

Summary of the Year

Welcome to the 2018 CGREC Annual Report

The growing season for 2018 was much better than 2017, with the station receiving 125 percent of normal precipitation during the growing season.

We produced ample hay from our perennial hay fields and our annual forage crops, and produced almost two years' supply of corn silage. We are like many ranchers in North Dakota with old hay fields that need rejuvenating or reseeding (another new study).

We completed two years of patch burn studies (part of an eight-year study) with some cool results coming in on impacts on the plant community, soil physical properties, enhancement in flowering forbs that have increased pollinator and bird habitat, and increases in livestock performance. We also started the modified twice-over rest-rotation grazing study this year.

These trials will be compared with the season-long grazing pasture. We are working collaboratively with the range science faculty on the NDSU campus, including Torre Hovick, Ryan Limb and Devan McGranahan.

Michael Undi completed his third year of research on the bale grazing study and corn/cover crop trial. We plan to run a fourth year on the bale grazing study, then summarize the impacts on livestock performance, economic and soil health.

We continue to conduct studies on beef cattle reproduction, cattle genetics and the interaction of nutrition on reproduction in the cow herd. Almost all of our steers went on trials for the Main Station campus or Carrington Research Extension Center (REC) in a genomic study or bedding study.

Our researchers even kept 36 bull calves intact and used them on two studies: one (12 head) on a methods study looking at predicting potential daily sperm production and fertility in the bull using the testis, and a second study (24 head) looking at the effects of feeding 60 percent dried distillers grains plus solubles or the equivalent sulfur as calcium sulfate on hydrogen sulfide gas production in the rumen. We are working collaboratively with the Animal Sciences faculty on the main campus, including Carl Dahlen, Alison Ward and Lauren Hannah, and Bryan Neville at the Carrington REC.

We were able to fill two of our vacant positions in 2018. We hired Cody Wieland as our livestock technician and Erin Gaugler as our range research specialist. Lisa Pederson was hired in 2018 as the center's new Extension livestock and beef quality assurance specialist.

As I reported in last year's annual report, we lost Rodney Schmidt, the center's herdsman and an employee since 1999, to an ATV accident May 12, 2018. Rodney was

the face of our livestock unit, and we truly miss him. He was the most humble, kind-hearted man I have ever met.

The CGREC is home to numerous graduate students and summer seasonal workers. Our graduate students included Megan Dornbusch, advised by Ryan Limb; Cameron Duquette and Brooke Karasch, advised by Torre Hovick; Nicolas Negrin Pereira, advised by Carl Dahlen and Pawel Borowicz; Felipe Alves Correa Carvalho Da Silva and Kacie McCarthy, advised by Dahlen; Micayla Lakey, advised by Devan McGranahan; Haley Johnson, advised by Limb and me; Leslie Gerhard, advised by Caley Gasch, soil scientist in the School of Natural Resource Sciences; and Jerica Hall, advised by Alison Ward. Articles summarizing these students' projects can be found in this year's report.

Congratulations to Megan Dornbusch, Haley Johnson and Felipe Alves Correa Carvalho Da Silva. All three graduated with their M.S. degrees in range science or animal sciences in 2018.

The CGREC continues to address our original mission of conducting research and outreach on range and grassland science, forage management and applied beef cattle systems production. We continue to improve our infrastructure and will work closely with the NDSU Main Station scientists (Range Science, Animal Sciences, Soil Science and Plant Sciences) and partner RECs (Carrington, Hettinger, Langdon, Minot) to conduct research in the areas of rangeland, forage, wildlife and pollinators, soil health and beef cattle research in 2019.

