

Experimenting with Pasture Plant Species

Ten southwest Wisconsin farmers demonstrate the value of trying something new

By Peggy Compton

Basin Educator for Natural Resources, Grant-Platte-Sugar-Pecatonica Basins



In rural southwestern Wisconsin, farmers can easily see why it makes a lot of sense to let livestock graze the undulating hills. It's certainly preferable to maneuvering harvesting machinery over difficult terrain. Grazing is also better for the environment because pastures provide permanent vegetative cover so less soil erosion and nutrient runoff occur.

Despite these clear benefits of grazing, many dairy and livestock producers have been reluctant to move from traditional farming methods to grazing-based operations. One of the barriers to adoption of grazing is that producers fear that they will not get the desired production needed from their pastures. Improving pasture production just might be the key to overcoming this "fear factor" in grazing, a system that not only saves more soil than conventional farming but reduces farmer time and energy inputs.

Promoting pasture improvement and grazing through on-farm demonstrations



The on-farm demonstrations and educational outreach were designed to show current livestock and dairy producers the benefits of pasture improvement and to encourage new producers to use more managed grazing and pasture systems. This project was funded from 1999 - 2003 with a USDA-NRCS grant administered through the Multi-Agency Land and Water Education Grant program. It was coordinated by Peggy Compton, UW-Extension Basin Educator for the Grant-Platte/Sugar-Pecatonica Basins, in conjunction with UW-Extension County Agriculture Agents (Rhonda

Gildersleeve, Iowa County; Vance Haugen, Crawford County and Dave Wachter, Grant County).



The project described in this publication recruited experienced graziers in the area to evaluate pasture improvements through species selection and management. 'Endura' kura clover alone, kura clover with 'Bellvue' reed canarygrass, 'Madera' perennial ryegrass alone and perennial ryegrass with 'Ranger' or "Alice" white clover were planted on ten grazing-based farms across four counties. These grass and legume species were selected for the project because of their potential for providing high quality forage and yields based on university research and farmer experiences from other areas of the Upper Table 1 (at the end of the report) provides details on the characteristics, potential yields and quality of the forages used. Field preparation and planting methods varied among sites as determined by each farmer, who also recorded other management practices including fertilization, grazing frequency and weed control. Table 2 describes the types of soils that occur at the demonstration locations, all of which are common to many outhwest Wisconsin farms.

Prior to the project, most of the cooperating farms had limited experience with the species selected for the demonstration, so they encountered a learning curve both for establishment and management. Although each farm had unique inputs and management approaches, the results on the 10 farms were fairly uniform.

Ryegrass

Ryegrass establishment was a struggle and did not produce a good stand on half of the farms. On the other five farms, ryegrass stands were excellent to good and maintained high yields for the three years of the study (Table 3). Iowa County producer Mark Brown found that ryegrass definitely has a place in his production system, as it can be readily integrated into existing crop

rotations with corn and beans. He was especially pleased with the milk production responses he saw when his registered Jerseys and Holsteins grazed the ryegrass. He plans to continue using ryegrass on about 10% of his acres. Although other producers also had success with perennial ryegrass establishment, they struggled with integrating its management needs into their grazing systems. Crawford County producer Doug Spany was also pleased with his ryegrass stands, but plans to return to using annual ryegrass interseeded with other grasses in the future as insurance against winterkill, which is an issue with perennial ryegrass. Winterkill concerns and summer dormancy were also concerns of Dan Vosberg (Lafayette County), Harley Troester (Grant County), and Mike/Don Boland (Crawford County) on their farms.

Kura clover

Establishment methods and seedling year management were the biggest challenges faced by all of the cooperating producers. Kura clover, an excellent grazing legume, was improved or maintained on eight of the 10 farms from 2000 to 2002 (Table 4). While two farms had to replant the initial stand in 2001, they also saw success with their second attempt by 2002. With a reputation for being difficult to establish, this level of success with kura clover is encouraging. Since kura clover partitions a majority of its energy to rhizome development during establishment, even good stands aren't impressive in the seedling year, so there is a strong temptation to give up and start over with something else. Because kura clover seed is expensive, producers are also reluctant to invest in this forage. However, its success in this project demonstrates that patience with kura clover pays off. Dick Cates (Iowa County) and Dennis Rooney (Crawford County) both

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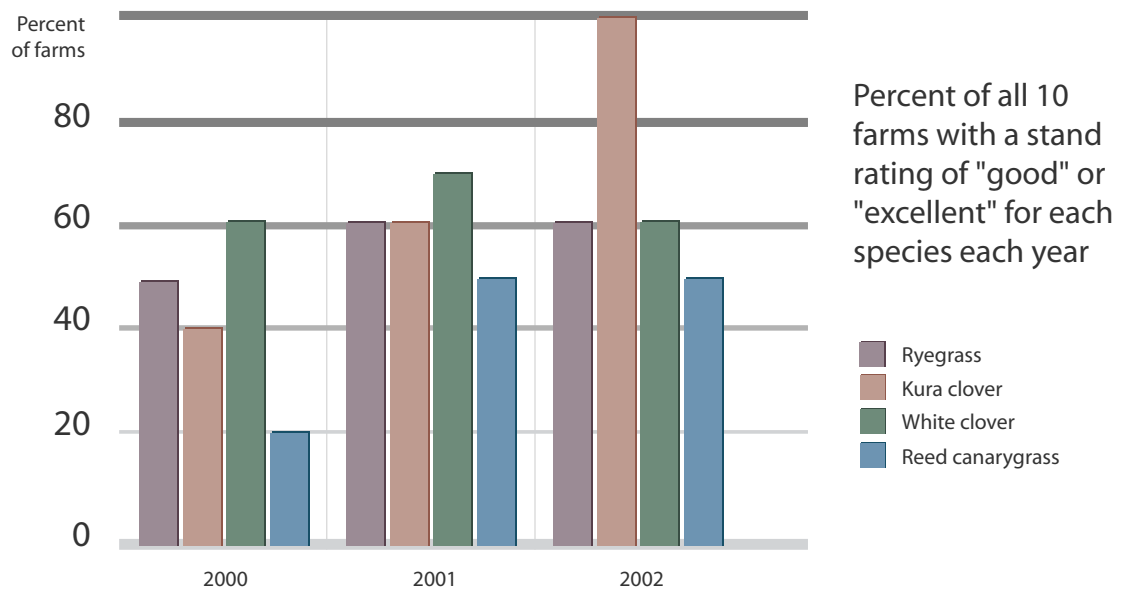
became believers in kura clover once it began showing up in their pastures in the second year of the study. Peter Winch (Grant County) even found that a two year old kura clover stand that he had nearly given up on showed surprising vigor and recovery after chisel plowing and reseeding to sorghum sudangrass.

'Alice' and 'Ranger' white clover cultivars

Both established fairly consistently on eight of the 10 farms in 2000 and had good stands in 2000 and 2001. However, white clover stands declined slightly in 2002 on five farms (Table 5). Eric and Bob Baehler (Lafayette County) found that white clover did well in their pastures along the Pecatonica River. Gene Schriefer (Iowa County)

would consider experimenting with a ryegrass-white clover combination for fattening lambs on pasture. Other producers agreed that white clover has a place in southwest Wisconsin in mixtures with adapted grasses and can provide high quality forage, but more needs to be known about its stand life and whether reseeding will be necessary a few years down the road.

