N per acre | (1 rep.) | 16.3 | 160 |
| Austrian Winter Pea with no Sidedress N | (1 rep.) | 15.8 | 143 |

Discussion:

This demonstration plot evaluated corn performance following three legume cover crop species in a field planted to corn in 2015 and 2016. All plots received 70 lbs. of nitrogen per acre in a broadcast application prior to planting. Stand establishment and growth of all of the cover crop species were excellent. Termination of the cover crops was delayed until late April to maximize cover crop growth and nitrogen availability from the cover crop species. See figure 1 below.



Figure 1. Planting into hairy vetch and crimson clover cover crops.

The plot was planted on April 27th and topsoil moisture conditions were very good in the hairy vetch cover. Topsoil moisture was lower in the other treatments, with the crimson clover treatment being especially dry. Bio-mass and tissue samples were taken from all cover crop species to get an estimate of nitrogen availability. See results below.

| Cover Crop | Bio-Mass (lbs./acre) | % N @ Termination | N Availability Est. (lbs./acre)* |
|----------------------------|----------------------|-------------------|----------------------------------|
| Crimson Clover | 4,084 | 2.31% | 47 lbs. per acre |
| Austrian Winter Pea | 5547 | 2.95% | 82 lbs. per acre |
| Hairy Vetch Innoculated | 4410 | 3.32% | 73 lbs. per acre |
| Hairy Vetch | 4302 | 3.32% | 71 lbs. per acre |

*Assuming 50% availability for first crop

Since this is a demonstration plot no hard conclusions should be drawn from it. Corn from all of the sidedressed cover crop species yielded 17 bushels per acre or more than the corn behind corn with the hairy vetch cover providing a yield boost of almost 25 bushels per acre. Corn behind the hairy vetch and Austrian winter pea covers that was not sidedressed yielded more than the corn following corn. Corn yields following the crimson clover plot that was not sidedressed were much lower than any of the other treatments. This may be partially explained as the nitrogen tissue sample for the clover was lower than the other covers, resulting in a lower nitrogen availability estimate. Growers are encouraged to experiment with cover crops to help determine how they can fit into their cropping systems in an effort to increase yields and profitability. We also compared weigh wagon yield results with the combine yield monitor and got very similar results (below), illustrating well-calibrated yield monitors can be powerful tools for farmers evaluating practices on their farms.

| TREATMENT | PASS | MOISTURE | ACRES | LBS | AVE | RANK % | BPA |
|--------------------|-------|----------|-------|-------|------|-----------|-----|
| Vetch, no N | 3 | 14.73 | 0.41 | 3416 | 3416 | 108.49 | 149 |
| Vetch + 80# N | 4,5 | 14.76 | 0.8 | 6944 | 3472 | 110.27 | 155 |
| Normal Operation | 6,7 | 14.59 | 0.79 | 6272 | 3136 | 99.60 | 142 |
| Vetch, no N | 8 | 14.56 | 0.39 | 3472 | 3472 | 110.27 | 159 |
| Vetch + 80# N | 9 | 14.68 | 0.39 | 3640 | 3640 | 115.60 | 167 |
| Clover + 80# N | 10-13 | 14.71 | 1.53 | 12992 | 3248 | 103.15 | 152 |
| Clover, no N | 14 | 14.53 | 0.38 | 2576 | 2576 | 81.81 | 121 |
| Winter Pea + 80# N | 15 | 14.56 | 0.37 | 3360 | 3360 | 106.71 | 162 |
| Winter Pea, no N | 16 | 12.22 | 0.37 | 3024 | 3024 | 96.04 | 146 |
| Normal Operation | 18 | 14.4 | 0.37 | 2856 | 2856 | 90.70 | 138 |
| AVERAGE | | | | | 3149 | | 145 |

2016 Evaluation of Late Season Nitrogen Application on Corn

Cooperators: **Producer:** Keith Balderson
Extension: Keith Balderson, VCE-Essex
MacKenzie Moore, VCE Summer Intern

