NORTH IDAHO ALFALFA VARIETY TRIALS

DOUG FINKELNBURG
UI – EXTENSION

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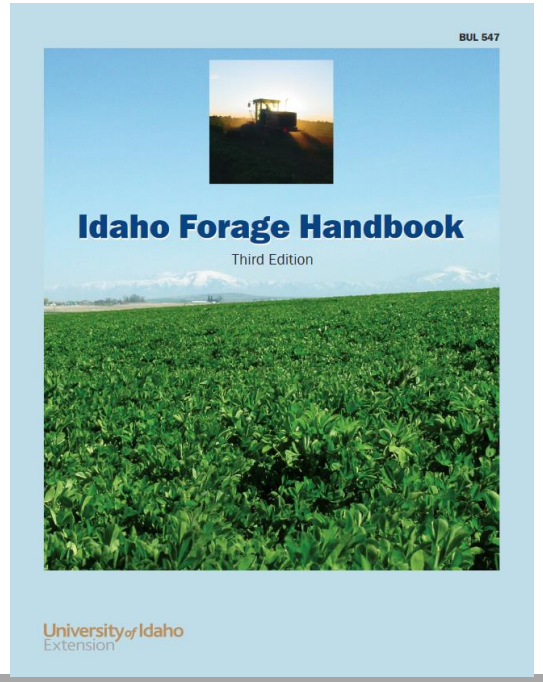
IMPORTANCE TO IDAHO AGRICULTURE

- Statewide
  - 1 million acres @ $735 million
- Northern Idaho
  - ~50,000 acres
  - Boundary, Bonner & Kootenai Co.
  - ~18,000 acres, $2.9 – $5.8 million annually

SUCCESSFUL ALFALFA

- Good Establishment
  - Site preparation
  - Soil test based fertility and acidity management program
  - Certified, inoculated seed
    - …and a well adapted variety



Sources of Alfalfa Info:

Idaho Forage Handbook -
http://www.cals.uidaho.edu/edComm/pdf/BUL/BUL0547.pdf

Northern Idaho Fertilizer Guide Alfalfa
-http://www.cals.uidaho.edu/edComm/pdf/CIS/CIS0447.pdf

EVALUATING ALFALFA VARIETIES

- Growing constraints
  - Climate
    - Temperature
    - Precipitation
  - Place
    - Soil
  - Management goals
    - Long term hay
    - Rotation crop
    - Weed control
  - Desirable traits
    - Cold hardiness
    - Disease resistance
    - Herbicide resistance

Sources of Alfalfa Info:

National Alfalfa and Forage Alliance - https://www.alfalfa.org/

VARIETY CONSIDERATIONS

- Winter Survival (WS)
  - Tendency to survive low temps (severe winter conditions)
  - Ranked 1-6
    - 1-little damage
    - 6-plant death

Winter Survival Ratings*NAFA

Category	Check Variety	Score
Superior	ZG 9830	1
Very Good	5262	2
Good	WL325HQ	3
Moderate	G-2852	4
Low	Archer	5
Non Winter hardy	Cuf 101	6

VARIETY CONSIDERATIONS

- Fall Dormancy (FD)
  - Tendency to stop growing in fall
  - 1 – 11 ranking, 1 very dormant, 11 non-dormant
  - Higher FD = higher yield potential

Fall Dormancy Ratings *NAFA

Check Variety	Rating
Maverick	1
Vernal	2
5246	3
Legend	4
Archer	5
ABI700	6
Dona Ana	7
Pierce	8
CUF101	9
UC-1887	10
UC-1465	11