Reed canarygrass. Establishment was variable with good establishment occurring on only half of the farms. However on each of those five farms, reed canarygrass stands were maintained or improved over the three years of the study (Table 6). Previous experience with reed canarygrass, which like kura clover is



slow to establish, may have been a factor in success among the cooperators in this project, as those producers with the most success had already utilized this long-lived perennial grass on their farms. Don Boland was most impressed with how well kura clover and reed canarygrass worked together. Bolands, along with producers Mark Brown and Dan Vosberg, will continue to include this grass in their grazing systems.

Please read on to see what the participating farmers had to say about the demonstration project on their farm.

● MA Brown Holsteins & Jerseys

Mark Brown, Dodgeville

On April 18, 2000, Mark planted his experimental plots into cropland tilled the prior fall. He used a spring disk and cultimulch, then broadcast seed with a fertilizer spreader and again cultimulched. In 2000, Mark saw a spike in milk production when grazing ryegrass (7-8 lbs./cow for Holsteins; 4-5 lbs./cow for Jerseys). He also experienced summer slump with ryegrass in 2001—milk production dropped 13 lbs./cow for Holsteins and 3 lbs./cow for Jerseys from July to August when the ryegrass was dormant. Before the slump, Holsteins were up to 80 lbs./cow. Overall milk production was up the second year, with 20,000 lbs. for Holsteins and 14,000 lbs. for Jerseys.

Mark was already familiar with reed canarygrass. He had been seeding it with alfalfa to provide a high quality winter feed supply as first and second crop hay or baleage. He had also grazed the reed canarygrass-alfalfa stands in late summer when other pastures on his farm went into summer dormancy. He believes the key to management of this grass is to get it "set up" with an early first crop harvest (in most years he harvests first crop between May 15-20) and second cut at an interval similar to that for harvesting high quality alfalfa.

Mark feels that the gentle hills of his farm, which allow him to use tillage without causing erosion, give him an advantage in establishing new pastures. He has tried several times to establish new pastures by spraying them in the fall with herbicide then using no-till or light tillage when planting into the sod. He did not experience much success with this method and now routinely kills the sod, plants corn or soybeans the following year and then establishes the pasture into the crop ground following the year of corn or beans. He feels the good to excellent establishment rates he had for this project are the result of his past experiences and the fact that he planted (for this project) into "old crop ground" rather than sod.

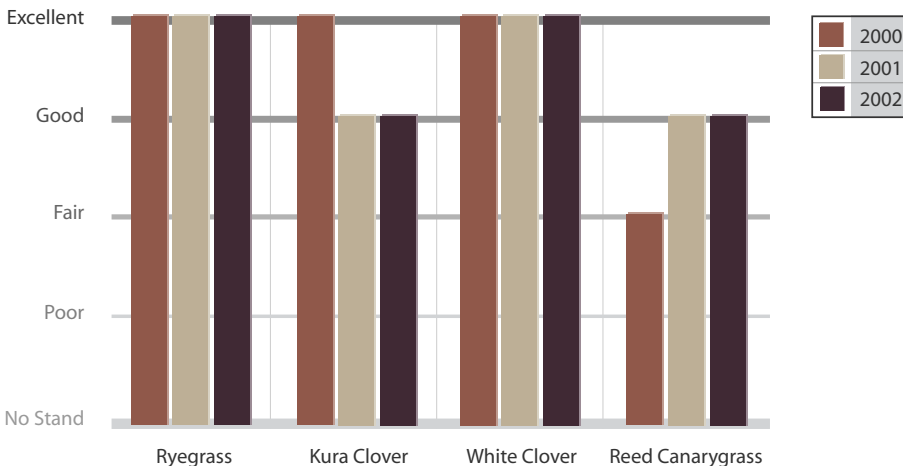
Farm Facts ✓

- ▶ 200 farm acres
60-120 grazed, depending on the season and year
- ▶ 60 milking cows
(Jersey and Holstein)

"For this project we converted corn fields into pasture. During the project our pastures were ryegrass and kura clover. The kura plot now contains quackgrass, reed canarygrass and white clover. We rotated the ryegrass area to corn in 2003."



Jersey grazing in the ryegrass/white clover pasture, September 11, 2001.



Landowner comments

"The perennial ryegrass was new to me and I will continue to use it. We get enough of an increase in milk production to cover the cost of seeding and fertilizing when the cows graze the perennial ryegrass. I will plant about 10 acres of it (perennial ryegrass) each year and work it in with a rotation of corn or beans. The plots for this project died last winter (2002/2003) because it was an old stand and we didn't have any snow. It did come back some, although there are some miscellaneous weeds like quackgrass. I'm not as excited about the kura clover as my ryegrass. The kura clover went to the edge of my hay field, so I hayed it more than I grazed it."

Overall, Mark feels that his farm has been (and can continue to be) improved by the use of the species tested in this project. He likes his pastures to be "a good mix of reed canarygrass, perennial ryegrass and traditional bluegrass pastures" to give him flexibility and grazing throughout the summer.



Ryegrass and 'Ranger' white clover on September 25, 2001

● Pine Grove Farms

Peter & Christina Winch, Fennimore

Peter planted on April 27, 2000 with a Tye no-till drill into pasture following spring-applied glyphosate. Due to a poor stand, he replanted kura clover in 2001 after a fall 2000 glyphosate application with more success. All pastures were fertilized twice with nitrogen in 2001. In 2002, only manure was used. Weed pressure in this field was high, especially thistles, so in 2002, Peter decided to chisel-plow the field and plant sorghum sudangrass across most of the pasture. Due to wet weather conditions, he chiseled the ground three times to control weeds before he was able to plant the sudangrass in June. At his July 2002 pasture walk, we were surprised but pleased to see that the kura clover survived the chisel plowing, and was growing well among the sudangrass. The field was rotated to corn silage in 2003, but Peter left one end of the kura clover plot undisturbed to watch how it develops and spreads.



Peter's pasture where kura clover had been planted was mostly weeds and bare ground, May, 2002.



Following early summer chisel plowing, kura clover plants were abundant in the newly planted sorghum sudangrass. Photo October 10, 2002.

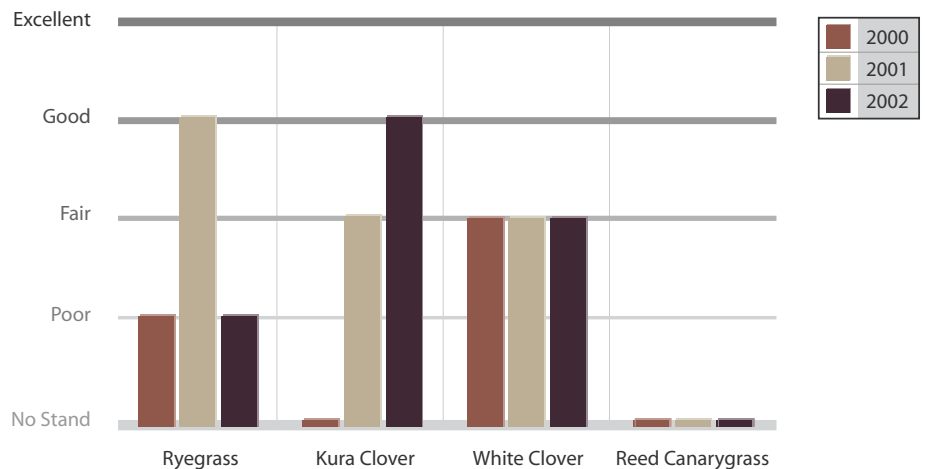


By October 2002 the pasture area that was not chisel plowed was also filling in with kura clover and grasses where only weeds and bare ground had been earlier in the growing season.