Soil Type: Kempsville sandy loam
Hybrid: Pioneer 06-04AM
Tillage: Continuous No-Tillage
Previous Crop: Soybeans
Planting Date: April 15, 2016
Fertilizer: Broadcast: 60-60-60 per acre
Sidedress: 100-0-0-12.5 per acre
Hopper Box: Wolftrax Zinc

Crop Protection: Burndown: Gramoxone and 2,4-D
Pre-emergence: Bicep and Princep
Post-emergence: Halex GT and atrazine

Harvest Date: September 5, 2016

| Treatment | Rep. | % Moisture | Yield (bu./A @15.5%) |
|-------------------------------------|------|------------|----------------------|
| 30 lbs. per acre late Nitrogen | 1 | 20.0 | 181 |
| Check | 1 | 20.2 | 186 |
| 30 lbs. per acre late Nitrogen | 2 | 20.0 | 185 |
| Check | 2 | 19.8 | 172 |
| 30 lbs. per acre late Nitrogen | 3 | 19.8 | 180 |
| Check | 3 | 20.2 | 172 |
| 30 lbs. per acre late Nitrogen—Ave. | | 19.9 | 182 |
| Check—Ave | | 20.0 | 177 |
| LSD (0.10) | | ns | ns |

Discussion:

With the increased yield potential of today's corn hybrids, there is a need to evaluate nitrogen fertilizer recommendations to reach maximum economic yields. This field received 60 pounds of nitrogen in a pre-plant application followed by 100 pounds of nitrogen applied at sidedressing. Although rainfall data for the location were not kept, rainfall for May was well above normal, creating a concern about nitrogen loss. A plot was established at V-12 on June 16th to evaluate 30 pounds of late season nitrogen applied as urea. The application was made just prior to a .5 inch rainfall in an effort to minimize nitrogen volatility losses. Ear leaf tissue samples were not taken prior to the nitrogen application, but samples taken three weeks after the application showed nitrogen content of 3.02% in the nitrogen plots and 3.06% in the check plots. Both levels are considered sufficient. The additional nitrogen tended to increase yields, but the increase was not statistically significant.

KING & QUEEN ADDITIONAL NITROGEN STUDY I

Cooperators: Producer: Craig Leggett
 Extension: David Moore, VCE-Middlesex
 MacKenzie Moore, VCE Intern

Previous Crop: Soybeans
Soil Type: Emporia Sandy Loam
Plant Date: April 27, 2016
Row Space/Population: 30-inchrows/27,700
Hybrid: Pioneer P0604AM
Crop Protection: Pre: Glyphosate +2,4-D + Lambda-Cy+
 Atrazine + Simazine + Corvus
 Post: Glyphosate

Fertilization: 18-39-60 Broadcast
 50-0-0 with Pesticides
 100-0-0 Sidedress

Additional Nitrogen 45-0-7-2fe (Applied at VT on 6-30-16)
Harvest Date: September 13, 2016

| Treatment | Replication | M% | TW | Yield 15.5% |
|------------------------|--------------------|-------------|-------------|--------------------|
| Treated | 1 | 15.7 | 58 | 196.5 |
| Control | 1 | 15.7 | 57 | 183.4 |
| | | | | |
| Treated | 2 | 15.7 | 57 | 175.5 |
| Control | 2 | 15.4 | 56 | 160.4 |
| | | | | |
| Treated | 3 | 15.5 | 57 | 178.6 |
| Control | 3 | 15.1 | 57 | 158.3 |
| | | | | |
| Average Treated | | 15.6 | 57.3 | 183.5 |
| Average Control | | 15.4 | 56.7 | 167.4 |
| LSD (0.10) | | ns | ns | 6.3 |

Discussion:

Research from Louisiana State University, together with DuPont Pioneer, has shown that additional nitrogen fertilizer applied to corn at tassel, can increase yields and improve kernel weight. In addition to this, it provides another avenue when applying nitrogen to corn that spreads the application times which may be another water quality benefit to this practice.

