Novel Endophyte Tall Fescue Establishment

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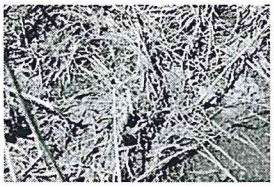
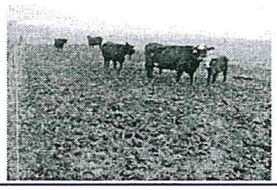
This is Our Goal!

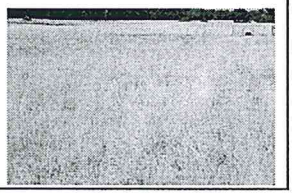
Things May Go Wrong!

Seed from soil seed bank germinates
Improper soil fertility
Improper drill setup
Carryover chemicals
Improper establishment year management
Adverse environmental conditions

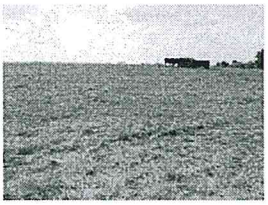
How many of these do we have control over?

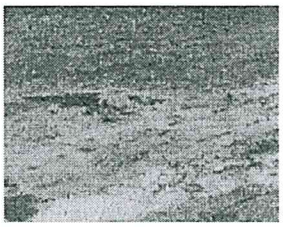




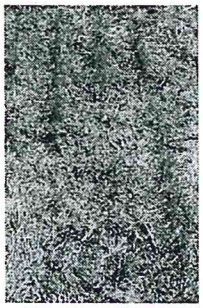


Soil Moisture





Many Seeds Planted Too Deep



- Most small seeded grasses should be planted at ¼ inch below the soil surface
- Depth control on many no-till drills is poor
- Seeds planted too shallow have a better chance than those planted too deeply

Seedlings Die Immediately After Germination

Soil drying- Insufficient rooting

Freezing- Seed are sensitive to freezing as the young root breaks the seed coat

Crusted soil surface- Prevents emergence

Toxicity- Seed in direct contact fertilizer, improper herbicide use, and herbicide carryover

Seedlings Die After Establishment

Drought
Poor drainage
Insects and pests
Legume inoculation- Always inoculate legumes
Undesirable pH- Apply Lime according to soil test
Low fertility- Apply P, K, or other nutrients to soil test
Poor seedling vigor
Winterkill- Seeding too late/seeding poorly adapted cultivars

Fall Forage Establishment Recipe

1. Take a soil test
2. Amend soil with lime and/or P & K fertilizer
3. Wait six months if lime was needed
4. Graze or clip the sod closely
5. Spray Roundup or Gramoxone
6. Calibrate & adjust no-till equipment for proper seeding rate and seed placement
7. Sow desired forage by Oct. 1 (S. Mo) or Sept. 10 (N. Mo)
8. Control Competition
9. Manage spring growth cautiously

No-till Advantages

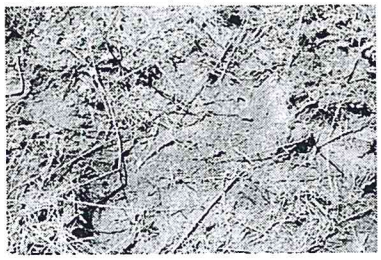
- Less cost than conventional tillage
  - Time, Labor, Fuel
- Greater establishment success than broadcasting
- Able to keep existing sod
  - Conventional tillage can bring old seed to surface
  - Less soil erosion than conventional tillage
  - Less soil moisture loss

Renovation Success Rates & Relative Cost

Establishment Method	Success Rate (%)	Relative Cost
Conventional	85	100
No-till	67	32
Broadcast	21	14

The Plan

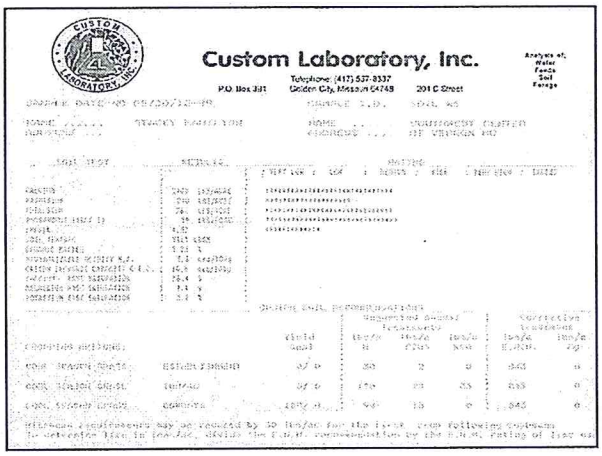
Do not allow existing forage to set seed during the growing season prior to starting the spray-smother-spray