Farm Facts ✓

- ▶ 440 farm acres
220 acres grazed
- ▶ 185 milking cows
100 heifers (Dutch Belted and Holstein)

"At the start of this project our pastures were bluegrass, ryegrass, orchardgrass and red clover. Our pasture species are the same now as they were before participating in this project."



Note: The kura clover stand is the result of re-seeding in the spring of 2001. White clover and reed canarygrass were not established with the 2000 seeding and were not re-seeded in 2001.

Landowner comments

"Ryegrass has been kind of hard for us to establish. We had a poor kill (of the established pasture prior to planting) because the grass was too thick for the chemical to kill it. A tremendous thistle problem really set us back. I have not re-planted that plot. The ryegrass is spotty but okay in some places. I planted an additional plot of ryegrass (a different variety than what we planted for this project) and it came okay, but we didn't have good weed control there, either. The following year (spring 2001) I added more ryegrass to it and now I have an okay pasture there. My best ryegrass plots have been when I seeded into winter-killed alfalfa."

"I think the reed canarygrass did not get going due to the weed pressure. There was too much competition. The white clover was fair-it also suffered from the weed competition."

Peter feels that the struggle in establishing all of these species on his farm was due to "really bad timing. It was very dry following the spring 2000 seeding and that, in combination with the heavy weed pressure, was too much for the seedlings to overcome." He is willing to try new things to improve his grazing operation, but right now is concentrating on grazing the pastures he has established and spot spraying for weeds to get them under control.

Denmar Ridge Farms LLC

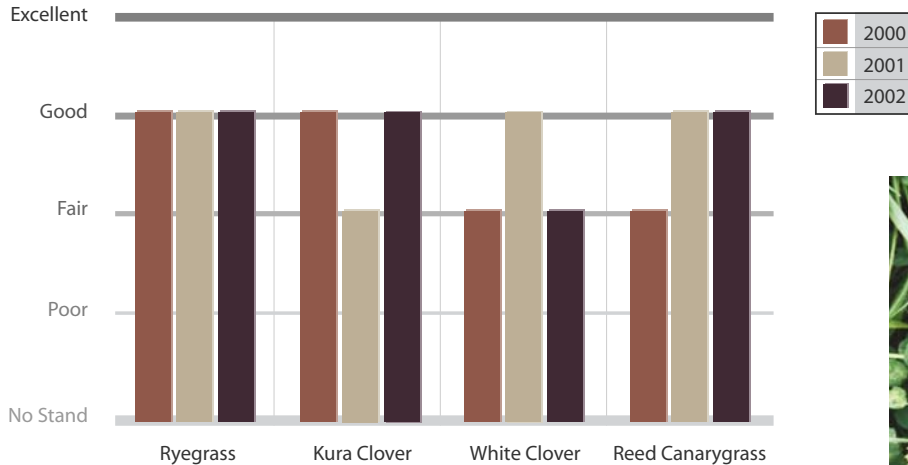
Dennis and Tim Rooney, Steuben, Crawford County

Dennis and Tim, a father-son team, planted their four plots into existing mixed grass pastures on May 27, 2000 with a Great Plains no-till drill following spring-applied glyphosate. The plots were grazed once and clipped 4-5 times in 2000 to keep the weeds down. They were also clipped 2-3 times in each of the second and third years. Dennis feels that their success in establishing all four of the species used in this project is due in large part to the clipping they did to minimize weeds and competition during the establishment years.

Farm Facts ✓

- ▶ 240 crop acres
140 acres grazed
- ▶ 100 milking cows
40 springing heifers; 40 yearling heifers (Holstein)

"At the start of this project our pastures were mostly orchardgrass, red clover and bluegrass. Now our pastures are orchardgrass, white clover and ryegrass with some reed canarygrass and kura clover."



Landowner comments

"The cows sure like the kura clover. We might've even overgrazed it. So far it is a plus, and herd health is better." Dennis also said that although he is interested in planting more kura he is "waiting to see how it lasts" and also wants to know more about keeping the grass growing with the kura before planting more of it on his farm.

"The reed canarygrass is coming on pretty good now and it is worth the effort". "We still had some of the ryegrass left this last summer (2003, the fourth year after planting). I have some fescue pastures that I am trying to get rid of. I planted one new paddock in 2003 with an annual and perennial ryegrass mix. We grazed it about 6 times and I would see milk production increase each time the cows were on that plot. The planting costs were paid for the first year of grazing."



White clover, September 2002.



The kura clover (center of photo) established and persisted along with the pre-project pasture species (grasses and Dutch white clover). Photo October 15, 2001.

Cates Family Farm

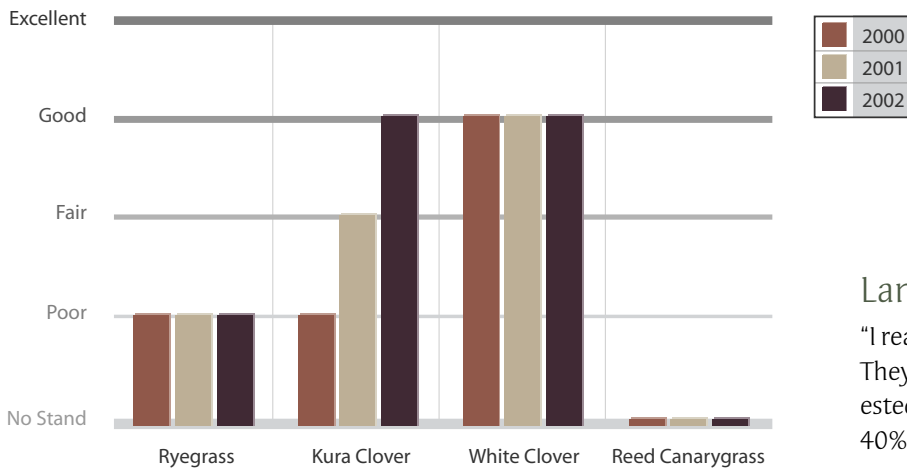
Dick and Kim Cates, Spring Green

On April 15, 2000, plots of the selected species were planted with a Truax no-till drill following spring-applied Paraquat®. All plots were located on a ridge with thin soils that had never been plowed. Dick feels his pastures were over-grazed for the most part, inhibiting establishment of plants, and he is not recommending the use of Paraquat®, because it suppressed the existing grass too much. He grazes a total of 700 acres of grass on three farms. The plots were located 25 minutes away from his home farm, “making it difficult to closely monitor growth” according to Dick. Although kura clover plants were sparse in 2000, the species has made a steady increase since then.