The equivalent of 45 additional pounds of nitrogen (in Urea form) was added on June 30 during beginning tassel time for the corn. In this particular plot, the late season nitrogen resulted in statistically significant increase in yield. An additional 16 bushels can pay over \$50.00 in returns per acre. This study was replicated in 3 other locations and there were no significant yield differences in those studies. More work with this may be done in 2017.

2016 ADDITIONAL CORN NITROGEN STUDY KING & QUEEN II

Cooperators: Producer: Robert T. Bland IV
Sarah E. Bland
Extension: David Moore, VCE-Middlesex
MacKenzie Moore, VCE-Intern

Previous Crop: Soybeans
Soil Type: Emporia Sandy Loam
Plant Date: April 26, 2016
Corn Hybrid: Pioneer P0339AM
Fertilization: 2 Tons Poultry Litter incorporated
Crop Protection: Pre: Glyphosate + Atrazine + Simazine
Post: Halex GT

Treatment: Additional 45-0-7-2fe applied at beginning R1
Treatment Date: July 12, 2016
Harvest Date: September 15, 2016
Harvest Equipment: AGCO Gleaner R52

| Treatment | Replication | Moisture | TW | Yield @ 15.5% |
|------------------------|-------------|-------------|-------------|---------------|
| Treated | 1 | 16.0 | 58 | 175.5 |
| Control | 1 | 15.8 | 57.5 | 177.0 |
| | | | | |
| Treated | 2 | 15.9 | 58 | 160.0 |
| Control | 2 | 15.7 | 57.5 | 162.2 |
| | | | | |
| Treated | 3 | 15.5 | 58 | 176.5 |
| Control | 3 | 15.5 | 58 | 171.3 |
| | | | | |
| Average Treated | | 15.8 | 58 | 170.7 |
| Average Control | | 15.7 | 57.7 | 170.2 |
| LSD (0.10) | | ns | ns | ns |

Discussion:

Research from Louisiana State University, together with DuPont Pioneer, has shown that additional nitrogen fertilizer applied to corn at tassel, can increase yields and improve kernel weight. In addition to this, it provides another avenue when applying nitrogen to corn that spreads the application times which may be another water quality benefit to this practice.

The equivalent of 45 additional pounds of nitrogen (in Urea form) was added on July 12th, during tassel time for the corn. In this particular plot, there is no significant advantage in yield by applying additional nitrogen. This study was replicated in 3 other locations and the additional nitrogen provided a statistically significant yield increase in one location. More work with this may be done in 2017.

2016 ADDITIONAL CORN NITROGEN STUDY MIDDLESEX I

Cooperators: Producer: Tyler Crittenden
 Extension: David Moore, VCE-Middlesex
 MacKenzie Moore, VCE-Intern

Previous Crop: Soybeans
Soil Type: Suffolk Fine Sandy Loam
Plant Date: May 24, 2016
Corn Hybrid: Dekalb DKC 63-87
Fertilization: **Broadcast:** 70-60-90
Post: 150-0-0-25s
Crop Protection: **Burndown:** Glyphosate + 2,4-D + Atrazine/Simazine
Post: Glyphosate + Status
Treatment: Replicated Comparison of additional 45#N and Control
Treatment Date: June 30, 2016 at Growth Stage VT
Harvest Date: September 14, 2016
Harvest Equipment: AGCO Gleaner R62

| Treatment | Replication | Moisture | TW | Yield @ 15.5% |
|------------------------|-------------|-------------|-------------|---------------|
| Treated | 1 | 18.9 | 57.5 | 264.2 |
| Control | 1 | 18.9 | 57 | 242.8 |
| | | | | |
| Treated | 2 | 18.2 | 57.5 | 226.6 |
| Control | 2 | 17.7 | 57 | 229.4 |
| | | | | |
| Treated | 3 | 17.7 | 57.5 | 217.4 |
| Control | 3 | 17.7 | 56.5 | 221.1 |
| | | | | |
| Average Treated | | 18.3 | 57.5 | 236.1 |
| Average Control | | 18.1 | 56.8 | 231.1 |
| LSD (.10) | | ns | 0.5 | ns |

Research from Louisiana State University, together with DuPont Pioneer, has shown that additional nitrogen fertilizer applied to corn at tassel, can increase yields and improve kernel weight. In addition to this, it provides another avenue when applying nitrogen to corn that spreads the application times which may be another water quality benefit to this practice.