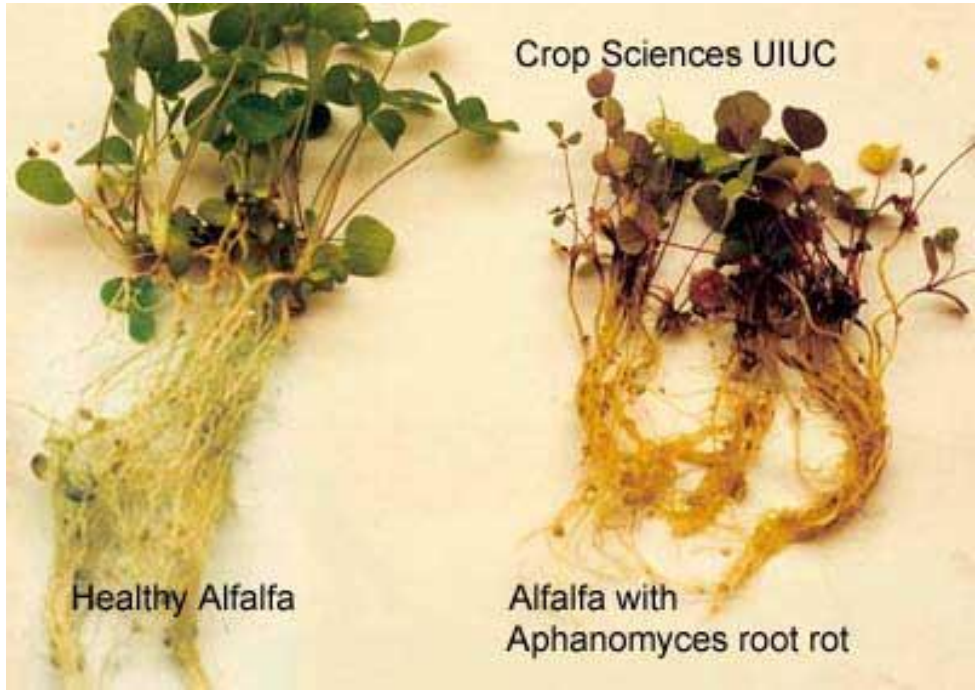
VARIETY CONSIDERATIONS

- Diseases – Anthracnose
  - Diamond-shaped lesions on stems
  - Hot moist conditions favorable
  - Not observed in Idaho

http://cropdisease.cropsci.illinois.edu/alfalfa/anthracnose.html

VARIETY CONSIDERATIONS

- Diseases – Aphanomyces Root Rot
  - Stunts/kills seedlings, caused chronic root disease in established stands
  - Common in wet soils
  - Symptoms resemble nitrogen deficiency
  - Plants slow to recover from cutting, dormancy
  - Two races (race-1, race-2)
  - Control with rotation, resistance



http://cropdisease.cropsci.illinois.edu/alfalfa/aphanomyces.html

VARIETY CONSIDERATIONS

- Bacterial Wilt
  - Most severe where nematodes/root feeding insects are a problem
  - Plants are stunted, yellow/brown discoloration inside the root. Worsens with age of stand.
  - Control with resistant varieties, cultural practices limiting crown/root damage

http://utahpests.usu.edu/IPM/htm/field-crops/insects-and-diseases/alfalfa-diseases

VARIETY CONSIDERATIONS

- Verticillium Wilt
  - Occurs in cooler climates
  - Spread by plant material on equipment
  - Stunts plants; yellow “V” at leaf tips. Leaves may curl along midrib, turn pink. Stems remain green after leaves die.
  - Resistant varieties; clean equipment, cut younger stands first. Bleach (10%) cutter bars

http://utahpests.usu.edu/IPM/htm/field-crops/insects-and-diseases/verticillium-wilt-of-alfalfa/

VARIETY CONSIDERATIONS

- Fusarium Wilt
  - More common in warm climates, can be severe with nematode/root feeding insect issues
  - Stunted plants, red/reddish brown discoloration inside roots. More sever with age of stand.
  - Control with resistant varieties, root rot nematode resistance, reduced crown/root damage

Photo by Dennis H. Hall.

http://ipm.ucanr.edu/PMG/r1100811.html

VARIETY CONSIDERATIONS

- Pea Aphid
  - Common
  - ID-dark bands on antennae
  - Turn leaves yellow, stunt plant growth
  - Control with resistant varieties, early cutting, insecticides - *https://pnwhandbooks.org/insect/hay-pasture/alfalfa/alfalfa-hay-aphid*

University of Idaho - http://www.cals.uidaho.edu/aphidtracker/

VARIETY CONSIDERATIONS

- Spotted Alfalfa Aphid
  - Likes warm, dry conditions – late summer, older leaves
  - Injects toxic substance, causes yellowing leaf veins, lower economic threshold than pea aphid
  - Control with resistant varieties, early cutting, insecticides - *https://pnwhandbooks.org/insect/hay-pasture/alfalfa/alfalfa-hay-aphid*

http://entomology.k-state.edu/extension/insect-information/crop-pests/alfalfa/spotted-alfalfa-aphid.html