Farm Facts ✓

- ▶ 950 farm acres
700 acres grazed
- ▶ 2000-2002
(40 Angus/Jersey steers;
180-200 Holstein/Jersey
heifers; 500-560 beef
steers)
- ▶ 2003
(185 dairy heifers; 42 beef
steers; 140 beef cow/calf
pairs)

“At the start of this project our pastures were bluegrass/Dutch clover, red clover and fescue. Now our predominantly bluegrass pastures have some kura clover and the white clover that was planted for this project.”



Landowner Comments

“I really like the kura clover and the cattle love it. They could eat it all day,” Dick said. He is interested in maintaining the recommended 30% to 40% kura clover in his pasture. He also commented “ the ryegrass didn’t grow on the dry ridge where fertility is modest. Ryegrass needs high-fertility and moisture, and the cattle also grazed it down to the nub.”



Kura clover, although initially sparse, improved each year. Photo October 15, 2001.



White clover, September 4, 2002.

● Rolling Hills Sheep Farm

Gene Schriefer, Mineral Point

Gene is a sheep farmer who grazes 100+ acres of permanent pasture and additional hay acres as needed for lambs. He planted his pastures on April 21, 2000 with a Truax no-till drill into existing pasture following spring applied glyphosate. Gene summed up his experience with no-till drilling as being "very tricky, risky, highly variable. Working the seedbed, while increasing our risks of erosion, provided a much better establishment. My speculation is there are major differences in the abilities of different no-till drills." His efforts in 2000 were also hampered by dry conditions for several weeks after establishment, and resulted in very poor stands. He reseeded kura clover in June, 2001 with good results, using tillage and planting with a conventional grain drill.

Farm Facts ✓

▶ 135 farm acres
105 acres of permanent pasture; 30 acres of alfalfa for haying or grazing

▶ 350 ewes; 700 lambs (Texel and Charollais)

"At the start of this project our pastures were bluegrass, orchardgrass, timothy, smooth brome grass, white clover, ladino clover and red clover. Our pasture species are the same now as they were before participating in this project."

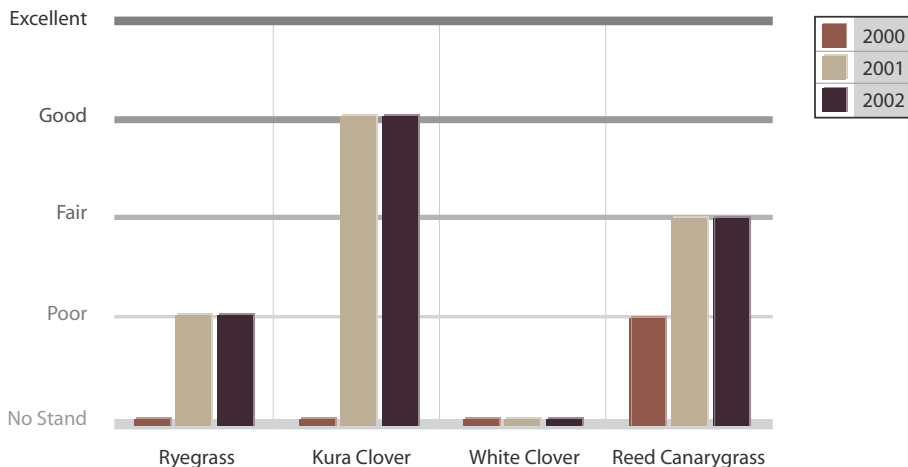
Landowner Comments

"The no-till drill that we used did not work in our situation. We've frost-seeded clover and annual ryegrass each year and we get it to work some. I expected the no-till to be better. I would have guessed that no-till would have worked better on ryegrass and white clover (easy to establish species) especially. We got good kill on the sod so competition wasn't an issue. I think it was a seed placement issue. Using this seeder, we had to put so much pressure on the coulters to get it to cut through the sod that the grass seed was too deep."

"I would try kura and reed canarygrass again. We had some reed canarygrass by the second year, even after plowing it and now in the fourth year it's still out there. There's still too much that is not known about establishing these species, but I'd try possibly five acres or so again. I think the reed canarygrass/kura clover combination, which was the original intent, still has the most promise if we can get the establishment kinks worked out. The ryegrass/white clover needs a prepared/worked seedbed and is only a short term rotation, which doesn't often fit in with our cropping plans, but I'd continue to work with this combination also as a lamb fattening mixture"



The kura clover planted in June 2001 germinated and persisted amidst high weed pressure.



Note: The kura clover stand is the result of re-seeding in the spring of 2001. White clover and reed canarygrass were not established with the 2000 seeding and were not re-seeded in 2001.



The steep slopes of the farm limit tillage options, often making establishment of new species more difficult. (Rhonda Gildersleeve photo.)

Spany Farm

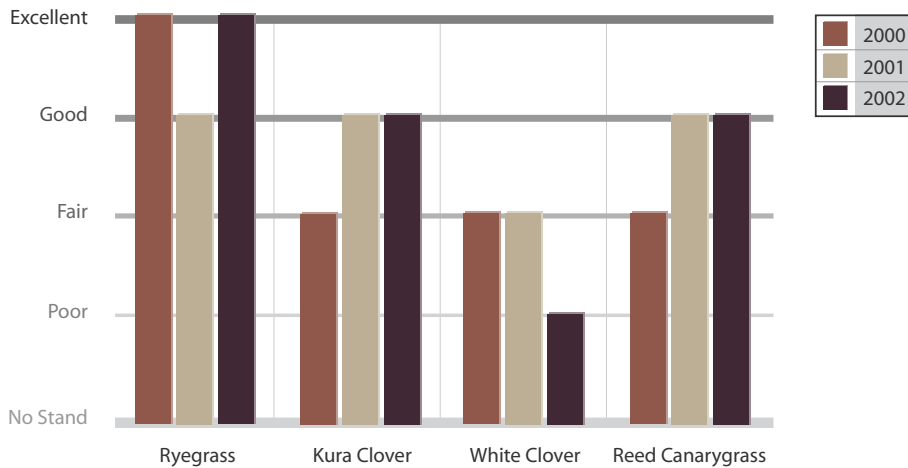
Doug & Carol Spany, Wauzeka

Doug planted on May 24, 2000 with a Tye no-till drill into pasture following spring-applied glyphosate. In 2000, he started grazing the areas about five weeks after planting and grazed four times, followed by clipping after two grazing events to control weeds.

Farm Facts ✓

- ▶ 200 farm acres
75 acres grazed
- ▶ 50 milking cows
(Jersey and Jersey/Holstein cross)

"At the start of this project our pastures were orchardgrass and fescue. Now our pastures are ryegrass, reed canarygrass, fescue and kura clover."



Ryegrass established well and produced an excellent stand. Photo September, 2002.



Kura clover, shown here with reed canarygrass, improved over the span of the project and was abundant by 2002.

Landowner Comments

In general, Doug was pleased with the ryegrass, although he would probably use annual ryegrass inter-seeded with other grasses instead of perennial ryegrass next time: "I think the annual ryegrass yields a little more," he said. "I hate to think of waking up next spring and there's nothing there." Last winter's (2003) low snow cover followed by a spring cold spell killed off Doug's perennial ryegrass plots. Doug has 70-75 acres dedicated to grazing and notes that he always sees milk production spike two to three pounds when his cattle graze ryegrass.

