A cultivar, also known as a crop variety, is a collection of plants with specific desirable characteristics that are maintained throughout generations. The goal of any breeding program is to develop improved cultivars for the growers. Noble Research Institute has been involved in developing superior cultivars of different forage species for grazing in the Great Plains. Noble established its forage breeding program in the early 1950s. Initially, the focus of our breeding program was to develop better cultivars of small grains with high biomass production and improved forage qualities. The first released was Elbon rye. Other rye cultivars eventually released from the Noble program included Bonel (1965), Maton (1975), Oklon (1993) and Bates (1994). In 1997, perennial forage breeding programs were developed to fill forage gaps when bermudagrass is dormant, or to replace or complement the planting of winter annuals, such as winter wheat or rye. Once improved varieties are successfully created, their performance is analyzed through extensive evaluations, such as livestock grazing trials, to assess their economic impact and safety and to develop crop management practices that capitalize on the new cultivars’ value-added traits. The following are a brief description of the more recent cultivars, the release year and availability.

Story continues on next page
MATON II (NF306) RYE
Maton II is a forage rye cultivar that was released in 2006. It was an improvement over the existing cultivar, Maton, for early fall and winter forage production. More than half of the total yield is produced during November to February; whereas, most of the Maton forage is obtained during spring. Maton II tends to have taller plants with broader leaves and thicker stems than Elbon and Maton. Crude protein content is higher than that of Maton or Oklon. Maton II is especially suited in the light-textured soils of the southern United States.

BATES RS4 (NF307) RYE
Bates RS4 is an early-maturing and high yielding forage rye cultivar released in 2013. It was selected and developed from the rye cultivar Bates for early fall-winter forage production. Bates RS4 produced 16% more fall-winter forage than Maton, but the total yield is similar to Maton, which produces better spring forage. Bates RS4 plants are tall and have erect growth habit. It performed well in statewide variety trials in Oklahoma, Texas, Louisiana, Mississippi, Georgia and Florida.

HEAVY GRAZER II (NF401) OAT
Heavy Grazer II is a facultative, winter-type forage oat cultivar released from Noble’s breeding program in 2012. It has excellent fall and spring forage production potential, superior to those of Harrison, Dallas and PlotSpike oats. Plants have sprawling vegetative growth habit with dark green leaf. In forage trials in the southern United States, Heavy Grazer II ranked No. 1 for forage production and exhibited better freezing tolerance than many oat cultivars developed for the region.

IMPACT CRABGRASS
Noble has been conducting research on crabgrass for many years. In 1988, we were the first to publicly release a crabgrass cultivar, Red River. Across the years, Red River became the main commercial crabgrass cultivar and helped crabgrass gain acceptance as an important warm-season forage crop. Recently, Noble plant breeders developed a new crabgrass cultivar called Impact. Impact was developed for livestock producers needing cultivar that matures later than Red River but one that is broadly adapted, high yielding and has improved nutritive value. Seeds of Impact are available from Barenbrug U.S.A in Tangent, Oregon.

NF402 OAT
NF402 is a forage oat cultivar developed by Noble and released in 2013 for early fall forage. In southern Oklahoma, NF402 produced more fall and total forage than the commonly grown oat cultivars. NF402 exhibits a sprawling growth habit, and mature plants are slightly taller than those of Dallas or PlotSpike. It is well adapted in the Great Plains. In southern Oklahoma and North Texas, NF402 exhibited complete or partial senescence during winter but showed excellent recovery in spring.

CHISHOLM SUMMER-DORMANT TALL FESCUE
As previously stated, tall fescue generally needs a minimum of 35 inches or more of annual rainfall for suitable production and persistence. The area west of Interstate 35 in Oklahoma and Texas experiences very hot, dry summers and is not suitable for tall fescue cultivation. However, some tall fescue cultivars possess a unique trait where the plant enters a period of dormancy to avoid the harsh conditions of summer, only to be awakened by the cooler temperatures and shorter days of autumn. These tall fescue varieties originate from the Mediterranean region of southern Europe and North Africa and are often referred to as Mediterranean or summer-dormant types. In 2016, Noble in cooperation with GENTOS in Argentina and Grasslanz Technology in New Zealand developed Chisholm, a summer-dormant-type tall fescue (Figure 3). Chisholm fescue stops growth during summer in response to long days, high temperatures and dry conditions. In western regions of Oklahoma and Texas, Chisholm offers high quality cool-season forage production together with multi-year persistence. Seeds of Chisholm tall fescue are available from Warner Brothers Seed Company in Lawton, Oklahoma.

NF201 TRITICALE
NF201 is the first triticale cultivar developed and released from our program, in 2013. NF201 has demonstrated excellent fall and winter forage production potential, making it an excellent choice for producers who need forage for early winter grazing. It is productive on marginal lands and usually requires less management under stressful conditions. Plants are semi-erect and tall with better disease resistance characteristics in southern Oklahoma.

NF101 WHEAT
NF101 is the first wheat cultivar developed in our program. It was released in 2014. It is a hard red winter wheat with potential for fall-winter forage yield. Under rain-fed conditions, NF101 is an excellent choice for producers wanting to maximize their fall forage production. NF101 plants are tall and early in heading. NF101 showed reasonable resistance to powdery mildew and leaf rust.

RENOSMEN TALL WHEATGRASS
Plainsmen tall wheatgrass was released in 2014 for its improved persistence under grazing and its higher forage yields, especially in the fall when compared to the cultivar Jose. Tall wheatgrass is more commonly used as forage for grazing livestock in the northern Great Plains and the intermountain regions of the Western United States. It is adapted to a wide range of soil types and climates but is often recommended for regions with at least 12 to 14 inches of rainfall or sites with high water tables. It is winter hardy and can grow at elevations up to 6,000 feet. It is also well adapted to saline-alkaline-type soils, and its yields are unsurpassed under these conditions. Tall wheatgrass can also be established in soils with a pH as high as 8. Because of its late maturity, early to mid-July in the Great Plains, tall wheatgrass provides a long grazing period when used for pasture. Seeds of Plainsmen tall wheatgrass are available from Johnston Seed Company in Enid, Oklahoma.

RENOVATION WHITE CLOVER
In 2016, Noble and the University of Georgia developed a new white clover cultivar called Renovation to help agricultural producers improve and maintain healthy, productive pastures. Renovation white clover is ideal for grazing livestock and wildlife food plots and helps maintain healthy soils by fixing nitrogen, controlling erosion and providing slope stabilization. Once established and properly managed, Renovation is an ideal companion legume for orchardgrass, perennial ryegrass, tall fescue and other cool-season grasses, promising years of productivity. Renovation can also be planted into warm-season pastures, where it may act as a short-lived perennial or a self-seeding annual, based on location and weather. Seeds of Renovation white clover are available from Smith Seed Services in Halsey, Oregon.