CATTLEMEN'S UPDATE

PRESENTED BY

The University of Nevada Cooperative Extension (UNCE) and College of Agriculture, Biotechnology and Natural Resources (CABNR) with financial support from local sponsors and the USDA, Risk Management Agency

January 2015
Agenda

Welcome and Introductions

Discussion of Research and Educational Needs for the Nevada Livestock Industry
Dr. Bill Payne, Dean and Director, UNR College of Agriculture, Biotechnology and Natural Resources and Nevada Agricultural Experiment Station
Dr. Mark Walker, Dean and Director, University of Nevada Cooperative Extension

Digital Brand Inspection
Flint Wright, Nevada Department of Agriculture, Animal Industry Administrator

Exploring Potential Forages in Northern Nevada
Juan Solomon, Forage Agronomist/Animal Nutrition, UNR College of Agriculture, Biotechnology and Natural Resources, Department of Agriculture, Nutrition and Vet Services

Alternative Feeds for Cattle during Drought
Steve Foster, Extension Educator, University of Nevada Cooperative Extension, Pershing County

Improving Hay Yield through Distribution Uniformity
Seth Urbanowitz, Extension Educator, University of Nevada Cooperative Extension, White Pine County

Cheatgrass Fuels Reduction at a Landscape Scale
Dr. Barry Perryman, Professor, UNR College of Agriculture, Biotechnology and Natural Resources, Department of Agriculture, Nutrition and Vet Services

Update on Animal Health/Disease
Dr. Michael Greenlee, State Veterinarian, Nevada Department of Agriculture

Update of USDA Farm Service Agency Livestock Forage Program (LFP)
Nevada Farm Service Agency Staff

Beef Quality Assurance Update
Kent Evans, Regional Sales Manager, Boehringer-Ingelheim
Shane Strickler, Regional Sales Manager, Boehringer-Ingelheim

Scour and Scour Prevention Update
Janie Sustaita, Regional Sales and Marketing Manager, ImmuCell

Crop and Livestock Insurance Program
USDA, Risk Management Staff

Local Veterinarian Update
Table of Contents

College of Cooperative Extension Overview ........................................... 1
College of Agriculture, Biotechnology & Natural Resources Overview ...... 7
Alternative Feeds for Cattle During Drought Presentation ...................... 13
Alternative Feeds for Cattle During Drought (No. 1.626) ......................... 29
Beef Cattle Handbook: Management to Minimize Hay Waste .................. 34
Alternative Winter Nutritional Management Strategies .......................... 38
Emergency Rations for Wintering Beef Cows ..................................... 39
BioOne: Knapweed Hay as a Nutritional Supplement for Beef Cows Fed Low-Quality Forage ......................................................... 41
Improving Hay Yield through Distribution Uniformity ........................... 47
Animal Disease Traceability for Cattle .............................................. 61
Cattle Health Issues ............................................................................. 62

USDA, Farm Service Agency

What’s in the 2014 Farm Bill for Farm Service Agency Customers ... 70
Base Acre Reallocation, Yield Updates, ARC & PLC .......................... 76
Livestock Forage Disaster Program (LFP) ........................................... 87
Livestock Indemnity Program (LIP) ..................................................... 91
Farm Loan Information Chart ............................................................. 97

USDA, Risk Management Agency

Livestock Risk Protection: Feeder Cattle .......................................... 98
Livestock Risk Protection: Fed Cattle ................................................. 100
Table of Contents Continued

Livestock Risk Protection: Lamb .............................................102
Pasture, Rangeland, Forage Pilot Insurance Program .......................104
Forage Production: Nevada ..................................................106
Small Grains: Nevada .........................................................108
News Release: New Whole-Farm Revenue Insurance Protection Available in Nevada.................................110
Sponsor Update: Sours and Scour Prevention................................112
Sponsor Update: Don’t Take a Gamble with Newborn Calf Health ........116
University of Nevada Cooperative Extension—2015 update

Mark Walker
Interim Dean and Director
University of Nevada Cooperative Extension

Background:
College of Cooperative Extension

• Centennial—2014!
  – Award winning video celebration
• State, federal, county partnership
Background:

• Substantial cuts in state portion, 2012
  – Changes in roles of key personnel
  – Changes in organizational emphasis
• Proposal for reorganization, 2012—2013
  • Change in leadership, June 2013
    – Recently extended to June, 2016

Initiatives:

• Reorganization:
  – Areas redefined
  – Moving fiscal officer position to Reno
Initiatives:

• Strengthen 4-H throughout the state:
  – Convened youth development study group
    • Seeking greater engagement in local 4-H programs

Initiatives (cont.):

• Drought
  – Living with drought web site
  – Partnership with California, New Mexico, Utah, Hawaii Extension systems
  – Sponsorship from U.S. Department of Agriculture’s Agricultural Research Service
  – National Science Foundation Grant
    • Water for the Seasons—$3.8 million
    • Multi-institutional focus on drought
Recently completed searches

- Extension Educator: Lyon County
  - Replacement position for long-standing vacancy

New Position

- Climate Program Leader
  - Shared with UNR Department of Geography
  - Active Search
  - Social dimensions of natural hazards, drought, and climate risks
New Position

• Food Safety Program Leader
  – Shared with UNR Department of Agriculture, Nutrition and Veterinary Sciences
  – Emphasis on animal agriculture and health
  – Active search

New Position

• New 4-H statewide youth program leader position
  – Based in Clark County
  – Primary responsibilities
    • Revitalize Nevada’s 4-H program
    • Find new programming opportunities
    • Connect Nevada’s youth with state, regional and national opportunities
What’s next?

• Develop options for vacant educator position in Eureka County
• Seek support for development officer, for 4-H, likely based in Clark County
• Rethink approaches to nutrition education
• Economic development team organization
• Children, youth and family programming organization
• Prepare to respond to spring request for faculty positions
CABNR - NAES NEW LEADERSHIP

Dr. William (Bill) Payne

- **Dean** College of Agriculture, Biotechnology and Natural Resources
- **Director** Nevada Agricultural Experimental Station
- **Professor** Crop Physiology at Texas A&M University
- **Research Director** N. Borlaug Institute for International Agriculture
- **Director** CGIAR a Global Research Program on Dryland Agriculture

Starting Date February 7th 2014
Predominance of Dry Areas

- Cover 41% of the earth's surface; 2/3 rangeland
- Home to over 2.5 billion people – and the majority of the world’s poor.
- About 16% of the population lives in chronic poverty
- Age distribution skewed towards youth
- Urbanization, unemployment, rising food prices, political unrest

Greatest challenge of our generation is to feed a rapidly growing population...Answering the call requires us to develop a human capital pipeline that will invigorate America’s scientific, technological and business leadership in food and agriculture

— College of —
Agriculture, Biotechnology & Natural Resources

SUSTAINABLE SCIENCE FOR LIFE™

University of Nevada, Reno
CAREER OPPORTUNITIES IN THE FOOD AND AGRICULTURE INDUSTRIES

+33,500 hired in the food & agricultural industries from January to August 2014

55+ age of ¼ current food and agriculture professionals

4.9% the STEM employment opportunities in advanced agriculture fields is projected over the next five years

TOTAL STUDENT ENROLLMENT

College

Departments

2008 2009 2010 2011 2012 2013 2014

2008 2009 2010 2011 2012 2013 2014

ANVS BMB NRES

SUSTAINABLE SCIENCE FOR LIFE.™

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Agriculture, Biotechnology & Natural Resources