Doug's kura clover stand improved from poor to good over the three years. "Kura clover continues to intrigue me, but I can't seem to pull the trigger on investing in it," he said. "The first couple of years, we had nothing, but it seems to be gaining ground this year." He said the slower growing rate of kura clover makes it hard to produce prime grazing pasture when it is inter-seeded with other grasses. "Reed canarygrass grows so fast, it's a jungle before the kura clover comes up. It tends to be hard to graze."

"I don't know if it was the level of nitrogen, but we didn't get good re-growth this year (2003) on the white clover." Doug mentioned that he tends to graze "a little longer" until the grass is about three or four inches high and he speculates that white clover has a hard time competing with grass under his management style.

Terraced Acres Partnership

Mike and Don Boland, Seneca/Mt. Sterling

Mike and Don Boland, a father-son team, have been experimenting with pasture renovation for several years, and have found that they get good results with a fall and spring glyphosate spraying to destroy tall fescue sods and then rotating into another crop like sudangrass for one year. The Bolands planted their plots on April 14, 2000 using a conventional grain drill into sudangrass residue that had been chisel plowed. The pastures were grazed five times and clipped after each of the first four grazing events. The Bolands had good to excellent stands for each of the species.

Farm Facts ✓

- ▶ 340 farm acres
150 acres grazed
- ▶ 100 milking cows
60 young stock (Holstein)

"At the start of this project our pastures were orchardgrass and ladino clover. Now our pastures are orchardgrass, ladino clover, reed canarygrass and kura clover."

Landowner Comments

"I think one of the keys to our success was being able to use tillage," remarked Don. "We had not had much luck with no-till in the past. For this project, using ground that was coming out of cropland was a benefit."

They have been pleased with the reed canarygrass and kura clover. "Based on what I saw, I won't have to replace it. I didn't think the kura clover could compete with reed canarygrass, but I'm impressed with it," said Don. The Bolands' had a pasture walk in July, 2003 and Don noted that many were surprised to see kura clover springing up in a cow path with bare patches. "Most things won't grow on a cow path. It's pretty hardy once it's established." Don also noted that the "ryegrass is great feed." However he is not planning to seed more ryegrass at this time because he is more interested in getting something established that will provide permanent pasture, especially on the steep slopes that are common on their farm. In his opinion, "the kura clover is better long term."

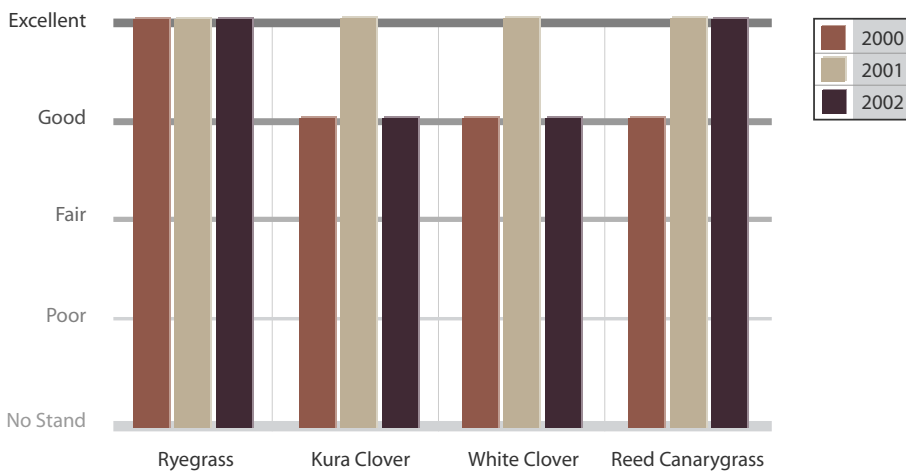
Don was a little puzzled about the slight decline in the white clover stand between the second and third years, but noted that "although it isn't as thick as it was, it has filled in with other things and is still providing pasture."



The 'Alice' white clover was very vigorous, appearing to nearly choke-out the ryegrass in some areas.



Reed canarygrass (left) and white clover/ryegrass stands were good to excellent throughout the project years.



Ryegrass established well and persisted with excellent stands during the three years of the project. Photo on September 27, 2002, one week after this pasture had been grazed.

Troesters Grassland Farms

Harley & Nancy Troester, Beetown

Harley planted on May 9, 2000 with a Tye no-till drill into pasture following spring-applied glyphosate. Due to poor stands and high weed pressure, he replanted in 2001 with more success. Each spring, he fertilized grasses with 100 lbs, urea/acre. By the end of 2002, ryegrass was the least productive; most of the pasture is filling in with kura clover or white clover, orchardgrass and a few weeds. Harley's 70 head of cattle graze 80 acres.

Landowner Comments

Harley had the following comments on the struggle of getting some of these species established on his farm. "I don't think we got good enough seed to soil contact for the grass seed that first year. We were planting into really old, really sod-bound pasture and the no-till drill may not have got the seed to the soil. We should have tilled and prepared a good seedbed. The clover did establish better than the grasses, possibly they fell down into the soil better or were better able to push through the thatch."

After a poor start and with variable performance throughout the three years, kura clover is now starting to fill in the experimental pasture—about 20% in the fourth year, a showing that Harley didn't expect. "Some people would say 'shoot, nothing is coming up' after the third year, but they just need to have a little patience," Harley said. He also noted that each time he took his cattle off a 10-acre pasture of previously established kura clover, milk production dropped five pounds per head per day. Harley was also pleased with the 'Ranger' white clover. "I had some wet, muddy areas that I seeded with seed left over from the drill. That area did extremely well." The ryegrass was variable and although some areas were good by 2002, overall it was spotty. "I couldn't recommend the varieties of ryegrass available for our area. It stops in hot, dry weather and it doesn't take winters very well."

When asked about trying new species to improve his grazing operation, Harley said, "I think it depends on your inventory. You have to look at what you have now and decide if it is profitable to change. If you need more feed in your pastures than you have now, what time of the grazing season are you low on pasture? Answering these questions might tell you what species would improve your operation."

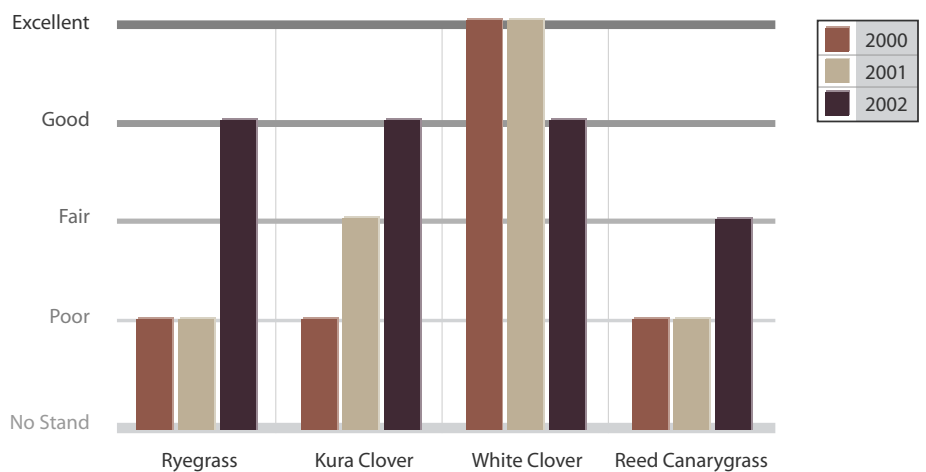
Farm Facts ✓

- ▶ 80 farm acres
70 acres grazed plus 35 rented acres grazed
- ▶ 70 milking cows
30 open heifers; 30 heifer calves

"At the start of this project our pastures were fescue and orchardgrass. Now our pastures are white clover, orchardgrass, weeds and some kura clover."