VARIETY CONSIDERATIONS

- Stem Nematodes
  - Prefers heavy, wet soils
  - Lives in plant matter mainly
  - Transported in infested seed, plant residue, manure, irrigation water, equipment
  - Symptoms: stunted patches, bare patches, areas of poor growth in spring, swollen distorted buds, gall-like outgrowths on crown
  - Resistant varieties, sanitation, fall burning, crop rotation (2-4 yrs out, cereals good option except oats), cutting when soils are dry (top 2-3 inches)

http://alfalfa.ucdavis.edu/+producing/stemNematode.aspx

http://utahpests.usu.edu/IPM/htm/field-crops/insects-and-diseases/alfalfa-stem-nematode

VARIETY CONSIDERATIONS

- Northern Root Knot Nematode
  - Wide host range – rotation not practical mitigation method
  - Causes galls and lateral root growth
  - Varietal resistance is best option

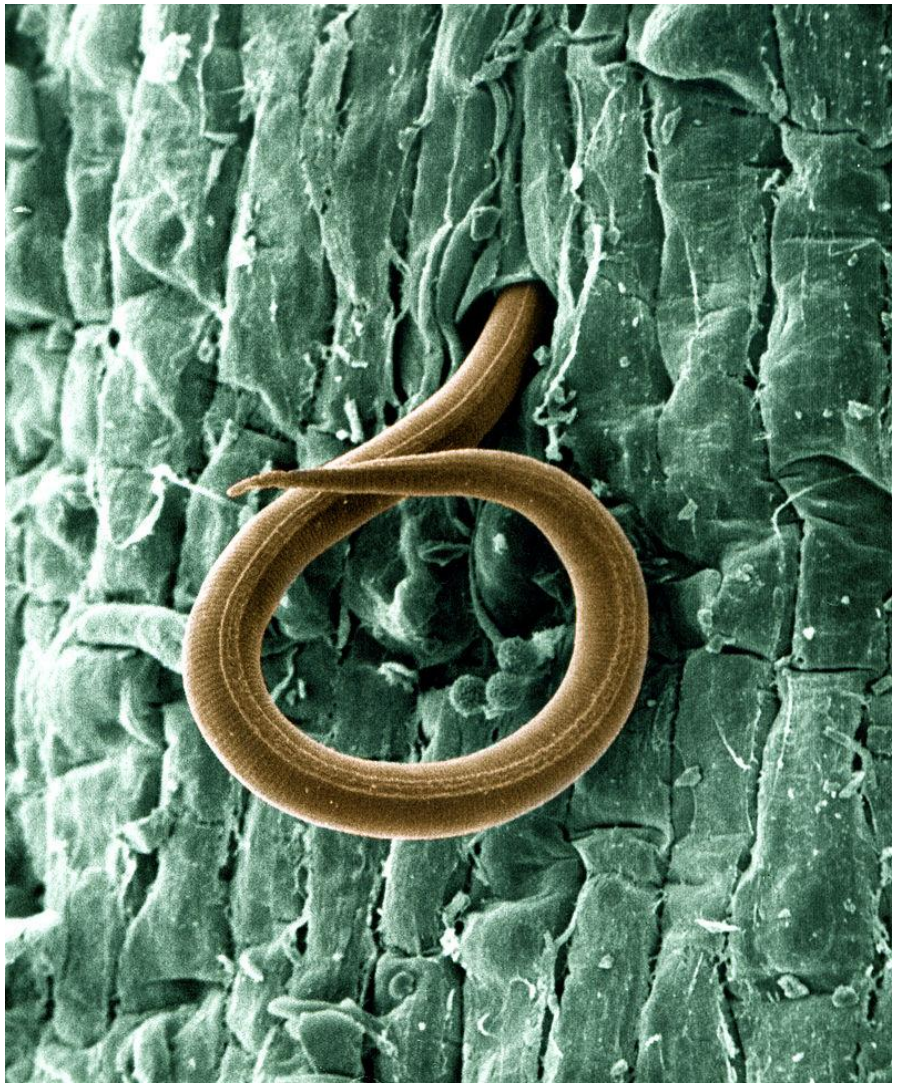


Photo by William Wergin and Richard Sayre. Colorized by Stephen Ausmus.
U.S. Department of Agriculture - d2549-1

