Extension Ag Agent
CREC Agronomy Update

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CREC
RESEARCH AGRONOMIST

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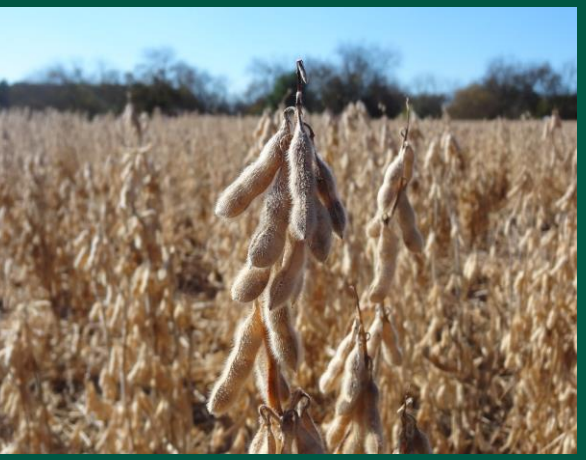
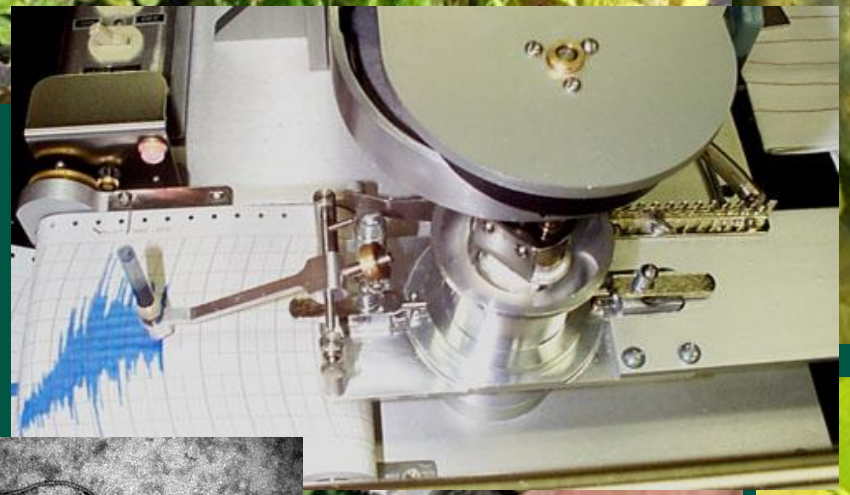
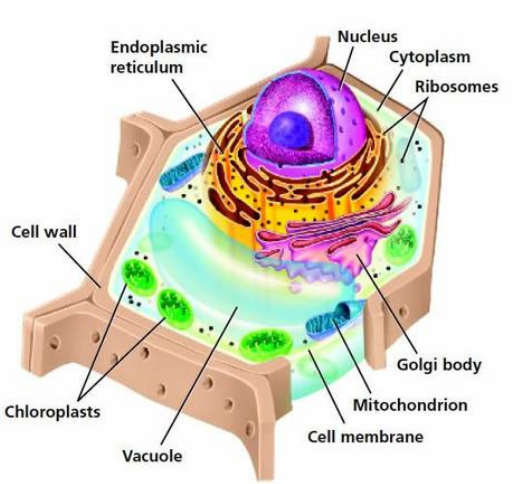
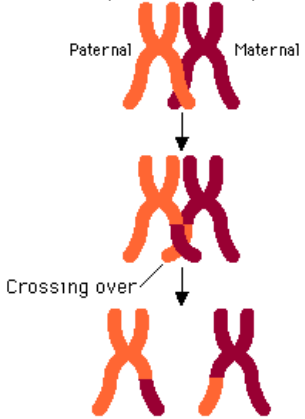
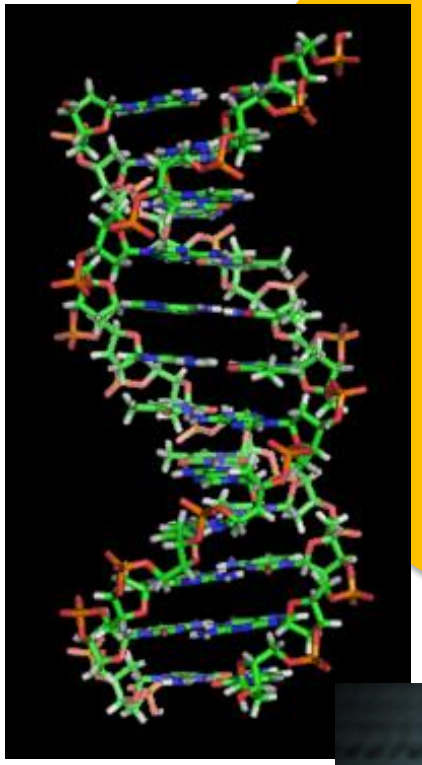
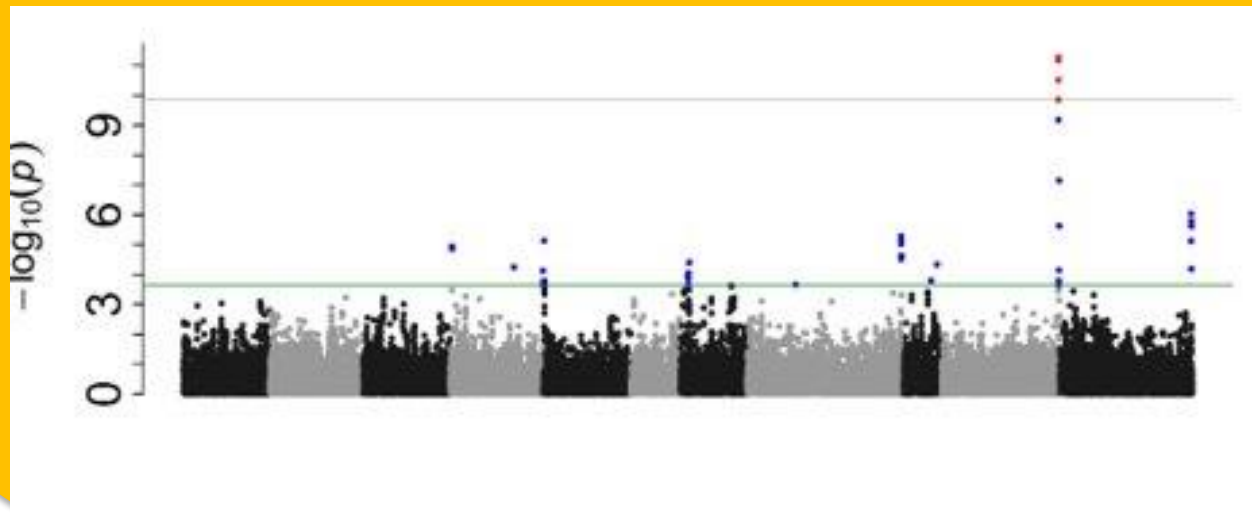