University of Nevada, Reno
NEW FACULTY SINCE 2013

- Ian Wallace – plant molecular biology
- Dylan Kosma – plant molecular biology
- Veronica Zepeda – biochemistry instructor
- Adrian Harold – ecohydrologist
- Ben Sullivan – soil scientist
- Paul Verburg – soil scientist
- Antonio Faciola – large animal nutritionist
- Tracy Shane – ag science instructor
- Juan Solomon – forage agronomist
- Patricia da Conceição Ferreira dos Santos, plant biochemist
- Talline Martins, plant geneticist

CURRENT SEARCHES

Horticulturalist: Sustainable Horticulture
Food Safety Scientist: Meat emphasis
Wildlife Biologist: Population Ecology
Molecular Nutritionist: Epigenetics
Molecular Biologist: insect-vectored diseases
QUESTIONS & COMMENTS
THANK YOU

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(775) 784-6237
www.ag.unr.edu
Alternative Feeds for Cattle During Drought

Steve Foster
University of Nevada Cooperative Extension
Pershing County, Nevada

Bottom Line

• Drought is a part of the normal production cycle.
• Dealing with these dry periods and decreased feed supplies needs to be part of the overall management plan.
Goal

• The goal is to re-breed cows while maintaining calving intervals, maintain pounds of calf produced per cow, and minimize feed cost per pound of calf sold.

Alternative Feeding Considerations

• Carefully balance every ration against the animal’s requirements,
• Analyze forages and feed precisely,
• Supplement low-quality feeds correctly,
• Design a feeding program to fully utilize local feeds,
• Make every effort to reduce feed losses,
• Feed the highest quality feeds to animals that have higher feed requirements
  o (i.e., growing replacement heifers or growing calves),
Alternative Feeding Considerations

- Feed the lower quality roughages to cows in the middle-third stage (2nd trimester) of pregnancy,
- Save the better quality feeds for periods before and after calving, and
- Treat low-quality roughages with various feed additives.
  - Additives can improve palatability and feeding quality. (Brownson, 1996).

Stretching the Hay Pile

- Substitute 1 pound of grain (corn) or other concentrate feed for 2 pounds of alfalfa hay or 3 pounds of grass hay.
  - Grain is not always practical to feed, but there are ways to feed it even in pasture or rangeland situations.
  - Many producers use barrels, gated pipe split in half, bunks, or old hog feeders mounted on a trailer.
  - Limited feeding (all animals eat at once) – 20-26 inches/head.
Cattle Feeder Ideas

Table 1. Energy value of various grains compared to prairie, sorghum-sudan, alfalfa, and mixed hay.*

<table>
<thead>
<tr>
<th>Grain</th>
<th>TDN</th>
<th>Amount of hay that can be replaced by 1 pound of grain</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Prairie hay</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(47% TDN)</td>
</tr>
<tr>
<td>Corn</td>
<td>91</td>
<td>1.9</td>
</tr>
<tr>
<td>Barley</td>
<td>83</td>
<td>1.8</td>
</tr>
<tr>
<td>Oats</td>
<td>76</td>
<td>1.6</td>
</tr>
<tr>
<td>Wheat</td>
<td>88</td>
<td>1.9</td>
</tr>
<tr>
<td>Ear corn</td>
<td>80</td>
<td>1.7</td>
</tr>
</tbody>
</table>

*Mixed hay is equal to 50 percent prairie and 50 percent alfalfa hay.
Possible high grain rations for dry and lactating cow

<table>
<thead>
<tr>
<th>Dry Cows - 1050 lbs.*</th>
<th>Lactating Cows - 1050 lbs*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Requirements:</td>
<td>Requirements:</td>
</tr>
<tr>
<td>TDN - 9.2 lbs</td>
<td>TDN - 13 lbs.</td>
</tr>
<tr>
<td>Protein - 1.3 lbs</td>
<td>Protein - 2.3 lbs</td>
</tr>
<tr>
<td>Phosphorus - 16 grams</td>
<td>Phosphorus - 24 grams</td>
</tr>
<tr>
<td>Calcium - 16 grams</td>
<td>Calcium - 32 grams</td>
</tr>
<tr>
<td>Vitamin A - 25,000 IU</td>
<td>Vitamin A - 40,000 IU</td>
</tr>
<tr>
<td><strong>Possible Ration:</strong></td>
<td><strong>Possible Ration:</strong></td>
</tr>
<tr>
<td>Corn - 10 lbs</td>
<td>Corn - 13 lbs</td>
</tr>
<tr>
<td>Hay** - 3 lbs</td>
<td>Hay** - 4 lbs</td>
</tr>
<tr>
<td>Soybean Meal - 0.5 lbs</td>
<td>Soybean Meal - 2.0 lbs</td>
</tr>
<tr>
<td>Free Choice Mineral</td>
<td>Free Choice Mineral</td>
</tr>
<tr>
<td>(high calcium feedlot type with Vitamin A)</td>
<td>(high calcium feedlot type with Vitamin A)</td>
</tr>
</tbody>
</table>

* For each 100 pound increase in body weight, increase TDN by .7 pound and protein by .1 pound per day.

** Assumes average to poor quality grass hay, or crop residues. If good alfalfa hay is fed, no supplemental protein is needed by the dry cow and the lactating cow would need only 1 pound of soybean meal or equivalent. Urea can be used as the protein source in these rations due to the higher energy level.
High Grain Ration

- Cows should be slowly adapted to high concentrate feeding, just like feedlot cattle.
  - Begin with 2 to 3 pounds of whole shelled corn per head and free-choice roughage.
  - Increase the grain by 1 pound per day, and reduce the hay by 2 pounds each day, until the final ration is attained.
  - Observe their body condition (fleshiness) over time and adjust the grain as needed to maintain adequate condition.

Alternative Feeds

- Alternative feedstuffs used to decrease the dependency on alfalfa or grass hay include:
  (Grains, Summer Annuals, Crop Residues, By-Products)
  - Corn stalks,
  - Millet hay,
  - Wheat straw,
  - Cottonseed hulls,
  - Soybean hulls,
  - Wheat middlings
  - Corn gluten feed
  - Sorghum-sudan,
    - test for nitrates in annual forages including sorghums and for prussic acid levels in sorghums, sudans and sorghum-sudan varieties
Cottonseed Hulls

- Cottonseed hulls are low in protein (3.5 percent), but equal in energy to late cut grass hay.
- Cottonseed hulls should be fed with 2 to 3 pounds of 30-40 % all natural protein supplement and mineral.

<table>
<thead>
<tr>
<th>Component</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dry matter</td>
<td>91.3</td>
</tr>
<tr>
<td>Crude Protein</td>
<td>3.7</td>
</tr>
<tr>
<td>Fat</td>
<td>1.5</td>
</tr>
<tr>
<td>Crude fiber</td>
<td>44.0</td>
</tr>
<tr>
<td>Neutral Detergent Fiber</td>
<td>81.9</td>
</tr>
<tr>
<td>Acid Detergent Fiber</td>
<td>66.4</td>
</tr>
<tr>
<td>Calcium</td>
<td>0.1</td>
</tr>
<tr>
<td>Phosphorus</td>
<td>0.1</td>
</tr>
<tr>
<td>Total Digestible Nutrients</td>
<td>40.3</td>
</tr>
<tr>
<td>Net energy—Lactation</td>
<td>.40 Mcal/lb</td>
</tr>
</tbody>
</table>

Soybean Hulls

- The crude protein in soybean hulls ranges from 10-16%.
- Soy hulls can be fed without additional forage, however the digestible energy is increased when fed with hay in a 2-to-1 ratio.