NORTH IDAHO ALFALFA VARIETY TRIALS

Conducted by:
UI-Personnel - Jim Church, Ken Hart, Doug Finkelnburg, and Glen Shewmaker

Cooperators - Joe and Stephen Baerloecher (Idaho County)
Mart and Marty Thompson (Lewis County)

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NORTH IDAHO ALFALFA TRIALS

- 33 dryland alfalfa varieties planted
- 1 sanfoin mix seeded in plots

IDAHO COUNTY TRIAL

- Field Management:
  - Seeding date = May 29, 2012
  - Seeded on a field following oats
  - No fertilizer applied at seeding & 1st yr
  - 150 lbs of 16-20-0 applied ea. yr
  - Sprayed with Gramoxone each spring

LEWIS COUNTY TRIAL

- Field Management:
  - Seeded May 30, 2012
  - Fall 2011 = 100 lbs Gypsum
  - Fall 2012 = 4.2N–20P–20S–1.5Boron
  - Fall 2013 = 100 Gyp-18S- 1 Boron
  - Fall 2014 = 100 Gyp- 4.23N-20P-20K-18S-15chloride

ALFALFA TRIALS –HARVEST DATES

Idaho County

June 14, 2013

June 20, 2014

June 18, 2015

June 16, 2016

Lewis County

June 28, 2013

June 20, 2014

June 19, 2015

June 13, 2016

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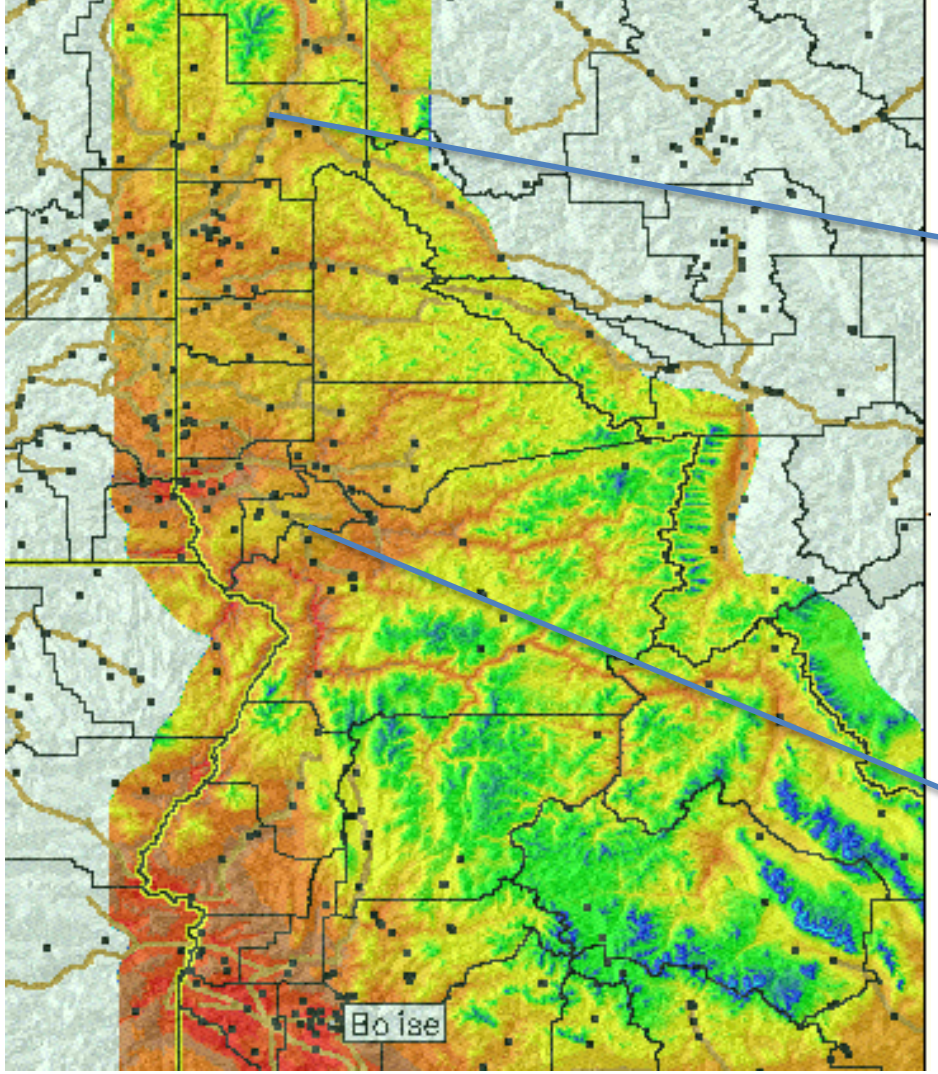
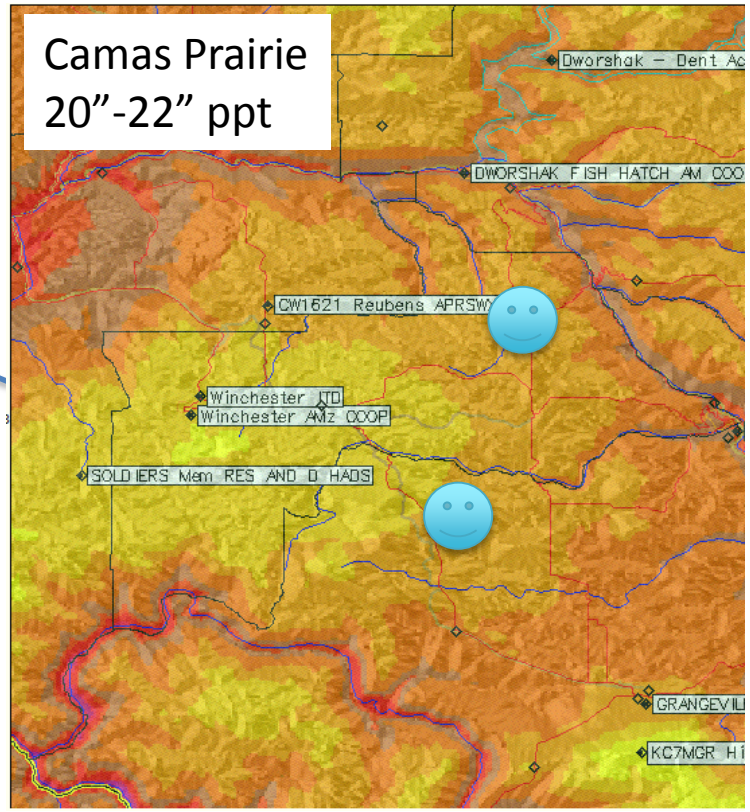
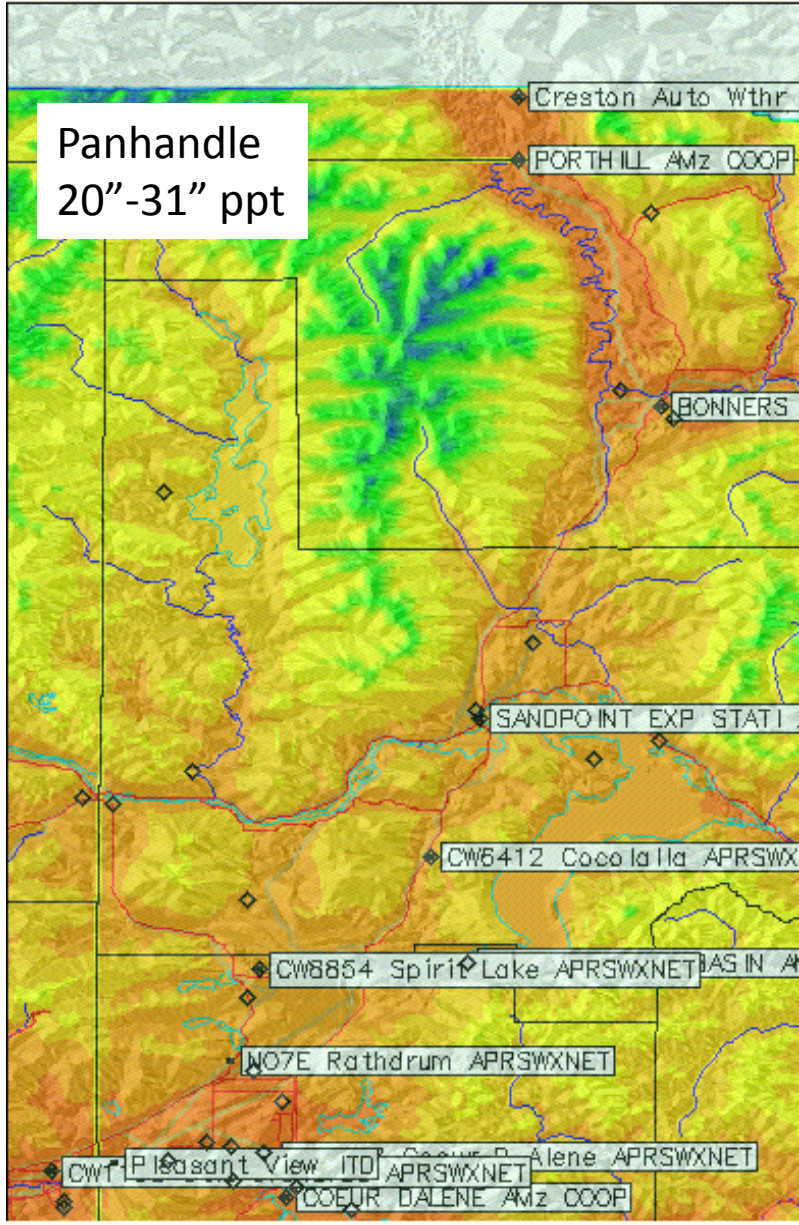
CLIMATE