crop_evaluation

fertility

management

pathology

weeds

cover_crop

inoculants

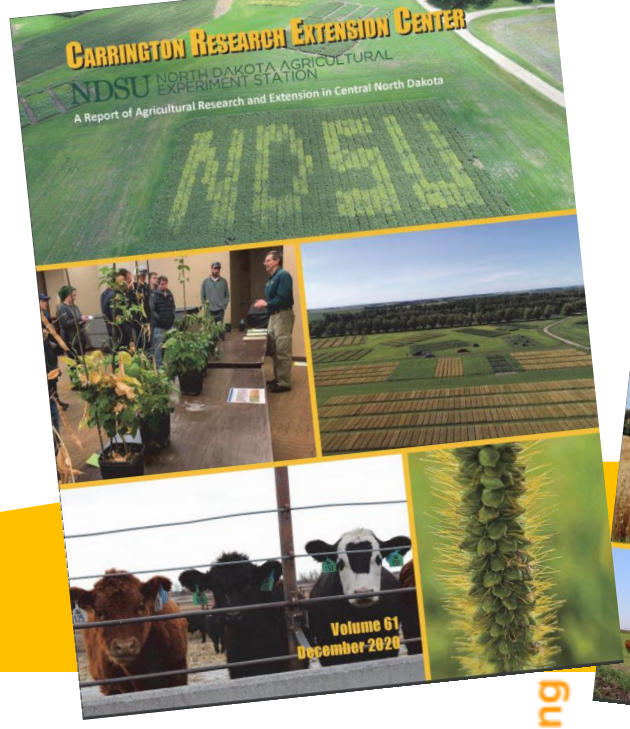
quality

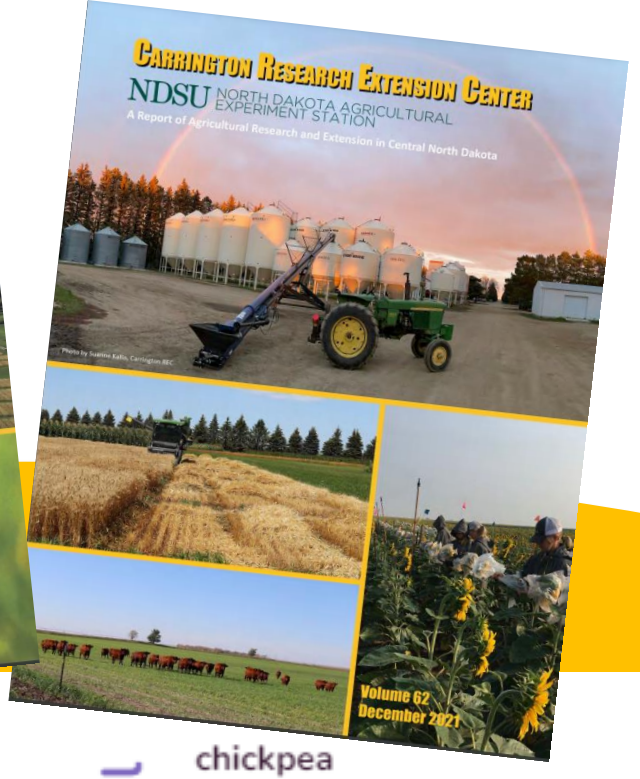
product_evaluation

rotation

seed_increase

salinity





field pea

canola

dry bean

kernza

w wheat

einkorn

barley

intercropping

lentil

chickpea

durum

spelt

soybean

wheat

forages

lupin

flax

buckwheat

oats

sorghum

crambe

hemp

rye

corn

misc

sunflower

emmer

fababean

Organics, Too!

Crop Evaluation

Crop	Lines
Barley	18
Corn - grain	90
Corn - silage	26
Durum	41
Oat	40
Spring Wheat	66

Crop	Lines
Buckwheat	?
Canola	41
Dry Bean	?
Field Pea	55
Flax	39
Lupin	24
Soybean	100
Sunflower	47

New Crop Development

- White Sorghum
  - Variety Development
- Lupin
  - Yield Testing
  - Alkaloid Testing

Desirable Characteristics

- Nitrogen fixation with Rhizobium symbiosis
- Low phosphate requirement
- Pods near top of plant
- Low alkaloid are more pest and disease susceptible

- High protein – 28-40%
- Tocopherols
- Lowest glycemic grain
- High fiber
- Suitability for allergen replacement

Selection Criteria

- Maturity date
- Yield
- Protein
- Seed size
- Alkaloid level

2004	**F2**	**Single plant selection**
2005	**F3**	**Single plant selection**
2006	**F4**	**Line selection**
2007-2022	**F5 - F11**	**Line selection with rogueing**