Table 1. Crude Protein, Fiber, and Energy Values of Selected Feedstuffs

<table>
<thead>
<tr>
<th>Feed</th>
<th>CP (%)</th>
<th>NDF (%)</th>
<th>NEm1</th>
<th>NE2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corn</td>
<td>9.8</td>
<td>10.02</td>
<td>0.70</td>
<td></td>
</tr>
<tr>
<td>Beet Pulp</td>
<td>9.7</td>
<td>0.79</td>
<td>0.52</td>
<td></td>
</tr>
<tr>
<td>Citrus Pulp</td>
<td>6.7</td>
<td>0.91</td>
<td>0.61</td>
<td></td>
</tr>
<tr>
<td>Corn Gluten Feed</td>
<td>25.6</td>
<td>0.92</td>
<td>0.62</td>
<td></td>
</tr>
<tr>
<td>Cottonseed, whole</td>
<td>23.0</td>
<td>1.09</td>
<td>0.77</td>
<td></td>
</tr>
<tr>
<td>Dried Brewers Grains</td>
<td>25.4</td>
<td>0.68</td>
<td>0.41</td>
<td></td>
</tr>
<tr>
<td>Soybean Hulls</td>
<td>12.1</td>
<td>0.65</td>
<td>0.39</td>
<td></td>
</tr>
<tr>
<td>Wheat middlings</td>
<td>18.4</td>
<td>0.73</td>
<td>0.45</td>
<td></td>
</tr>
</tbody>
</table>
Wheat Middlings

- Wheat middlings are a good source of protein (14-18 %) and energy.
- It is best to mix at least 5 pounds of forage with the wheat middlings.

<table>
<thead>
<tr>
<th>Table 2. Wheat Middlings Typical Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dry matter</td>
</tr>
<tr>
<td>Crude Protein</td>
</tr>
<tr>
<td>Fat</td>
</tr>
<tr>
<td>Crude fiber</td>
</tr>
<tr>
<td>Neutral Detergent Fiber</td>
</tr>
<tr>
<td>Acid Detergent Fiber</td>
</tr>
<tr>
<td>Calcium</td>
</tr>
<tr>
<td>Phosphorus</td>
</tr>
<tr>
<td>Total Digestible Nutrients</td>
</tr>
<tr>
<td>Net energy—Lactation</td>
</tr>
</tbody>
</table>

Corn Gluten

- Corn gluten feed is a by-product of the corn wet milling industry and is available in wet or dry form.
- It is high in protein (25%) and should be fed at a rate of 0.5 percent of body weight, with a forage source.

<table>
<thead>
<tr>
<th>Table 1. Typical Analyses of Corn Co-Products (DM Basis)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dry Matter</td>
</tr>
<tr>
<td>Protein</td>
</tr>
<tr>
<td>Fat</td>
</tr>
<tr>
<td>NDF</td>
</tr>
<tr>
<td>TDN</td>
</tr>
<tr>
<td>NEg (Mcal/kg)</td>
</tr>
<tr>
<td>Calcium</td>
</tr>
<tr>
<td>Phosphorus</td>
</tr>
<tr>
<td>Sulfur</td>
</tr>
</tbody>
</table>
Forage Alternatives

- **Irrigation** is essential for forage production in Nevada.
- Due to the cost of irrigation, one should use only well-adapted plants with good potential quality and high production capability.
- These should be amply fertilized and established at a high seeding rate.

Spring Forages

- Small grains, such as annual rye triticale or oats can be used to fill the void of spring forage.
- If the annual forage has been stressed be sure to have the forage tested for nitrates.
  - (drought, wind, excessive soil nitrogen, shade, frost, certain herbicides, acid soils, low growing temperatures, and nutrient deficiencies)
Planting Spring Oats

- Planting dates vary, depending on location and elevation.
  - Usually between March 15, and April 15.
- Oats will germinate when soil temps reach 40°F.
- Seeding rates of 50 to 90 lbs/ac. are recommended.
- Used as a companion crop for establishing perennial forages.

Summer Forage

- Plant **Sorghum-sudan** for summer grazing.
- Sorghum-sudan uses less water than corn and produces enough forage for two to three cuttings or grazing rotations.
  - Sorghum-sudan is susceptible to **prussic acid** accumulation.
    - **Grazing on stunted plants during drought is the most common cause of poisoning of livestock by prussic acid-producing plants.**
- Management of Sorghum-sudan includes:
  - No grazing or green chopping for several days after a killing frost,
  - No grazing until the regrowth of shoots is 15 to 18 inches tall,
  - Make sure that animals are not hungry and turn them in later in the day,
  - Dilute with grass or alfalfa hay.
Summer Forage

• Other forages that can be planted for summer grazing are:
  • Millet, Cowpeas, Soybeans, Turnips
• They can also be grazed in the fall.
  o This is critical during drought years because lack of water and forage may force some producers to come off of the rangelands and summer pastures early.

Fall Forage

• In June, plant winter varieties of rye, triticale or wheat.
  o In addition, plant oats, sorghum-sudan, or any of the brassicas such as turnips, kale, or rape.
Turnips for Grazing

• Turnips bulk seed can cost less than ten dollars per acre.
• Late July to early August is the time to plant turnips for fall grazing.
• Do not plant turnip seeds too deep.
• If planting no-till, control weeds first.
  o Turnips do poorly if weeds get ahead of them, but once started, turnips compete very well.
• Plant only 2 to 4 pounds of turnip seed per acre.

Turnips for Grazing

• Animals grazing turnips in the fall and winter usually consume a diet that is 10-14% crude protein and 70-85% TDN, and fresh turnips are 80-90% moisture.
Grazing Turnips Precautions

- Brassicas are very high in crude protein and energy, but extremely low in fiber.
  - Their low fiber content results in rumen action similar to when concentrates are fed; thus the need for proper roughage supplementation.
  - Nitrate poisoning has been documented from excessive nitrogen fertilization plus reported instances of high accumulation of calcium and potassium that can reduce the availability of magnesium to animals.

Planting Oats for Fall Forage

- Can produce over 2 tons/acre of hay or pasture.
  - It'll die out over winter, so it'll protect soil without causing planting problems next spring.

- Drill about 3 bu/acre in early August for maximum yield potential.
- A fully prepared seedbed usually is best, but you can plant oats directly into wheat stubble or other crop residues if weeds are killed ahead of planting.
- Avoid fields with herbicide carryover, and top-dress 40 lbs of N₂/ac. unless the previous crop was heavily fertilized.
- With good moisture, oats will be ready to graze about 6-8 weeks after emergence.
  - Calves and yearlings can gain over 2 lbs/day.
Additional Feeding Options

- Additional feeding and harvesting strategies include:
  - Windrow grazing,
  - Stockpiling forage,
  - Ammoniation of forages, and adding liquid supplementation to the forage.