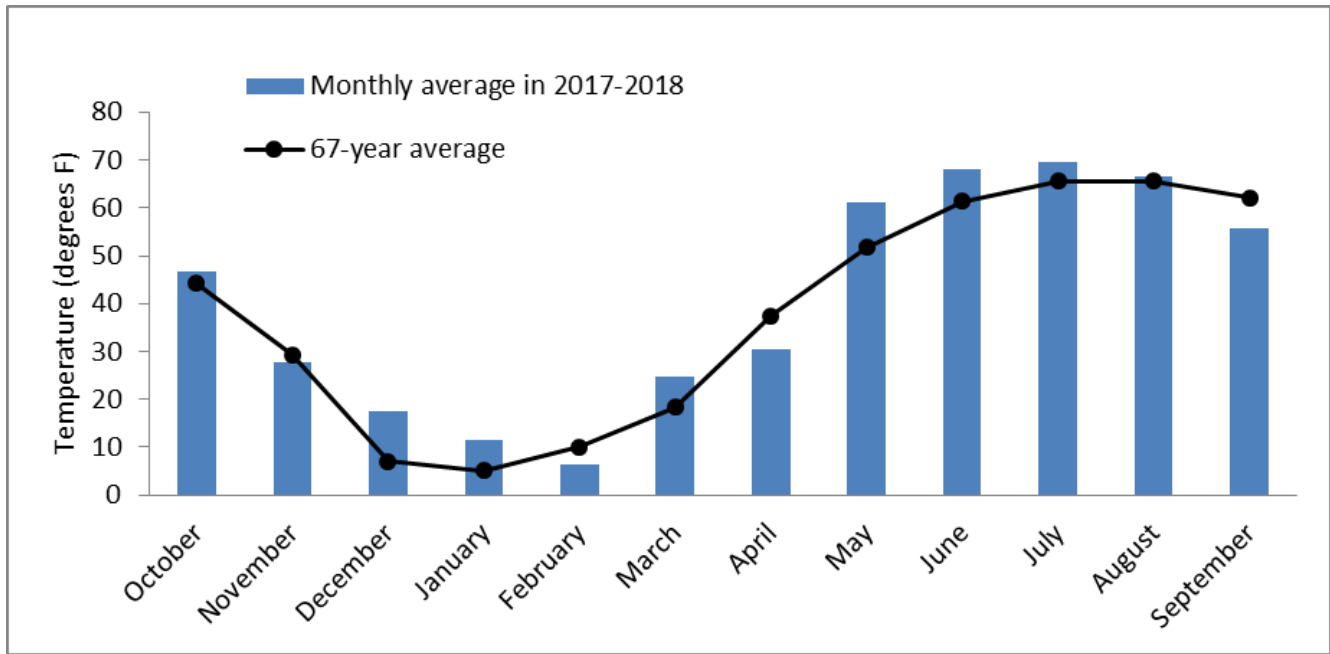
We invite you to our 2019 annual field day on July 8 from 4 to 7 p.m., followed by a supper and good conversation.

We hope to continue serving you for many years to come. You are always welcome to stop by and visit.



Kevin Sedivec, Interim Director

Monthly Temperatures for the 2017-2018 Crop Year



Last spring frost: May 11, 2018 (32°F)

Average² last spring frost: May 13

First fall frost: Sept. 28, 2018 (29°F)