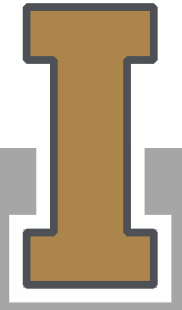


Camas Prairie
20”-22” ppt



Panhandle
20”-31” ppt





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TRIAL RESULTS

- Top yielding non-RR varieties

	Eight Site-Year Average		2013-2014
Variety	**1st Cutting Yield**		**Protien**
	lbs/acre	**tons/acre**	**%**
Rugged	4241	2.12	16.0
Big Sky Ladak	4235	2.12	14.7
Magnum - 7	4224	2.11	15.4
Melton	4204	2.10	11.8
AgRMS-102	4072	2.04	11.0
AgRMS-103	3996	2.00	13.7
TS 4013	3993	2.00	16.5
Shaw	3865	1.93	14.5
PGI 424	3853	1.93	16.2
PGI 215	3800	1.90	15.5
LSD (0.05)	**454**	**0.23**	**--**
CV (%)	**25**	**--**	**--**

TRIAL RESULTS

- Roundup Resistant Varieties
  - Higher price
  - Weed control tool

Variety	Eight Site-Year Average 1st Cutting Yield		2013-2014 Protien
	lbs/acre	tons/acre	%
WL 355RR	***4102***	***2.05***	15.0
MsSunstra - 803	***4043***	***2.02***	15.8
AgRMS-101	***3703***	***1.85***	12.8
Hybri Force - 2400	***3685***	***1.84***	13.1
FGR47M312	3355	1.68	12.8
Graze N Hay 3.1RR	3213	1.61	14.0
DKA43-22	3169	1.58	12.9
DKA34-17RR	3075	1.54	13.5
4R200	3062	1.53	13.0
FGR48M137	2981	1.49	13.2
LSD (0.05)	**454**	**0.23**	**--**
CV (%)	**25**	**--**	**--**

SUMMARY

- Getting the most from alfalfa
  - Know your climate, soil, fertility, disease pressures
  - Manage for success
    - Avoid compaction/damaging stand
    - Clean equipment, don’t spread a problem around
  - Choose a well adapted variety that suits your operations management goals

CONTACT INFORMATION

Doug Finkelnburg

Nez Perce County Extension

dougf@uidaho.edu