Feeding Weeds

<table>
<thead>
<tr>
<th></th>
<th>Vegetative CP</th>
<th>IVDMD</th>
<th>Flower/Boot CP</th>
<th>IVDMD</th>
<th>Fruit/Head CP</th>
<th>IVDMD</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Herbaceous weeds</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Curly dock</td>
<td>30</td>
<td>73</td>
<td>19</td>
<td>54</td>
<td>16</td>
<td>51</td>
</tr>
<tr>
<td>Henbit</td>
<td>—</td>
<td>—</td>
<td>20</td>
<td>78</td>
<td>16</td>
<td>75</td>
</tr>
<tr>
<td><strong>Grasses</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cheat</td>
<td>23</td>
<td>81</td>
<td>18</td>
<td>69</td>
<td>14</td>
<td>61</td>
</tr>
<tr>
<td>Little barley</td>
<td>24</td>
<td>82</td>
<td>18</td>
<td>78</td>
<td>14</td>
<td>62</td>
</tr>
<tr>
<td>Virginia wildrye</td>
<td>23</td>
<td>80</td>
<td>19</td>
<td>74</td>
<td>7</td>
<td>60</td>
</tr>
<tr>
<td><strong>Forages</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hairy vetch</td>
<td>30</td>
<td>80</td>
<td>29</td>
<td>77</td>
<td>26</td>
<td>77</td>
</tr>
</tbody>
</table>

“If all else fails”

A Weed That's Noxious In The Field, Tasty By The Bale

Beef cows savor baled Russian knapweed

Hay & Forage Grower, by Florrie Kohn, Aug 22, 2013

• “People who have Russian knapweed, can bale it and then feed it as a protein supplement either on winter range or when they’re feeding low-quality hay.”
  o The protein content of Russian knapweed varies depending on when it is cut; young plants will contain more protein.
  o “In our study, the protein was around 13% prebloom”.
“Drought is a part of the normal production cycle. Management during these dry periods and decreased feed supplies need to be part of the overall plan”.

Question?

References

- **Knapweed Hay as a Nutritional Supplement for Beef Cows Fed Low-Quality Forage**, David W. Bohnert,1 Roger L. Sheley,2 Stephanie J. Falck,3 and Arthur A. Nyman4 Eastern Oregon Agricultural Research Center, Oregon State University, Burns, OR 97720, USA.
Quick Facts...

- Drought is a part of the normal production cycle. Dealing with these dry periods and decreased feed supplies needs to be part of the overall management plan.
- In many cases, the best solution for cow/calf producers is to utilize a limit-fed, high grain diet fed in drylot or semi-confinement.
- Substitute 1 pound of grain or other concentrate feed for 2 pounds of alfalfa hay or 3 pounds of grass hay.
- Since intake on concentrate diets is restricted, cattle may appear gaunt and behave as though hungry, however after 14 to 21 days, they will adapt to the reduction in feed intake.

Drought conditions greatly reduce the available forage for livestock. They also impact forage and rangeland production across the state. Short and long-term ramifications will continue to affect the management of livestock. Livestock have been sold, or relocated out of state in record numbers; however, there are alternatives for the remaining population.

Alternative Feeding Options

When deciding on an alternative feeding program, there are several options to consider. The goal is to re-breed cows while maintaining calving intervals, maintain pounds of calf produced per cow, and minimize feed cost per pound of calf sold. When considering feed options, think about the following:

- Design a feeding program to fully utilize local feeds,
- Supplement low-quality feeds correctly,
- Analyze forages and feed precisely,
- Substitute 1 pound of grain or other concentrate feed for 2 pounds of alfalfa hay or 3 pounds of grass hay,
- Carefully balance every ration against the animal’s requirements,
- Make every effort to reduce feed losses,
- Feed the highest quality feeds to animals that have higher feed requirements (i.e., growing replacement heifers or growing calves),
• Feed the lower quality roughages to cows in the middle-third stage of pregnancy,
• Save the better quality feeds for periods before and after calving, and
• Treat low-quality roughages with various feed additives. Additives can improve palatability and feeding quality. (Brownson, 1996).

**Stretching the Hay Pile**

Substitute 1 pound of grain or other concentrate feed for 2 pounds of alfalfa hay or 3 pounds of grass hay. Do not exceed grain feeding by 0.4 percent of the live body weight when forage is the major component of the diet. Grain is not always practical to feed, but there are ways to feed it even in pasture or rangeland situations. Many producers use barrels, gated pipe split in half, bunks, or old hog feeders mounted on a trailer. Other management options can be found at [www.ext.colostate.edu/drought/altfeed.html](http://www.ext.colostate.edu/drought/altfeed.html).

Relocating the cowherd into drylot is a management alternative that may allow producers to take advantage of grains and byproduct feeds (Wright, 2002). Diets for drylot cows are formulated to meet the nutrient requirements of the cows while minimizing feed costs. As a result, intake is generally limited and more concentrate feeds are included to cheapen the diets.

Since intake on concentrate diets is restricted, cattle may appear gaunt and behave as though hungry. After 14 to 21 days, they will adapt to the reduction in feed intake, but they may continue to appear gaunt. Cattle should adapt to high-grain diets in seven to 10 days and should be observed closely during that time. A minimal amount of roughage is required to maintain rumen function. As a rule of thumb, cows should receive at least 0.5 percent of their body weight as roughage (90 percent dry matter basis). Thus, a 1,200 pound cow should receive at least 6 pounds of roughage per day.

In many cases, the best alternative for cow/calf producers is to utilize a limit-fed, high-grain diet fed in drylot or semi-confinement. The most expensive nutrient for a cow is energy (TDN). Table 1 shows the nutritional requirements and typical rations for beef cows—either a fall or spring calving cow where the calf has been weaned or a lactating cow producing 14 to 16 pounds of milk per day (calves should be creep-fed). The initial reaction of many people evaluating these diets is that cows will not survive on that small amount of feed. But, it’s important to keep in mind that grain is a concentrated energy source with 10 pounds of grain supplying the energy equivalent of 15 to 20 pounds of hay.

Cows should be slowly adapted to high-grain feeding, just like feedlot cattle. A suggested practice is to begin with 2 to 3 pounds of whole shelled corn per head, per day and free-choice roughage. Then, increase the grain by 1 pound per day, and reduce the hay by 2 pounds each day until the final ration is attained. Make sure plenty of bunk space is provided so all cows can eat at the same time. Feed two times per day if possible. Once the cows are switched over to the limit-fed, grain-based ration, observe their body condition (fleshiness) over time and adjust the grain as needed to maintain adequate condition. Obviously, the rations shown in Table 1 represent high levels of grain feeding in order to minimize the amount of scarce forage used. However, other proportions of grain and roughage can be used depending on the forage supply, so long as the ration is formulated to meet the cow’s nutrient requirements.
Table 1. Possible high grain rations for dry and lactating cows.

<table>
<thead>
<tr>
<th>Dry Cows - 1050 lbs.*</th>
<th>Lactating Cows - 1050 lbs*</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1. Requirements:</strong></td>
<td><strong>1. Requirements:</strong></td>
</tr>
<tr>
<td>TDN - 9.2 lbs</td>
<td>TDN - 13 lbs.</td>
</tr>
<tr>
<td>Protein - 1.3 lbs</td>
<td>Protein - 2.3 lbs</td>
</tr>
<tr>
<td>Phosphorus - 16 grams</td>
<td>Phosphorus - 24 grams</td>
</tr>
<tr>
<td>Calcium - 16 grams</td>
<td>Calcium - 32 grams</td>
</tr>
<tr>
<td>Vitamin A - 25,000 IU</td>
<td>Vitamin A - 40,000 IU</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>2. Possible Ration:</strong></th>
<th><strong>2. Possible Ration:</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Corn - 10 lbs</td>
<td>Corn - 13 lbs</td>
</tr>
<tr>
<td>Hay** - 3 lbs</td>
<td>Hay** - 4 lbs</td>
</tr>
<tr>
<td>Soybean Meal - 0.5 lbs</td>
<td>Soybean Meal - 2.0 lbs</td>
</tr>
<tr>
<td>Free Choice Mineral</td>
<td>Free Choice Mineral</td>
</tr>
<tr>
<td>(high calcium feedlot type with Vitamin A)</td>
<td>(high calcium feedlot type with Vitamin A)</td>
</tr>
</tbody>
</table>

* For each 100 pound increase in body weight, increase TDN by .7 pound and protein by .1 pound per day.