The equivalent of 45 additional pounds of nitrogen (in Urea form) was added on June 30th, during tassel time for the corn. In this particular plot, there is no significant advantage in yield by applying additional nitrogen. This study was replicated in 3 other locations and the additional nitrogen provided a statistically significant yield increase in one location. More work with this may be done in 2017.

2016 ADDITIONAL CORN NITROGEN STUDY MIDDLESEX II

Cooperators: Producer: Jason Benton
 Extension: David Moore, VCE-Middlesex
 MacKenzie Moore, VCE-Intern

Previous Crop: Soybeans
Soil Type: Suffolk Fine Sandy Loam
Plant Date: April 20, 2016
Corn Hybrid: Pioneer P1637AM
Fertilization: **Broadcast:** 20-60-90
At Burndown: 60-0-0-10s
Post: 110-0-0-18s

Crop Protection: **Burndown:** Glyphosate + Atrazine + Simazine +
 2,4-D +Lambda-Cy
In-Furrow: 6 oz. Counter Insecticide
Post: Glyphosate + Status

Treatment: Additional 45-0-7-2fe applied at Growth Stage VT
Treatment Date: June 29, 2016
Harvest Date: September 13, 2016
Harvest Equipment: AGCO Gleaner R62

| Treatment | Replication | Moisture | TW | Yield @ 15.5% |
|------------------------|-------------|-------------|-------------|---------------|
| Treated | 1 | 15.5 | 58.5 | 162.8 |
| Control | 1 | 15.2 | 59.5 | 166.0 |
| | | | | |
| Treated | 2 | 15.1 | 59 | 174.1 |
| Control | 2 | 15.0 | 58 | 184.9 |
| | | | | |
| Treated | 3 | 15.1 | 59 | 187.3 |
| Control | 3 | 14.9 | 58 | 171.9 |
| | | | | |
| Average Treated | | 15.2 | 58.8 | 174.7 |
| Average Control | | 15.0 | 58.5 | 174.3 |
| LSD (0.10) | | 0.10 | ns | ns |

Research from Louisiana State University, together with DuPont Pioneer, has shown that additional nitrogen fertilizer applied to corn at tassel, can increase yields and improve kernel weight. In addition to this, it provides another avenue when applying nitrogen to corn that spreads the application times which may be another water quality benefit to this practice. More work with this may be done in 2017.

The equivalent of 45 additional pounds of nitrogen (in Urea form) was added on June 29th, during tassel time for the corn. In this particular plot, there is no significant advantage in yield by applying additional nitrogen. This study was replicated in 3 other locations and the additional nitrogen provided a statistically significant yield increase in one location. More work with this may be done in 2017.

Plant Tissue Test Results

Total Samples 2011-2016

| | N | S | P | K | Mg | Ca | Na | B | Zn | Mn | Fe | Cu | Al |
|-------------------|----------|----------|----------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----------|-----------|-----------|
| Very High | 7 | 0 | 2 | 10 | 0 | 9 | 0 | 2 | 0 | 5 | 4 | 3 | 2 |
| High | 69 | 6 | 48 | 52 | 7 | 32 | 12 | 15 | 24 | 19 | 43 | 43 | 1 |
| Sufficient | 83 | 177 | 127 | 109 | 119 | 147 | 148 | 139 | 131 | 168 | 155 | 155 | 175 |
| Low | 13 | 8 | 9 | 7 | 14 | 7 | 42 | 29 | 29 | 5 | 0 | 1 | 10 |
| Deficient | 30 | 11 | 16 | 24 | 62 | 7 | 0 | 17 | 18 | 5 | 0 | 0 | 14 |
| Total | 202 | 202 | 202 | 202 | 202 | 202 | 202 | 202 | 202 | 202 | 202 | 202 | 202 |