'Ranger' white clover established well and grew into tall, dense stands.



Note: Although there was kura clover established from the 2000 seeding, kura was re-seeded in 2001 following a Glyphosate® treatment to reduce the weed pressure.

Vosberg Valley View Farm

Dan and Ruth Vosberg, South Wayne

Dan planted his four plots into corn cropland on April 20, 2000 with a no-till drill following glyphosate application. The seedbed was disked lightly following planting. Dan feels that the good to excellent establishment of all of the species is due, in large part to good seed bed preparation which allowed good seed to soil contact. He also credits frequent clipping to keep the weeds and competition down and a "little luck" in getting good weather conditions.

Landowner Comments

Dan admits that the ryegrass "lived longer and stayed thicker" than he expected. Its positive attributes include "good grazing when other grasses are heading out since it heads out later. It is also good grazing in the fall when reed canarygrass is shutting down for the season." However, for the following reasons, Dan does not plan to routinely plant ryegrass on his farm. "It is slow to green up in the spring and dormant when it is hot. I can't feed hay on it over the winter and I can't stockpile it, so that limits my options overall, if I have ryegrass pastures." Overall, he just doesn't think it works well on the shallow soils on their farm.

According to Dan reed canarygrass is a much better fit for his farm. "You have to have patience because you won't get much production in year one." Overall, though, "it is easy to manage, drought tolerant, doesn't get leaf diseases and you can make some hay from it" which allows some flexibility in pasture management. "It is one of the more profitable grasses on our farm."

Dan has experimented with establishing kura clover beyond the scope of this project. Although he had good establishment on the plots for this project, he feels that he got his best kura stands when he planted kura with a barley cover crop then fall no-tilled grasses into the pasture. "Starting from scratch rather than planting into existing sod seems to work a lot better. I like the kura clover, that's for sure. If I had the time to wait for it, I would do it again. It takes a few years to get it established. Once it's established, it's an excellent clover. It's possible in the future that I will plant it again. Kura clover seems to do better on more marginal soils. I would recommend planting kura clover if the situation is right."

Dan admits to "experimenting a lot" on their farm, with some successes and some failures. "There is risk involved, but overall there is a place for trying to improve your pastures. For example, the kura is a real plus. The cows like it, it seems to have longevit.." However, he also admits that sometimes he should have tried new things on a smaller scale and at a slower pace. "Don't put in five acres and then another 10 acres before you really know if the first five acres worked out."

Farm Facts ✓

- ▶ 283 farm acres
238 acres grazed
- ▶ 150-180 milking cows
(Jersey and Jersey cross)

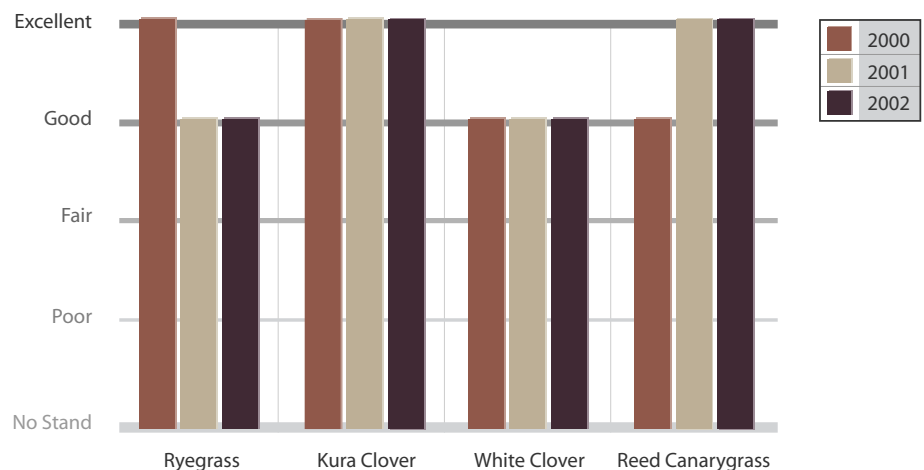
"For this project we converted corn fields into pasture. Now our pastures are composed of a mixture of orchardgrass, brome-grass, reed canarygrass, kura clover, ryegrass, quackgrass, white clover, alfalfa and millet (planted each year)."



Kura clover stands were excellent at the Vosberg Valley View farm. Photo September, 2002.



Rhonda Gildersleeve, Iowa County UWEX Agriculture Agent, and Dan Vosberg discuss pasture management as they gather a sample for forage analysis.



Baehler Farm

Robert, Mary and Eric Baehler, Mineral Point

The Baehler father-son team began with a spring glyphosate treatment just before planting their plots the last week of May 2000, using a Truax no-till drill. They followed with spot-spraying of thistles with glyphosate. Plots were planted into existing riparian pastures dominated by meadow fescue along the Pecatonica River. The Baehlers' grazed the plots four to six times during 2000 to keep the existing grasses under control so the clover could establish itself.

Landowner Comments

The Baehlers really like the white clover. Eric, the younger Baehler, said, "I know a few guys who planted white clover partly because of what they saw on our farm." Bob commented that they are unsure if it really declined from year two to year three or "if it just comes on strong the first years and then the grasses catch-up".

They continue to experiment with kura, and would do the no-till again because it did work on their soils, but finding a drill is the big issue for them. "They (no-till drills) are in high demand," commented Eric. Although the kura is not solid as it would be in a tilled field, Bob feels they have a good stand (of kura) mixed in with the grasses. "How that little seed can work in that thick sod is beyond me, but I love the stuff," he said..

The reed canarygrass was not a complete failure, but plants are spotty across the field. Bob feels that seeding rate is a big issue and you need to use much more seed than the recommended rates to get a thick sod. He also advised that you should probably pull off of it in August and let it go to seed to maintain sod.

The Baehlers continue to experiment with mixtures, including perennial ryegrass, kura and white clovers and are also looking at some of the new, endophyte-free tall fescue varieties. They generally are using much higher grass seeding rates than the suggested recommendations, for example in a pasture they planted last year, they used 100 lbs. of fescue, 40 lbs. of perennial ryegrass and 1-2 lbs. of white clover per acre.

Farm Facts ✓

- ▶ 344 farm acres
200 acres grazed
- ▶ 100 milking cows
40 yearlings (Holstein)

"At the start of this project our pastures were mostly meadow fescue. Now our pastures are fescue with kura or white clover."