** Assumes average to poor quality grass hay, or crop residues. If good alfalfa hay is fed, no supplemental protein is needed by the dry cow and the lactating cow would need only 1 pound of soybean meal or equivalent. Urea can be used as the protein source in these rations due to the higher energy level.

Alternative Feedstuffs

When considering alternative feedstuffs, conduct a nutritional analysis. In addition, test for nitrates in annual forages including sorghums and for prussic acid levels in sorghums, sudans and sorghum-sudan varieties. (See fact sheets 1.610, *Nitrate Poisoning* and 1.612, *Prussic Acid Poisoning*.)

Alternative feedstuffs used to decrease the dependency on alfalfa or grass hay include harvested corn stalks, millet hay, wheat straw, sorghum-sudan, cottonseed hulls, soybean hulls, wheat middlings and corn gluten feed. Cottonseed hulls are low in protein (3.5 percent), but equal in energy to late cut grass hay. Cottonseed hulls should be fed with 2 to 3 pounds of 30 percent to 40 percent all natural protein supplement and mineral. The crude protein in soybean hulls ranges from 10 percent to 16 percent. Soyahulls can be fed without additional forage, however the digestible energy is increased when fed with hay in a 2-to-1 ratio. Wheat middlings are a good source of protein (18 percent) and energy. It is best to mix at least 5 pounds of forage with the wheat middlings. Corn gluten feed is a byproduct of the corn wet milling industry and is available in wet or dry form. It is high in protein (25 percent) and should be fed at a rate of 0.5 percent of body weight, with a forage source. A calcium-phosphorus mineral mixture and salt...
should be available to cows at all times, especially when utilizing any alternative feeds. Vitamin A may need to be supplemented also.

**Planning for Spring Forage**

Spring forage is always a premium. Small grains, such as annual rye triticale or oats can be used to fill the void of spring forage. In planning for next year, plant these varieties in August or September to provide even more forage the following spring. If the annual forage has been stressed (drought, wind, excessive soil nitrogen, shade, frost, certain herbicides, acid soils, low growing temperatures, and nutrient deficiencies) be sure to have the forage tested for nitrates. High nitrate forages are consumable by diluting them with other feedstuffs and supplementing with energy (fact sheet 1.610, *Nitrate Poisoning*).

**Planning for Summer Forage**

Plant sorghum-sudan for summer grazing. Sorghum-sudan uses less water than corn and produces enough forage for two to three cuttings or grazing rotations. However, care must be taken when grazing or harvesting sorghum-sudan. Sorghum-sudan is susceptible to prussic acid accumulation. Prussic acid accumulates in stressed plants. The stress may be a result of drought, a freeze, excessive fertilization, or wind. Grazing on stunted plants during drought is the most common cause of poisoning of livestock by prussic acid-producing plants. Management of sorghum-sudan includes:

- No grazing or green chopping for several days after a killing frost,
- No grazing until the regrowth of shoots is 15 to 18 inches tall,
- Make sure that animals are not hungry and turn them in later in the day, and
- Dilute with grass or alfalfa hay.

Other forages that can be planted for summer grazing are millet, turnips, or oats. They can also be grazed in the fall. This is critical during drought years because lack of water and forage may force some producers to come off of the rangelands and summer pastures early. Planning now ensures that there is ample grazable forage available for the livestock.

**Planning for Fall Forage**

In June, plant winter varieties of rye, triticale or wheat. In addition, plant oats, sorghum-sudan, or any of the brassicas such as turnips, kale, or rape.

Additional feeding and harvesting strategies include windrow grazing, stockpiling forage, ammoniation of forages, and adding liquid supplementation to the forage. Drought is a part of the normal production cycle. Management during these dry periods and decreased feed supplies need to be part of the overall plan.

**References**


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Hay is harvested, stored, and fed under a wide variety of conditions that influence both its yield and quality. Harvest and storage involve both dry matter and nutritive value loss. These losses occur in all phases of getting the hay from the field to the livestock — harvest, storage, and feeding.

**Harvest**

After cutting, forage plant cells respire until their moisture content falls below 35 - 40 percent. Hay dries rapidly on a warm, dry, breezy day resulting in dry matter losses to respiration of only 2 - 6 percent. If hay dries slowly, however, dry matter losses to respiration can be as high as 15 percent. This can happen when hay is rained on soon after cutting or when soil moisture and humidity levels are high. Overnight losses from hay cut in late evening can be as high as 11 percent. Respiration loss is due primarily to the breakdown of soluble carbohydrates, which are roughly 100 percent digestible. Therefore such losses will substantially reduce hay quality. Losses during curing cannot be eliminated, but cutting hay when good drying weather is expected will reduce respiration losses considerably.

Once the moisture content of hay falls below 35 - 40 percent, most harvest losses are caused by weathering and handling. Weathering losses, primarily losses to leaching, increase with the number of rain showers, amount of rain, and dryness of the hay. Leaching can cause yield losses as high as 20 percent. Most of the lost nutrients are highly-digestible solubles (carbohydrates, proteins, B vitamins, and some soluble minerals, such as potassium). Rain not only leaches nutrients, it can also increase leaf loss because of the extra handling needed to dry the hay. Leaves are the most valuable part of the hay since they have the highest quality. Therefore, losing leaves will decrease hay quality.

Leaf shatter, especially from legumes, can be serious at harvest time. Leaf loss can be minimized by reducing the number of times hay is handled in the field and by handling hay at high-moisture levels. Leaf loss is often 5 - 10 percent greater when hay is cut, conditioned, and raked separately than when all three operations are done at one time. Alfalfa hay that is raked and packaged very dry can yield 35 percent less dry matter and be of poorer quality than properly handled hay. Rake legume hay at a moisture content greater than 50 percent. Results of raking alfalfa hay at various moisture levels are shown in Fig. 1.

Windrower machines eliminate raking and thus the leaf loss that is caused by raking. Because drying takes longer in the windrow than in the swath, respiration losses and increased potential of rain damage may reduce this advantage in humid areas.

Condition freshly cut forage, especially legumes, to allow the plants to dry rapidly, thus reducing respiration losses and the risk of weather hazards. Dry matter and crude protein losses are greater with big-package hay making machines than with conventional balers when they are operated in dry, shatter-prone alfalfa hay. There is little difference in dry matter losses from different haymaking systems when hay moisture is optimum.

**Storage**

Even the best (shed or covered) storage conditions allow
about five percent of hay dry matter to be lost after one year. Most nutrients maintain nearly constant concentrations when hay is properly stored, although carotene (precursor to vitamin A) concentration declines rapidly. Losses of dry matter and quality during storage can be considerable when hay is stored too wet. These losses are caused mostly by heating, which will usually occur if hay is packaged above 20 - 22 percent moisture. Grass hay can be packaged at a slightly higher moisture content than hay containing legumes. Fig. 2 shows spoilage losses in alfalfa hay stacked at different moisture levels. Several types of hay preservatives are available that can prevent spoilage of hay packaged too wet. However, these preservatives are effective only when they are applied evenly throughout the hay at the correct rate.

Hay stored outdoors is subject to losses from weathering, but amount of loss is greatly influenced by climatic variables. In wetter, more humid climates, more losses occur with hay stored outdoors than in drier climates.