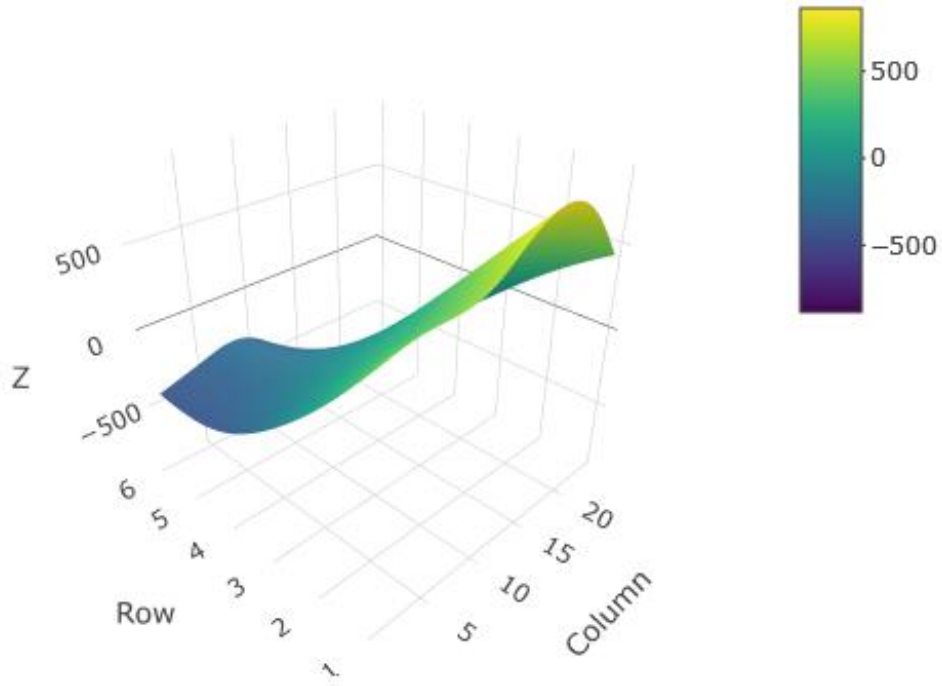
SCBG 2021 & 2022

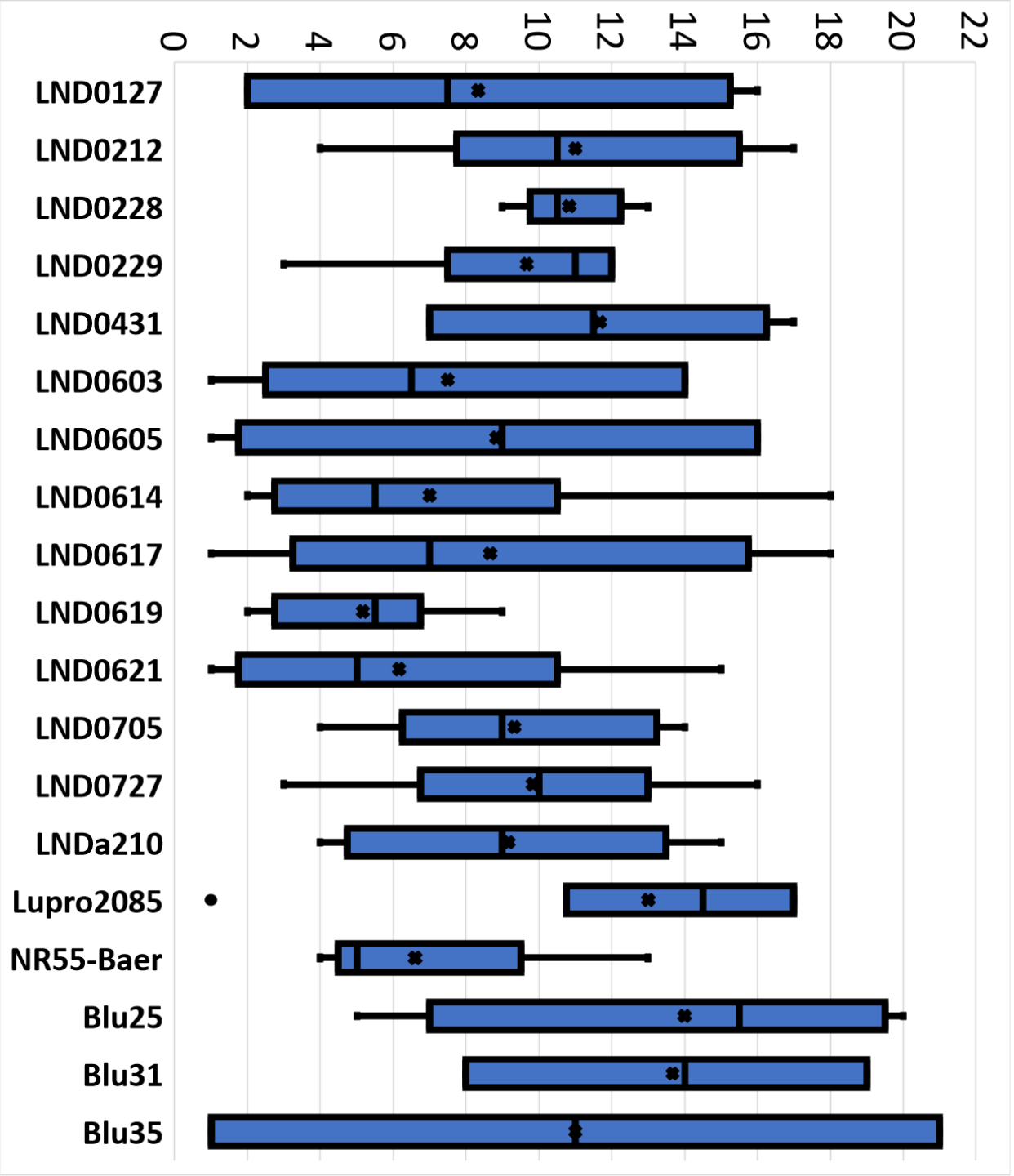
- Establish field trials
  - Germplasm – down to 48 lines
  - Multilocation VT – 14-17 ND lines
- Assess seed quality (alkaloid)
  - Dragendorff assay
  - Chromatography
- Cooperation with culinary professionals
  - Lupera – Ontario Canada