The Plan

6 -9 months prior to starting renovation

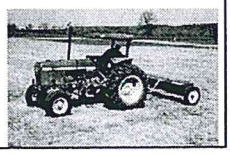
- **Soil test**
- **Soil amendments**
  - Apply lime at least 6 months ahead of sowing seed
    - Minimum pH 6.0
  - Adjust P and K to at least medium/high levels
    - Minimum P 30
    - Minimum K 300


Custom Laboratory, Inc.

The Plan

Do Not apply over 30 lbs/ac N or legumes at time of sowing

- **Keep competition to a minimum**
  - Clovers and alfalfa provide too much competition so do not establish with Novel endophyte tall fescue
  - Birdsfoot trefoil is the exception
- **N fertilizer will feed the weeds**



Soil Fertility (recap)

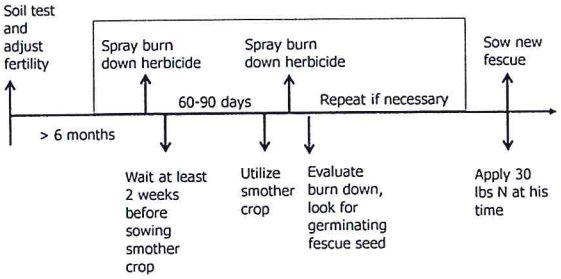
- **Many seeds will germinate but will not successfully establish if fertility is low**
- **Soil pH most critical**
  - **Lime needs to be applied 6 months before planting**
- **Phosphorus and Potassium critical for stand persistence**

oWatch nitrogen fertilization of new seedings

The Plan

- Timeline
- Spray smother spray?
- Spray wait spray?
- Always evaluate before establishing new fescue

Timeline
Spray-Smother-Spray



Herbicides

Burn-down:

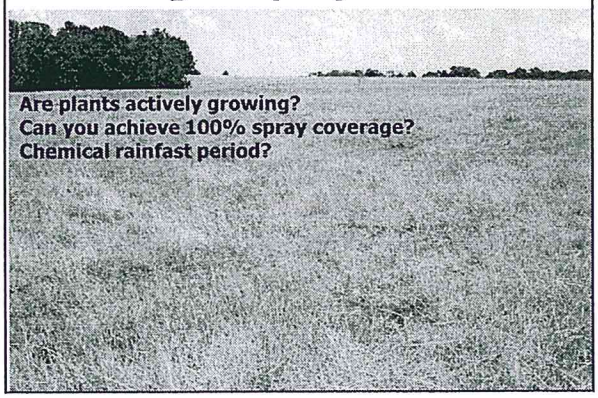
Roundup (Weather Max)

- **22 to 44 oz per acre (44 oz recommended)**
- **25 to 35 gallons water**
- **30 to 35 p.s.i.**
- **3 lb. of AMS per 100 gallons spray**

Gramoxone Extra

- **1.5 pints per acre**
- **25 to 35 gallons water**
- **30 to 35 p.s.i.**
- **1 to 2 pints nonionic surfactant per 100 gallons spray**

Timing of Spray is Critical



Are plants actively growing?
Can you achieve 100% spray coverage?
Chemical rainfast period?