Weathering occurs not only on the tops and sides of packages stored outside, but also where hay contacts moist ground. Research in Indiana has shown that storing bales on crushed rock vs. the ground reduced the weathered portion of the original bale weight from 23 - 11 percent. Thus, outdoor storage losses can be lower if good packages are made, and they are stored on a well drained site. This may not be a problem in most places in the arid West.

Weathering reduces the dry weight of hay and changes its composition. Dry matter losses during outdoor storage range from 5 - 30 percent. Losses of dry matter of loose (non-compressed) stacks usually exceed 10 -15 percent and are greater than losses from large round bales or compressed stacks. Length of storage will also influence losses. Maintaining an inventory or carrying over a portion of the previous year’s harvested hay crop is often needed to ensure against future hay shortages. However, long-term outside storage of hay may be costly.

Research in eastern Nebraska (Table 1) showed that after seven months of storage, hay in loaf stacks lost 12.4 percent of its original dry weight, 9.7 percent of the protein, and 12.1 percent of the energy (TDN). By 29 months of storage, 29.5 percent of the dry matter, 53.1 percent of the protein, and 42.1 percent of the TDN were lost. These losses can be attributed to natural processes of deterioration, including losses associated with mold and microbial activity, leaching of nutrients due to excessive moisture, and spoilage at the base of the stack.

Resistance to weather depends on how well the packages are made. In an Indiana study, from 18 - 44 percent of the hay in compressed stacks had weathered after one year of outdoor storage. The amount weathered increased to 28 - 50 percent after two years of storage. Large round bales were from 18 - 39 percent weathered after two years of storage. Tight hay packages, such as round bales, shed more water than stacks, which reduces losses during long-term storage. However, moisture content at harvesting is of greater concern with round bales than with loose stacks. Therefore, the choice of packaging may depend upon moisture content of hay, machinery operator skill, and length of time hay is expected to be stored outside.

### Table 1. Percent of Initial Quantity of Dry Matter, Crude Protein and Total Digestible Nutrients (TDN) Lost from Loaf Stacks of Alfalfa Hay Stored Outside.\(^1\)

<table>
<thead>
<tr>
<th>Nutrient</th>
<th>Months after harvest</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dry matter</td>
<td>12.4</td>
</tr>
<tr>
<td>Crude protein</td>
<td>9.7</td>
</tr>
<tr>
<td>TDN</td>
<td>12.1</td>
</tr>
</tbody>
</table>

To reduce storage losses, be sure the package is dense and evenly formed, especially with compressed stacks. This allows rainfall to run off rather than settle in depressions and soak into the stack. Store packages on a well-drained site with air spaces between packages to allow drying after rain. Round bales can be butted end-to-end with little increase in loss from storage. Do not stack round bales unless they are covered with plastic.

**Feeding**

Much expense and many long hours go into harvesting and storing good quality hay for winter feeding. You wouldn't dream of throwing away one-third of this hay. That is what happens when livestock are allowed unlimited access to hay, however. Livestock trample, over-consume, contaminate, and use for bedding 25 - 45 percent of the hay when it is fed with no restrictions (Table 2). Cattle will waste less hay when the amount fed is limited (Table 3). One-fourth more hay is needed when a four-day supply of hay is fed with free access than when a one-day supply is fed.

Excessive hay consumption can be a major problem when large hay packages are fed without restriction. A dry, pregnant cow may eat 20 - 30 percent more hay than she needs when allowed free access. This can amount to over 700 pounds per cow over a four-month feeding period. A 100 cow herd may overconsume 35 tons of hay if the cows have free access to hay.

<table>
<thead>
<tr>
<th>Bale type</th>
<th>Percent wasted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Square bale in rack</td>
<td>7</td>
</tr>
<tr>
<td>Large round bale in rack</td>
<td>9</td>
</tr>
<tr>
<td>Large round bale without rack</td>
<td>45</td>
</tr>
</tbody>
</table>


**Table 3. Hay Wasted by Cows on Pasture when Amount Fed was Controlled.**

<table>
<thead>
<tr>
<th>Feeding system</th>
<th>Hay per feeding (lb.)</th>
<th>Hay refused or wasted (%)</th>
<th>Hay required over rack feeding (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rack feeding</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No rack feeding</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1-day supply</td>
<td>20</td>
<td>11</td>
<td>12</td>
</tr>
<tr>
<td>2-day supply</td>
<td>40</td>
<td>25</td>
<td>33</td>
</tr>
<tr>
<td>4-day supply</td>
<td>80</td>
<td>31</td>
<td>45</td>
</tr>
</tbody>
</table>

This is in addition to the extra hay needed to replace that wasted during free-access feeding. Hay loss and waste can be reduced by feeding hay daily according to diet needs. Compared to feeding a several day supply each time hay is provided, daily feeding will force livestock to eat hay they might otherwise refuse, overconsume, trample, or waste. Daily feeding is more efficient, especially when hay is fed free-access.

Restricting the animal's access to hay will decrease waste. Efforts that limit the amount of hay accessible to trampling will save feed. Hay racks with solid barriers at the bottom prevent hay from falling out or being pulled out by livestock and getting stepped on. Loose or compressed hay stacks should have collapsible racks or electric wire around them to reduce the amount of trampling around the edges. Feed hay on a well-drained site or on concrete when possible. Feed bunks are excellent for feeding small square bales. Round bales should be fed in specially designed racks. When feeding square bales on the ground, unrolling round bales, or using other feeding methods that place a large percentage of the hay in an easily trampled position, spread hay so that all animals have access. In addition, limit feeding to an amount that will be cleaned up within a few hours. Otherwise, cows will use the hay for bedding after meeting their immediate intake needs.

Table 2 lists the dry matter losses that occur when handling hay from field to feeding. By the time hay is fed, losses can essentially increase the amount of production needed from the original standing crop by 35 percent. Production costs can be reduced and hay making can be more profitable when the amount of hay lost and wasted during harvest, storage, and feeding is controlled.

<table>
<thead>
<tr>
<th>Range</th>
<th>Average</th>
<th>Range</th>
<th>Average</th>
<th>Range</th>
<th>Average</th>
<th>Range</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mowing</td>
<td>1-6</td>
<td>3</td>
<td>Raking</td>
<td>5-20</td>
<td>10</td>
<td>Swathing with conditioner 1-10</td>
<td>5</td>
</tr>
<tr>
<td>Plant respiration</td>
<td>2-16</td>
<td>5</td>
<td>Baling, % of windrow</td>
<td>1-15</td>
<td>5</td>
<td>Storing, % of stack</td>
<td>5-30</td>
</tr>
<tr>
<td>Transporting</td>
<td>1-5</td>
<td>3</td>
<td>Feeding, % of bale or stack</td>
<td>1-10</td>
<td>5</td>
<td>Without feeder</td>
<td>2-45</td>
</tr>
<tr>
<td>Total, % of original standing crop</td>
<td>10-80</td>
<td>35</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1Without rain damage. Rainfall can reduce yields up to 20 percent.

One of the main challenges to beef producers in the western U.S. is to develop a cost-effective winter-feeding program while still maintaining acceptable levels of beef cattle production. Many producers in the Pacific Northwest and Intermountain West feed between 2 and 4 tons of hay to their mature cows during the winter feeding period. It is estimated that feed and supplement costs account for 50 and 70 percent of total production costs; therefore, a producer’s ability to compete with other regions is dependent in large part on the ability to reduce these costs. Producers can consider a variety of management alternatives when developing economical alternatives to feeding harvested forages.