Average first fall frost: Sept. 22

140 frost-free days

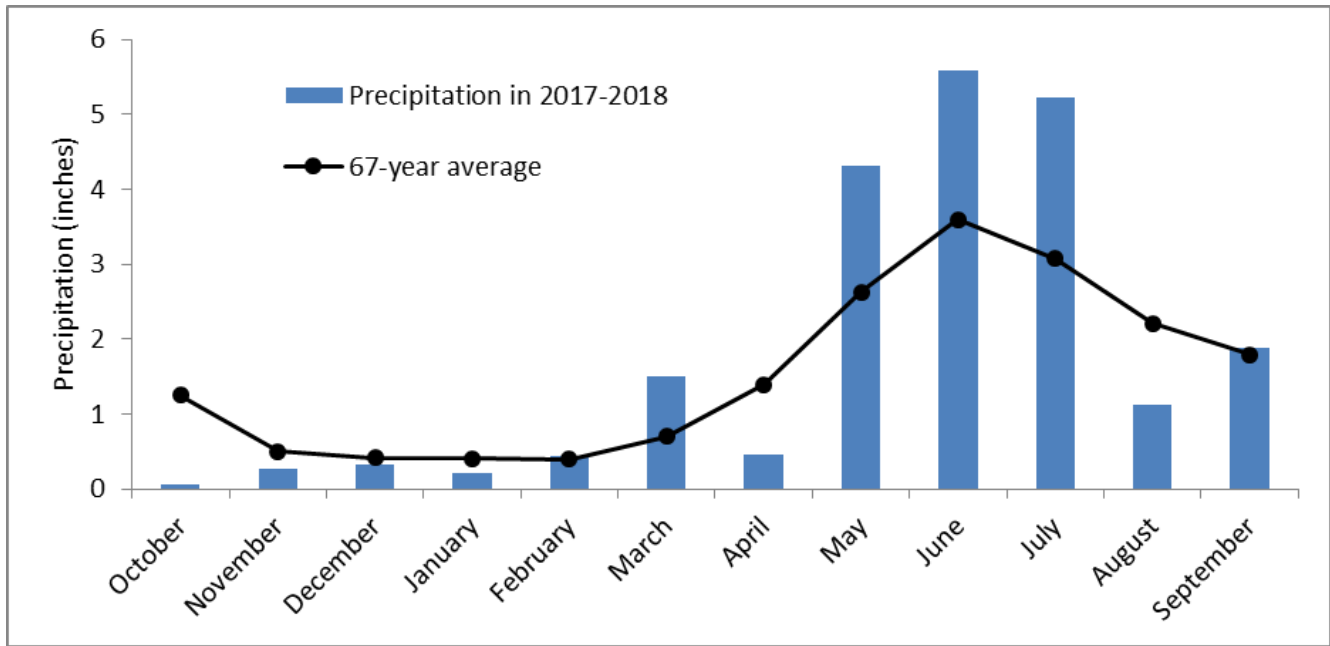
Average: 132 frost-free days

Month	Maximum temperature ¹	Minimum temperature	Average temperature	Long-term ² average temperature	2017-2018 deviation from long-term ² average
October	75	17	46.7	44.2	2.5
November	61	2	27.7	29.3	-1.6
December	51	-26	17.5	7.1	10.4
January	41	-29	11.6	5.1	6.5
February	40	-19	6.5	10.0	-3.5
March	43	-5	24.8	18.3	6.5
April	77	-5	30.5	37.4	-6.9
May	90	32	61.2	51.8	9.4
June	87	46	68.1	61.4	6.6
July	91	49	69.6	65.5	4.0
August	96	46	66.7	65.5	1.2
September	88	29	55.8	62.1	-6.4

¹ Degrees F.

² 1951 to 2018; 67 years

Monthly Precipitation for the 2017–2018 Crop Year



Month	Precipitation ¹	Long-term average precipitation ^{1,2}	Deviation from long-term ² average	Accumulated precipitation ^{1,2}	Accumulated long-term ² average	2017-2018 accumulated percent of long-term ² average	Snow ³
October	0.06	1.25	-1.19	0.06	1.25	4.79	0
November	0.27	0.50	-0.23	0.33	1.76	18.79	1.5
December	0.33	0.42	-0.09	0.66	2.17	30.37	5.2
January	0.21	0.40	-0.19	0.87	2.58	33.75	5
February	0.44	0.40	0.04	1.31	2.98	43.98	8
March	1.50	0.70	0.80	2.81	3.68	76.29	22.5
April	0.46	1.39	-0.93	3.27	5.07	64.44	6.5
May	4.31	2.63	1.68	7.58	7.71	98.36	0
June	5.58	3.60	1.98	13.16	11.31	116.39	0
July	5.23	3.08	2.15	18.39	14.38	127.86	0
August	1.12	2.21	-1.09	19.51	16.59	117.60	0
September	1.88	1.79	0.09	21.39	18.38	116.36	0
Total	21.39	18.35	3.04	21.39	18.38	116.36	48.7

¹ Rain and melted snow; in inches

² 1951-2018; 67 years

³ Depth in inches