Mother Nature was not kind to forage producers in 2007. While 2008 has definitely been a different ball game, some producers may still be running short on hay. Annual forages played a viable role in offering feed options in 2007 but those unusual conditions aren’t the only time to consider your double-crop options.

Where Do Your Double-crop Opportunities Exist?

- Following wheat harvest as a forage or grain
- Rotational crop between alfalfa seedings
- Smother crop when replacing Kentucky 31 tall fescue
- After harvesting grain crops in late summer

Summer Annuals

- Sorghum-sudangrass / sudangrass
  Ideally, seeded when soil temperatures reach 70°F at a rate of 25-35 lbs/acre Pure Live Seed, at an inch of depth. Usually ready to graze 30-45 days after seeding and will typically provide 4-6 tons dry matter per acre. Fairly palatable. A genetic mutation discovered at Purdue University known as the ‘brown mid-rib’ trait resulted in decreased lignin, increased digestibility and palatability of these warm-season grasses. As the name indicates some varieties will exhibit a brown mid-rib.

- Pearl Millet
  Seeded when soil temperatures reach 70°F at a rate of 15-20 lbs/acre Pure Live Seed, at ¾-1 inch of depth. Highly palatable, drought tolerant and typically yields 3-5 tons dry matter per acre. Can not withstand cool temperatures as well as sorghum-sudangrass or sudangrass.

- Teff
  Relatively new to forage industry in mid-west. Originated from Ethiopia where it has been used for making flour for cooking. Very small seeds. Planted when soil temperatures reach 70°F at a rate of 4-5 lbs/acre Pure Live Seed at ¼” of depth. Preliminary results in Indiana indicate yields will be 3+ tons dry matter per acre and decent quality. Quality levels of teff were very similar to sorghum-sudangrass, sudangrass and pearl millet. Will teff become a standard Indiana producers will be able to rely on? Time will tell.
2007 Feldun Purdue Ag Center Summer Annual Demonstration Plot –
Dry Matter Yield. Plot seeded May 15, 2007. 150lbs total N per acre applied
during season.

<table>
<thead>
<tr>
<th>Harvest Date</th>
<th>Teff</th>
<th>Pearl Millet</th>
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<th>Sudangrass</th>
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<tr>
<td>3-Jul</td>
<td>1.6</td>
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<td>1.6</td>
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<td>17-Aug</td>
<td>2.4</td>
<td>2.1</td>
<td>1.7</td>
<td>1.8</td>
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<td>Total</td>
<td>4.0</td>
<td>3.1</td>
<td>3.3</td>
<td>3.8</td>
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</table>

Potential Hazards of Summer Annuals

Prussic Acid Poisoning
A hazard of sudangrass and sorghum-
sudangrass. Grazing should not be initiated
until after forage reaches 24-36” in height as
young, rapidly growing plants are likely to
contain high levels of prussic acid.
Generally, any stress condition that slows
plant growth can increase prussic acid
levels. Plants grown on soils low in
phosphorus and potassium but fertilized well
with N have a greater potential for prussic
acid. Animals should not be allowed access
until 7-10 days after a killing freeze as
prussic acid compounds are slowly released.

Nitrate Toxicity
An issue when plants are stressed by
drought, shade and low temperatures
(<55°F). Nitrate toxicity can affect
sudangrass, sorghum-sudangrass and millet
as well as other crops. Animals under
physiological stress are more susceptible to
nitrate toxicity. Nitrate content is generally
highest in young tissue and normally
accumulates in stems. Nitrates can
accumulate in mature tissue of sorghum-
sudangrass and sudangrass. After a good
rain, nitrates will be metabolized over the
course of 10-14 days, allowing the plant to
be grazed. Ensiling forage reduces nitrate
levels by approximately 50 percent. Nitrate
concentrations are not reduced in hay.
Green chopped forages should be fed
immediately after cutting to prevent plants
from respiring, increasing toxicity hazards.

Winter Annuals

- Cereal grains
  Winter wheat has long had a
  reputation for winter grazing in the
  Plains states. Fall seedings of wheat
  and other grains such as spring oats,
cereal winter rye, and winter triticale
  (cross between wheat and rye)
  seeded at 90-120 pounds/acre can
  provide 2-5 tons of dry matter/acre in
  the spring. Spring oats seeded in
  August provide high quality forage
  in fall before frost. Wheat, cereal
  rye, and triticale will provide some
  grazing in fall but most forage will
grow in spring. Cereal rye will
  provide higher yields but not as
  palatable. Seeding cereal grains for
  grazing should be complete by late
  August for fall grazing.

- Italian Ryegrass
  Also known for foraging
  livestock in the winter months in the
  southern US. Seeded at 15-30
  pounds it can produce higher quality
  feed than cereal grains in late spring.
  Winter hardiness is an issue with
  some varieties. Those varieties that
  survive the winter will grow
aggressively in the spring and can be difficult to kill.

**Turnips**

Seeded at 2-4 pounds/acre, turnips can grow quickly and provide nutrient dense forage in 70-90 days. Livestock will need a source of roughage such as corn stalks, low quality hay or stockpiled fescue to balance-out the possible negative effects of this highly digestible forage.

Forage type turnips can provide 2-3 grazings as long as the bulbs are not damaged. Once turnip tops cease to grow, bulbs will provide adequate nutrition. Turnips can cause bloat and acidosis.

**Economics**

Even if one is short on hay, date of planting and potential yield need to be taken into consideration, as purchasing more hay may be more economical and a sure-thing versus utilizing annual forages. Establishing summer annuals can approach $150 per acre with seed, 150lbs of nitrogen per acre and charge of $15 per acre for use of a no-till drill. If the soil needs to be tilled first or if the forage will be made into hay or chopped for silage the cost increases even more. As we learned in 2007, Mother Nature doesn’t always play nice. Annual forages are definitely an option, but it boils down to how much risk one is willing to assume and how and when forages will be utilized.