Swath/Windrow Grazing

Costs associated with hay production vary widely according to location, yield, and cultural practices but can exceed $40/cow for producers in the western states (Short 2001). Swath or windrow grazing is the process of cutting hay and leaving it in windrows for cows to graze in the winter. Allowing cows to harvest cut forage directly can result in lower production and labor costs. Swath grazing has been shown to cost over $30/ton less than traditional haying systems due to the savings in baling and bale moving costs (Thomson 1999; Volesky et al. 2002).

Forage quality of swaths is generally similar to that of baled forage; however, a general decline in quality can be expected over the winter months. Energy or protein supplements may be warranted if grazing pregnant or lactating cows, and forage analysis is recommended.

A summary of 10 years of data from the Eastern Oregon Agricultural Research Center demonstrated that cows wintered on swaths had increased body condition and did not require supplements of additional hay compared to cows fed baled forage. Likewise, conception rates, calving interval, weaning weights, and attrition rates were equal between control and treatment groups.

The practice of swath grazing can generally be used with success in snow depths of up to 2 feet; however, producers may encounter forage loss and reduced forage accessibility in windy areas or areas with extreme weather conditions such as crusting snow or ice. In order to optimize success with windrow grazing, forage crops should be cut in the fall and windrows should be no more than 4 feet wide. Cross fencing with electric fence at right angles to the windrows will increase forage utilization and minimize waste.

To estimate swath utilization, assume a cow will consume 2 to 2.5 percent of its body weight. Thus, a 1,200-pound cow will consume about 24 dry matter pounds of swath feed per day. If fences are moved to limit cattle to one day’s feed, wastage could be lower than 5 percent (Surber et al. 2001).

Winter Grazing

Another alternative to traditional winter-feeding may be the winter grazing of “stockpiled” forage. To effectively use this alternative, the producer must defer grazing of irrigated pasture and native range to the fall or winter months. The range forage base will be dormant and, as a result, will likely need some level of supplementation depending on quality of selected diets, body condition status of mature cows, and stage of gestation (Brandyberry et al. 1994). Quality of standing forage may decline faster than forage stored in bales or windrows (Streeter et al. 1966). Controlling grazing with an inexpensive electric fence that allows access to a 3- or 4-day supply of forage at a time can increase forage utilization and reduce waste by up to 40 percent (Boyles et al. 1998).

Like swath grazing, winter grazing may decrease winter feed costs by $20 to $30 per cow during mild to average years. To effectively use winter grazing as part of a management program, the producer should have relatively easy access to grazing animals to accommodate supplementation programs. In addition, it
Emergency Rations for Wintering Beef Cows

Roger Brownson, Beef Cattle Specialist
Montana State University

Drought conditions greatly reduce the available forage for wintering cattle. During drought periods, both the quality and quantity of hay and winter range forage are often limited.

As a means of stretching limited hay and forage supplies, 1 pound of grain or other concentrate may be substituted for about 2 pounds of hay. Six pounds of grain is the practical limit for replacing hay in the daily ration for wintering a 1,100-pound cow. Feeding 6 pounds of grain will save 12 pounds of hay per head per day. This is a substantial saving over a full feed of hay at prevailing prices.

Corn silage may replace part or all of the hay in the ration at the rate of 3 pounds of silage to 1 pound of hay.

Tables 1 and 2 list examples of possible rations substituting grain for part of the forage and using more straw in the ration. Lesser amounts of grain can be used if hay is more plentiful or relative prices change.

If cows are thin at calving time, conception rates will be reduced 60 to 90 days later at breeding time. After calving, cows’ daily nutrient requirements increase 30 to 50 percent because of the lactation requirement.

A high-phosphorus mineral mixture and salt should be available to cows at all times.

Proposed rations are based on making maximum use of grain in meeting the minimum standards for wintering beef cows. A deficiency in Vitamin A in some rations may be met by feeding 1 pound of a commercial protein supplement fortified with at least 10,000 I.U. of Vitamin A or 1 pound of dehydrated alfalfa pellets.

Rations are based on cattle being allowed access to range forage or confined to a drylot. The ration assumes that cattle on poor range will have a daily intake of 10 pounds of forage and cattle on very poor range a daily intake of about 5 pounds.

These proposed rations are general in nature, and adjustments may be needed to meet an individual rancher’s needs. In drought conditions, all cows should receive 20,000 to 30,000 I.U. of Vitamin A during the last 90 days of pregnancy to ensure against Vitamin A deficiencies and subsequent losses. Feed manufacturers can provide the needed level of Vitamin A in a variety of protein supplements or in a custom pellet. Green color in feed is an indication of carotene or Vitamin A.

Cattle can store Vitamin A in their liver and fat for 4 to 6 months. Cattle on dry pasture during the major part of the summer and on cured hay and straw during the winter can become deficient by spring. That, coupled with the cow’s greater need in late pregnancy and lactation, could cause serious problems if the need is not met.
Table 1. Rations for 1,000-pound pregnant cow.

<table>
<thead>
<tr>
<th>Feed</th>
<th>Daily feed</th>
<th>Protein</th>
<th>Energy</th>
<th>Ca</th>
<th>P</th>
<th>Vitamin A</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(lb)</td>
<td>(lb)</td>
<td>(ME Mcal)</td>
<td>(g)</td>
<td>(g)</td>
<td>(1,000s I.U.)</td>
</tr>
<tr>
<td>Dairy requirement</td>
<td>19.6</td>
<td>1.6</td>
<td>17.3</td>
<td>23</td>
<td>18</td>
<td>25</td>
</tr>
<tr>
<td>#1 Barley, oats, or wheat straw</td>
<td>11.0</td>
<td>0.3</td>
<td>7.4</td>
<td>7</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Alfalfa hay</td>
<td>11.0</td>
<td>1.6</td>
<td>10.4</td>
<td>60</td>
<td>10</td>
<td>280</td>
</tr>
<tr>
<td>TOTAL</td>
<td>22.0</td>
<td>1.9</td>
<td>17.8</td>
<td>67</td>
<td>13</td>
<td>280</td>
</tr>
<tr>
<td>#2 Barley, oats, or wheat straw</td>
<td>12.0</td>
<td>0.4</td>
<td>8.0</td>
<td>8</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>Corn</td>
<td>5.0</td>
<td>0.4</td>
<td>7.5</td>
<td>1</td>
<td>5</td>
<td>1.8</td>
</tr>
<tr>
<td>Protein supplement (P 20%, Ca 1%, Ph 1%)</td>
<td>2.0</td>
<td>0.4</td>
<td>2.8</td>
<td>9</td>
<td>9</td>
<td>?</td>
</tr>
<tr>
<td>TOTAL</td>
<td>19.0</td>
<td>1.21</td>
<td>18.3</td>
<td>18</td>
<td>18</td>
<td>1.82</td>
</tr>
<tr>
<td>#3 Barley, oats, or wheat straw</td>
<td>12.0</td>
<td>0.4</td>
<td>7.4</td>
<td>7</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Corn silage</td>
<td>30.0</td>
<td>0.7</td>
<td>11.4</td>
<td>12</td>
<td>9</td>
<td>25</td>
</tr>
<tr>
<td>Protein supplement (P 20%, Ph 1%)</td>
<td>1.0</td>
<td>0.2</td>
<td>1.4</td>
<td>0</td>
<td>4</td>
<td>?</td>
</tr>
<tr>
<td>TOTAL</td>
<td>43.0</td>
<td>1.3</td>
<td>16.91</td>
<td>18</td>
<td>18</td>
<td>01</td>
</tr>
<tr>
<td>#4 Barley, oats, or wheat straw</td>
<td>12.0</td>
<td>0.4</td>
<td>7.4</td>
<td>7</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Barley</td>
<td>6.0</td>
<td>0.7</td>
<td>8.1</td>
<td>2</td>
<td>11</td>
<td>0</td>
</tr>
<tr>
<td>Protein supplement (P 20%, Ph 1%)</td>
<td>1.0</td>
<td>0.2</td>
<td>1.4</td>
<td>9</td>
<td>4</td>
<td>?</td>
</tr>
<tr>
<td>TOTAL</td>
<td>19.0</td>
<td>1.31</td>
<td>16.91</td>
<td>18</td>
<td>18</td>
<td>02</td>
</tr>
</tbody>
</table>

1Marginal unless additional consumption occurs.  
2Add mineral supplement and/or Vitamin A as needed.