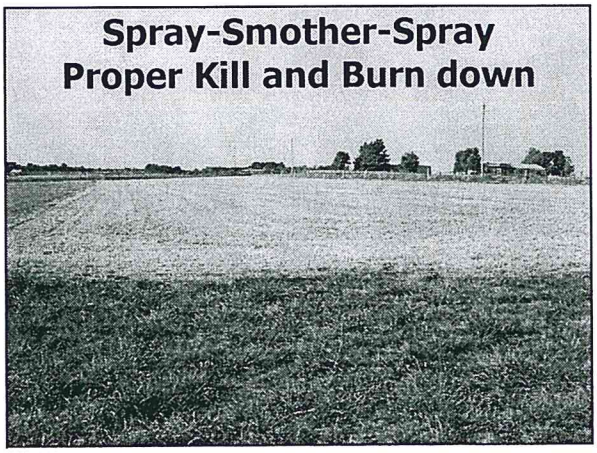
Failure---Weeks after Spray during Drought

Herbicides

Pre-Plant & Post emergence options

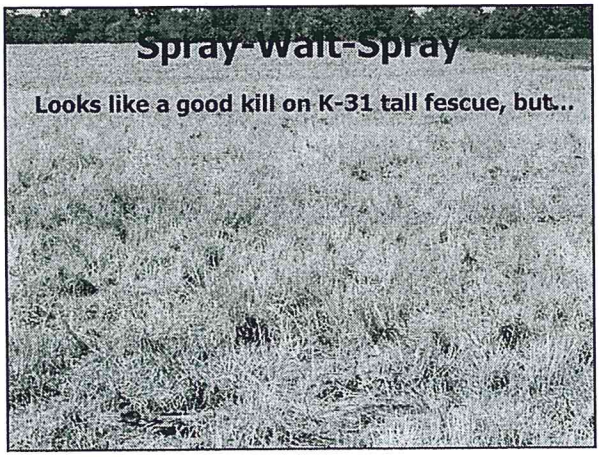
Recommendations vary with forage species and grass legume mixture.

Spray-Smother-Spray Proper Kill and Burn down

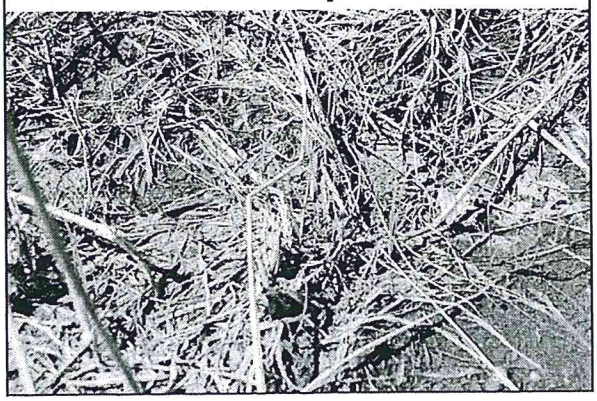


Spray-Wait-Spray

Looks like a good kill on K-31 tall fescue, but...



Evaluate Up Close!



Smother Crops

- **Winter annuals**
  - **Wheat**
  - **Cereal rye**
  - **Oats**
  - **Triticale**
  - **Annual ryegrass is not a good choice**
- **Summer annuals**
  - **Sudan**
  - **Millet**
  - **Crabgrass**
  - **Row crops (corn, soybean, milo)**
    - Check herbicide labels for plant back restrictions

Smother Crops

- **For fall establishment of Tall Fescue, have smother crop removed by:**
  - Northern Missouri-August 10
  - Southern Missouri-August 20

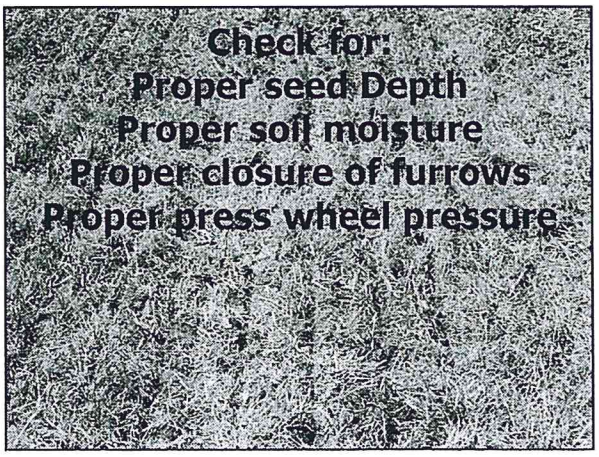
Drill Calibration and Setup

- If renting from local SWCD--
  - Call several weeks ahead of time and reserve the drill
  - Be prepared to clean, service, and repair the drill
  - Be sure to get information on how to calibrate the drill and ask SWCD staff to go over the drill operation/calibration with you