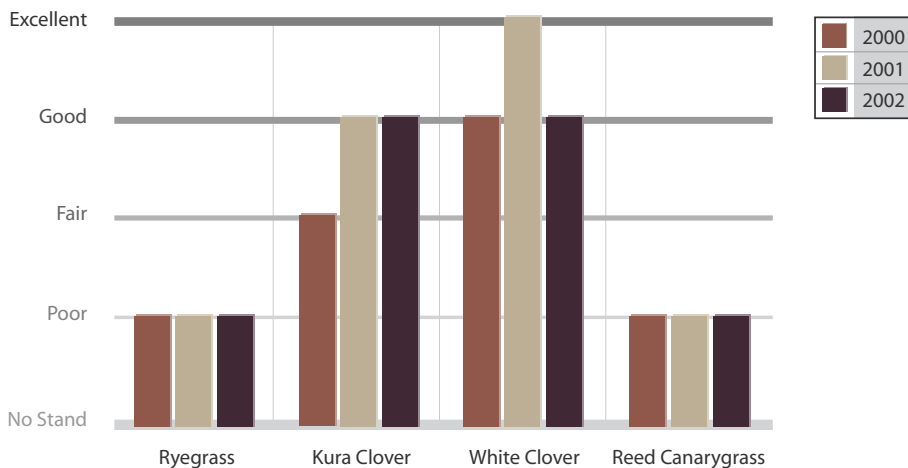
Baehler Farms utilize riparian pastures in their rotational grazing operation.



Rhonda Gildersleeve, Iowa County UWEX Agriculture Agent, and Eric Baehler sample the white clover pasture for forage analysis.



Kura clover, although slow at the start, produced good stands as shown here in the meadow fescue pasture, October 2001.



Education and Outreach Summary

Educational and outreach activities for this three-year project included on-farm pasture walks, a winter meeting with the participating producers and a winter grazing and forages seminar that included a presentation on the project to date. Educational and outreach activities included the following.

2000

- Four pasture walks with 85 attendees total

2001

- A January meeting for farmer cooperators and UW-Extension personnel involved in the project
- Ten pasture walks for a total of 145 attendees
- A summer newsletter/update sent to participating farmer cooperators
- A field day held August 15 at the Lancaster Agricultural Research Station for 30 attendees



Visitors look over reed canarygrass at Vosberg Valley View Farm.

2002

- In January, a project summary was presented to the SW Wisconsin Winter Graziers seminar for 31 attendees
- Details of demonstration project presented to more than 50 people during a breakout session at the Wisconsin Grazing Conference
- Seven pasture walks were held for a total of 80 people



Checking out kura clover at the Baehler farm.

2003

- In January, project summary once again presented to the Southwest Wisconsin Winter Graziers seminar for 40 attendees
- Poster presentation given to the annual meeting of the National Association of County Agricultural Agents

Pasture walk and summer field day attendees included farmers, seed company representatives and agency personnel. The winter seminars were attended primarily by farmers.

Observations Made, Lessons Learned

Working with a no-till drill

In several cases during this study, the farmer rented a no-till drill for the pasture establishment. There seem to be three key items in using a no-till drill to establish new pasture species:

- (1) having a drill available
- (2) knowing how to use it; and
- (3) determining the best pre-planting treatment.

This can be challenging because on the day the drill is available your soil conditions may not be right for planting or you may get tied up with something else and not have time to do the planting. Also, when renting a drill, it is sometimes difficult to get the settings on the drill just right since the farmer is unfamiliar with it.

The question of pre-treatment of the field is an important one. A fall glyphosate treatment often allows planting earlier in the spring (as compared to a spring glyphosate treatment). This can be a real benefit in trying to establish kura and other species that are slow to establish as it gives the pasture species a head start on the weeds. If we were to repeat this study, we would recommend either a fall glyphosate treatment or fall and spring treatments, rather than just spring treatments as we did. If doing only a spring treatment, the fall grazing schedule (when and how short to graze in the fall) may affect the spring treatments and should be considered.

Trying new pasture species

Each farm (soils, slope, etc.) and each farmer is unique. Often, trying something new on your farm is the only way to know for sure if you can grow it and if you want to grow it! For example, Dan Vosberg (see page 12) has the capability to grow ryegrass, but it doesn't fit well with his overall management and pasture goals. Mark Brown (page 4) and Doug Spany (page 9) both like ryegrass, but take two entirely different approaches to using it in their pastures. Mark plants perennial ryegrass for the high quality pasture it provides and it doesn't bother him that it will eventually winterkill or get so thin that it needs to be reseeded. Doug, on the other hand, feels more comfortable overseeding with annual ryegrass each year rather than planting perennial ryegrass and wondering if it is going to winterkill. The data from this report suggests that perennial ryegrass will probably survive and offer a quality pasture for two to three growing seasons.

As a rule of thumb start slowly. If your pastures are predominantly bluegrass and white clover, it's unrealistic to think



Tour of sheep pasture at the ?????? farm.

you should convert them all at once to kura clover or ryegrass. You can be somewhat conservative and start with one paddock or area (possibly 6-10 acres total). Keep in mind, though, how it will fit into your overall pasture rotation and your fencing situation. Ryegrass, for instance, will grow much differently than your bluegrass/white clover pastures so you will need to manage it and graze it differently, too.

Learning more

Several UW-Extension websites offer excellent resources on grazing and pasture establishment and management that will compliment the information in this summary report. On the "UW Extension Team Forage Resources" website (www.uwrf.edu/grazing/) you will find additional information on ryegrass, kura clover, other pasture and grazing topics and also an Excel spreadsheet that you can download to use in calculating your pasture needs based on the number of animals you will have on pasture. Additional information is available from Cooperative Extension at www.uwex.edu/ces/forage

And more useful information for farmers and graziers is available at the Wisconsin NRCS Grazing Lands website, www.wi.nrcs.usda.gov/programs/grazing.html

Table 1

Characteristics, forage quality and potential yields of forage species used in demonstration project

Species/Characteristics

Kura clover (*Trifolium ambiguum* M. Bieb.)

Hardy perennial clover originating in Caucasian Russia; very winter hardy; extensive root and rhizome system; large white-pink flower; leaves/stems are succulent, smooth; leaves more pointed and usually larger than those of other clovers; very persistent once established, but slow to establish; adapted to a diversity of soils and conditions; although it is not high yielding under drought, it survives because of its deep root system; forage has very high nutritive value, but may cause bloat in ruminants unless grown in mixtures; more adapted for grazing than mechanical harvest.

White clover (*Trifolium repens* L.)

Found throughout the temperate regions of the world, limited only by extreme cold, heat or drought; can be used on wet areas of soils with low pH, but does best in well-drained silt loam and clay soils of pH 6.0 to 7.0; not tolerant of saline or highly alkaline soils; white flower, leaves smooth and circular; spreads by stolons; forage has very high nutritive value, but may cause bloat in ruminants unless grown in mixtures.

Reed canarygrass (*Phalaris arundinacea* L.)

High yielding, sod-forming cool season grass that exceeds production of other grasses during the summer slump; particularly adapted to wet soils, but also does well on droughty soils once established due to its extensive root system; more difficult to establish than other cool season grasses, but aggressive once established; rhizomatous nature, forms tillers throughout the growing season, must be managed to avoid excessive growth and declines in quality; excellent for hay, baleage, or grazing.

Ryegrass (*Lolium perenne* L.)

Bunch-type cool season grass known for its exceptional forage quality; establishes rapidly and regrows quickly under cool, wet weather conditions—goes dormant during dry hot summer weather; not very winter hardy, will usually survive only 3 – 4 years under Wisconsin growing conditions; excellent choice for short term rotations and mixtures with legumes such as red or white clover.

Ryegrass/white clover (*Lolium perenne* L./*Trifolium repens* L.)

Please see above descriptions for the individual species.