	Yield		TW		Protein	
Name	BLUES	Rank	TW	Rank	BLUES	Rank
LND0729	2637.7	1	56.9	47	28.1	38
LND0705	2573.7	2	57.5	28	28.4	18
LND0631	2553.2	3	57.3	40	27.9	46
LND0615	2550.3	4	57.4	31	28.1	41
LND8130	2485.6	5	57.4	30	28.3	28
LND0733	2481.0	6	57.4	35	28.5	15
LND0726	2457.9	7	58.1	2	28.3	25
LND0628	2454.9	8	57.2	42	28.3	26
LND0721	2454.9	9	57.4	34	28.2	36
LND0621	2453.2	10	57.9	6	28.3	27
LND0724	2444.6	11	58.0	5	28.7	3
LND0502	2435.8	12	57.0	45	27.8	47
LND0614	2430.8	13	57.3	41	28.3	21
LND0704	2403.7	14	57.8	8	27.5	48
LNDa306	2389.0	15	57.7	14	28.0	44
LND0228	2388.9	16	57.7	17	28.7	5
LND0530	2384.0	17	57.3	38	28.3	23
LND0229	2384.0	18	58.1	4	28.2	33
LND0731	2383.3	19	57.3	36	28.5	13
LND0617	2377.2	20	57.6	24	28.3	22
LND0512	2370.0	21	57.7	18	28.2	32
LND0722	2369.8	22	57.7	13	28.4	17
LND0222	2366.6	23	57.7	10	28.2	29
LND0309	2363.7	24	57.9	7	28.4	19
LND0727	2361.3	25	57.5	26	28.2	31
LNDa210	2360.0	26	57.1	43	28.6	8
LND0511	2356.0	27	57.5	27	28.5	12
LND0127	2351.6	28	57.3	39	28.5	14
LND0602	2341.9	29	57.0	46	28.5	9
LND0719	2335.9	30	58.3	1	28.2	30
LND0624	2335.6	31	57.7	19	28.1	42
LND0611	2319.2	32	57.7	16	28.7	4
LND0211	2316.4	33	57.6	22	28.3	24
LND0619	2308.2	34	57.5	25	28.6	7
LND0531	2297.8	35	57.7	12	28.2	37
LND0620	2235.8	36	58.1	3	28.2	36
LND0431	2234.8	37	57.4	32	28.2	34
LND0430	2233.0	38	57.7	11	28.0	45
LND0605	2226.7	39	57.1	44	28.4	20
LND0730	2198.2	40	57.6	22	28.4	16
LND0108	2160.5	41	57.6	20	28.103	40
LND0427	2159.3	42	57.7	15	28.6	6
LND0603	2154.8	43	57.6	21	28.5	10
LND0223	2147.3	44	57.8	9	28.9	1
LND0123	2134.6	45	57.4	33	28.754	2
LND0514	2134.2	46	57.4	29	28.5	12
LND0212	2131.2	47	57.3	37	28.1	39
LND0230	2020.8	48	56.7	48	28.0	43

Germplasm Testing

- 48 lines





Multilocation Variety Trial

- Carrington
- Dickinson
- Hettinger
- Langdon
- Minot
- Williston

SCBG 2023

- Seed alkaloid stability
  - Field
  - GH – stress conditions
- Canning suitability
  - 2023 field season

SCBG 2023

- Nutrient evaluation
- Fresh market suitability
  - Alkaloid accumulation differences
  - Pod/seed appearance
  - Taste
- Marketing materials

Other Upcoming 2023 Studies

- Correlation between sunflower planting date and red seed weevil infestation (Prasifka)
- Wheat Seeding Rates (Keen)
- Field Pea/Soybean Inoculants (Geddes, Kalil)
- Numerous Industry Trials: Spring Rye Hybrid Testing

Beyond 2023

- Soil Heath & Crop Management
  - Rotation & Nitrogen Management on Soil Microbiome
- Integration of Cover Crops and Grazing
  - Using Cover Crops and Grazing to Improve Soil Health and Decrease Herbicide Application
- Lupin Markets
- ***Producer Directed***
- On Farm Research