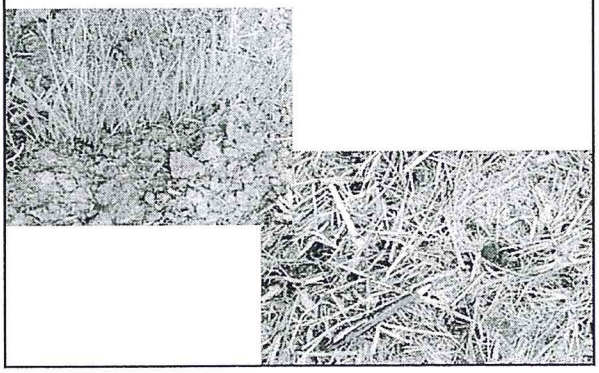
Drill Calibration and Setup

- Calibrate to sow 15 pounds PLS per acre
- Set depth (under actual field conditions) so that seed is placed between the soil surface (<10% on surface of soil) and ½" below the soil surface. Shoot for ¼" average depth.
- Be sure press wheels will close the furrow firmly

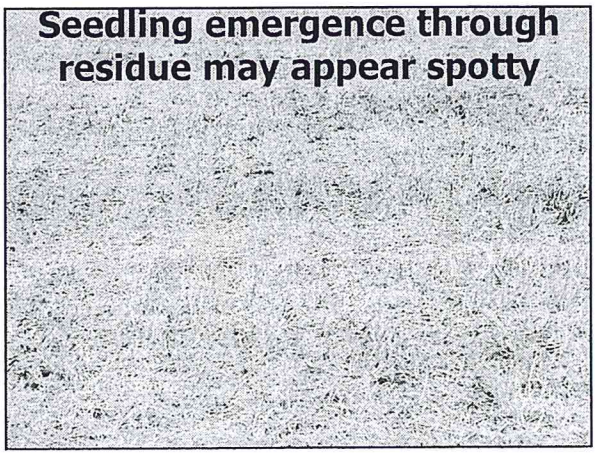
Checking and re-checking drill



Seedling Emergence



Seedling emergence through residue may appear spotty



Cultivar selection

Select a novel endophyte fescue

- **Look for the Alliance label/sticker on these companies products**
  - AgResearch
  - Barenbrug
  - DLF
  - Pennington
  - Mountain View

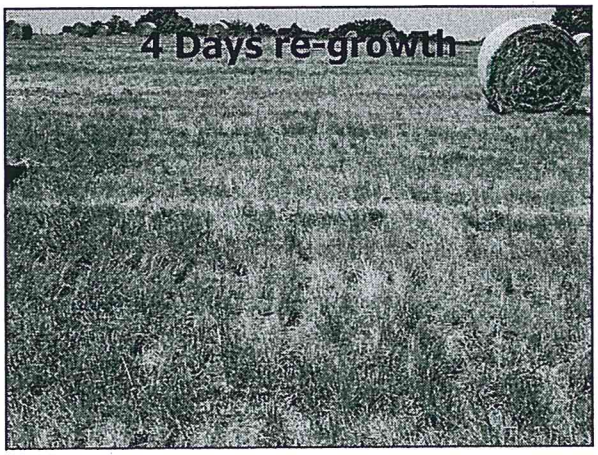
Management of the new stand after planting

- **Stay off new seeding during the fall, winter, and spring following planting**
- **Control Weeds after planting in the fall and/or spring if needed**
  - Winter annuals (chickweed, henbit, mustard family)
    - May be able to make hay to control these
    - Chemical control
      - Do you have legumes?
      - May damage new fescue seedlings
      - Visit your local CO-OP on proper spraying

Spring management

- **Hay or Graze?**
  - **Haying is recommended and is the safest approach for first harvest**
  - **Grazing increases likelihood of damaging stands**
    - This is not a novel endophyte tall fescue issue but an establishment issue!
  - **Haying will control many winter annual weeds**
  - **Leave a tall residual >4"**
  - **Rest is critical between harvests regardless of haying vs. grazing the first year**

Spring Following Fall Establishment



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