Forage Quality Indicators, Sampled July 2003

	CP1 (%)	RUP2 (%)	RDP3 (%)	ADF4 (%)	NDF5 (%)	RFQ6	Potential Yield7 (pounds dry matter per acre)
Average (5 samples)	23.57	22.32	77.68	23.45	30.04	257	5000
Range	19 – 27	21 – 24	76 – 79	20 – 25	23 – 34	212 – 330	
Average (2 samples)	26.22	25.45	74.56	21.30	29.71	271	5000
Range	23 – 29	22 – 29	71 – 78	20 – 23	29 – 30	250 – 289	
Average (4 samples)	24.47	36.88	63.13	27.06	48.54	175	6000
Range	19 – 29	34 – 40	60 – 66	27 – 29	42 – 53	162 – 203	
Average (2 samples)	27.38	36.64	63.37	23.83	38.38	241	6000
Range	26 – 29	36 – 38	62 – 64	20 – 28	34 – 42	209 – 273	
Average (2 samples)	23.93	30.81	69.20	22.75	34.98	254	6000
Range	20 – 28	26 – 35	65 – 74	20 – 26	28 – 41	219 – 288	

Table 1 Footnotes:

1 Crude Protein

2 Rumen-Undegraded Protein

3 Rumen-Degraded Protein

4 Acid Detergent Fiber

5 Neutral Detergent Fiber

6 Relative Forage Quality

7 Yields estimated from "Pastures for Profit" and "2002 Forage Variety Trials", UW Extension publications A3529 and A1525.

Table 2

Soil series and descriptions for the demonstration project locations

Soil Series	Farm/ Location	Soil Series Description
Dodgeville Silt Loam, Deep, <12% slope	MA Brown Holsteins & Jerseys Iowa County	Well drained upland soils along ridgetops and above the slopes of stream valleys; dark colored, loess-derived soils over reddish clay weathered from limestone with limestone bedrock below; moderate permeability, moderate to high moisture holding capacity; moderately high in natural fertility; slightly acid to medium acid. Original vegetation: prairie.
Dodgeville Silt Loam	Pine Grove Farms Grant County	
Dubuque Silt Loam	Pine Grove Farms Grant County	Silty, well drained soils occurring on upland ridges formed in a blanket of silt and in reddish, residual clay over limestone bedrock; depth to bedrock varies, may be less than 28 inches; grayish-brown to dark grayish-brown surface layer; natural fertility is moderately low to moderately high; moderate permeability and low to high moisture holding capacity; potential for erosion; medium acid to strongly acid. Original vegetation: grass or trees.
Dubuque Silt Loam, 6-12% slope	Denmar Ridge Farms LLC Crawford County	
Dubuque Silt Loam, 12 – 20% slope	Cates Family Farm Iowa County Rolling Hills Sheep Farm Iowa County	
Dubuque soils, deep, 12 – 20% slope	Spany Farm Crawford County	Thinner, lighter colored surface layer than Dubuque silt loam and finer (more clay) texture; low fertility, organic matter, and moisture holding capacity, with much of the original surface layer lost and mixed with the subsoil; medium to strongly acid; high erosion potential. Original vegetation: grass or trees.
Fayette Silt Loam	Terraced Acres Partnership Crawford County	Silty soils with a lighter colored surface layer that is mixed with the subsoil; found on rolling upland ridges, valley slopes and benches above streams; formed from silts blown from the Mississippi River floodplains during the last glaciation; overlies limestone or sandstone bedrock; medium to moderately high in natural fertility and moisture holding capacity; moderate permeability; potential for erosion; slightly acid to strongly acid. Original vegetation: hardwood forest.
Fayette Silt Loam, uplands, 6 – 15% slope	Troesters Grassland Farms Grant County	
Fayette Silt Loam, uplands, 2-6% slope	Vosberg Valley View Farm Lafayette County (ryegrass/white clover)	
Huntsville Silt Loam	Baehler Farm Lafayette County	Nearly level, dark colored, deep silty soils that are moderately well drained to well drained, located in small areas on bottom lands and scattered along many of the smaller streams. Formed in silty alluvial materials from loess-covered terraces and uplands; moderate permeability, high moisture holding capacity; neutral pH; moderately high natural fertility and organic matter. Original vegetation: prairie.
Palsgrove Silt Loam	Vosberg Valley View Farm Lafayette County (kura clover/reed canary-grass)	Light-colored, silty, well drained upland soils on ridges above stream valleys formed in a moderately thick blanket of loess that overlies reddish clay weathered from limestone; moderate permeability, moderate to high moisture holding capacity; moderately high fertility, slightly acid to medium acid. Original Vegetation: hardwood forest.

Table 3
Ryegrass stand ratings

Farm	2000	2001	2002
MA Brown Holsteins & Jerseys	E	E	E
Pine Grove Farms	P	F/G	0/P
Denmar Ridge Farms LLC	G	G	F/G
Cates Family Farm	P	P	P
Rolling Hills Sheep Farm	0	P	P
Spany Farm	G/E	G	E
Terraced Acres Partnership	E	E	E
Troesters Grassland Farms	P	P	F/G
Vosberg Valley View Farm	G/E	G	G
Baehler Farm	0/P	0/P	0/P

0 = no stand; P = poor; F = fair; G = good; E = excellent

Table 4
Kura clover stand ratings

Farm	2000	2001	2002
MA Brown Holsteins & Jerseys	E	G	G
Pine Grove Farms	0	P/F	G
Denmar Ridge Farms LLC	F/G	P/F	P/G
Cates Family Farm	P	F	G
Rolling Hills Sheep Farm	0	F/G	F/G
Spany Farm	P/F	G	G
Terraced Acres Partnership	F/G	G/E	G
Troesters Grassland Farms	P	P/F	P/G
Vosberg Valley View Farm	E	E	G/E
Baehler Farm	F	F/G	F/G

0 = no stand; P = poor; F = fair; G = good; E = excellent

Table 5
White clover stand ratings

Farm	2000	2001	2002
MA Brown Holsteins & Jerseys	E	E	G/E
Pine Grove Farms	0	0	0
Denmar Ridge Farms LLC	F	F/G	F
Cates Family Farm	G	G	G
Rolling Hills Sheep Farm	0	0	0
Spany Farm	F	F	0/P
Terraced Acres Partnership	G	E	F/G
Troesters Grassland Farms	G/E	E	G
Vosberg Valley View Farm	F/G	G	F/G
Baehler Farm	G	E	F/G

0 = no stand; P = poor; F = fair; G = good; E = excellent

Table 6
Reed canarygrass stand ratings

Farm	2000	2001	2002
MA Brown Holsteins & Jerseys	F	F/G	G
Pine Grove Farms	0	0	0
Denmar Ridge Farms LLC	F	F/G	G
Cates Family Farm	0	0	0
Rolling Hills Sheep Farm	0	0	0
Spany Farm	F	F/G	F/G
Terraced Acres Partnership	G	G/E	E
Troesters Grassland Farms	0/P	0/P	P/F
Vosberg Valley View Farm	G	E	E
Baehler Farm	0/P	0/P	0/P

0 = no stand; P = poor; F = fair; G = good; E = excellent

Experimenting with Pasture Plant Species

Ten southwest Wisconsin farmers demonstrate
the value of trying something new



Credits, logos, etc.

All photos by Peggy Compton unless otherwise noted.