Table 2. Rations for 1,100-pound cows nursing calves (average milking ability).

<table>
<thead>
<tr>
<th>Feed</th>
<th>Daily feed</th>
<th>Protein</th>
<th>Energy</th>
<th>Ca</th>
<th>P</th>
<th>Vitamin A</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(lb)</td>
<td>(lb)</td>
<td>(ME Mcal)</td>
<td>(g)</td>
<td>(g)</td>
<td>(1,000s I.U.)</td>
</tr>
<tr>
<td>Dairy requirement</td>
<td>21.6</td>
<td>2.0</td>
<td>19.9</td>
<td>27</td>
<td>22</td>
<td>38</td>
</tr>
<tr>
<td>#1 Barley, oats, or wheat straw</td>
<td>10.0</td>
<td>0.3</td>
<td>6.7</td>
<td>6</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Alfalfa hay</td>
<td>14.0</td>
<td>2.1</td>
<td>13.3</td>
<td>76</td>
<td>12</td>
<td>357</td>
</tr>
<tr>
<td>TOTAL</td>
<td>24.0</td>
<td>2.4</td>
<td>20.0</td>
<td>82</td>
<td>151</td>
<td>357</td>
</tr>
<tr>
<td>#2 Barley, oats, or wheat straw</td>
<td>12.0</td>
<td>0.4</td>
<td>7.4</td>
<td>7</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Barley</td>
<td>7.0</td>
<td>0.8</td>
<td>16.3</td>
<td>2</td>
<td>13</td>
<td>0</td>
</tr>
<tr>
<td>Protein supplement (P 20%, Ca 1%, Ph 1%)</td>
<td>2.0</td>
<td>0.8</td>
<td>2.8</td>
<td>9</td>
<td>9</td>
<td>?</td>
</tr>
<tr>
<td>TOTAL</td>
<td>21.0</td>
<td>2.0</td>
<td>26.5</td>
<td>182</td>
<td>25</td>
<td>02</td>
</tr>
<tr>
<td>#3 Barley, oats, or wheat straw</td>
<td>12.0</td>
<td>0.4</td>
<td>7.4</td>
<td>7</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Corn silage</td>
<td>40.0</td>
<td>0.9</td>
<td>15.6</td>
<td>16</td>
<td>12</td>
<td>33</td>
</tr>
<tr>
<td>Protein supplement (P 20%, Ph 1%)</td>
<td>2.0</td>
<td>0.8</td>
<td>2.8</td>
<td>9</td>
<td>9</td>
<td>?</td>
</tr>
<tr>
<td>TOTAL</td>
<td>54.0</td>
<td>2.1</td>
<td>25.8</td>
<td>32</td>
<td>24</td>
<td>33</td>
</tr>
</tbody>
</table>

1Add a phosphorus supplement or phosphorus in the salt.  
2Add a mineral supplement and/or Vitamin A as needed.
Knapweed Hay as a Nutritional Supplement for Beef Cows Fed Low-Quality Forage

Author(s): David W. Bohnert, Roger L. Sheley, Stephanie J. Falck, and Arthur A. Nyman
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Knapweed Hay as a Nutritional Supplement for Beef Cows Fed Low-Quality Forage

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Abstract

Advancing our ability to use invasive plants for producing commodities is central to the agricultural industry. Our objective was to evaluate Russian knapweed (Acroptilon repens [L.] DC.) as a winter feed supplement for ruminant livestock. In Experiment 1, we utilized three ruminally cannulated steers in a completely randomized design to compare the ruminal degradation characteristics of alfalfa and Russian knapweed. In the second experiment, Russian knapweed and alfalfa were compared as protein supplements using 48 midgestation, beef cows (530 ± 5 kg) offered ad libitum hard fescue (Festuca brevipila Tracey) straw in an 84-d study. Treatments included an unsupplemented control and alfalfa or Russian knapweed provided on an iso-nitrogenous basis. In Experiment 1, the rate and effective degradability of neutral detergent fiber was greater for alfalfa compared with Russian knapweed (P < 0.02). Ruminal lag time for NDF (period before measurable disappearance began) was greater for knapweed (P < 0.03). Soluble nitrogen, rate of N degradation, rumen degradable N, and effective degradability of N were all greater for alfalfa compared with Russian knapweed (P < 0.01). In Experiment 2, supplementation increased (P < 0.01) cow weight gain and BCS compared to the unsupplemented control with no difference between alfalfa and Russian knapweed (P = 0.47). There was no difference (P = 0.60) in the quantity of straw offered between the unsupplemented cows and supplemented groups, but alfalfa fed cows were offered approximately 11% more (P = 0.03) than Russian knapweed-fed cows. Total DM offered to cows was greater (P < 0.01) for supplemented compared with unsupplemented cows with no difference noted between alfalfa and Russian knapweed (P = 0.79). Russian knapweed is comparable to alfalfa as a protein supplement for beef cows consuming low-quality forage. Using Russian knapweed as a nutritional supplement can help solve two major production problems; managing an invasive weed, and providing a feedstuff that reduces an impediment in livestock production systems.

Key Words: digestible protein, invasive weeds, livestock feed, Russian knapweed

INTRODUCTION

Invasion of agricultural land by nonindigenous plants is a worldwide problem that costs producers millions of dollars each year (Radosевич et al. 2007). Substantial effort has focused on developing methods for controlling weeds and restoring invasive plant-infested rangeland. Identifying beneficial uses of invasive weeds has received some attention, especially for grazing (Landgraf et al. 1984) and for medical treatments (Efthimiadou et al. 2012). It is becoming increasingly clear that using invasive plants will be a necessary component of managing them. An ideal situation would be to use invasive weeds to fill a need while confronting an obstacle in the production of agricultural commodities.

As rangeland plants senesce during summer, livestock forage quality declines rapidly and remains low through fall and winter, creating an impediment in animal production in the Intermountain West (Adams and Short 1988). Annual winter feed costs in this region often total $100 to $200 per cow, representing a significant economic constraint for cow–calf producers. Winter feed costs normally include harvested forage and supplement necessary to sustain, or increase, cow body condition score (BCS) prior to calving. Feeding nutritious hay, especially alfalfa (Medicago sativa L.), and providing supplements to cows is often necessary to optimize conception rates and maintain a 365-d calving interval (Herd and Sprott 1986). Consequently, the ability to compete with other regions of the United States often depends on how effectively cow–calf producers in the Intermountain West can reduce winter feed costs while maintaining acceptable levels of livestock performance (Merrill et al. 2008).

Russian knapweed (Acroptilon repens [L.] DC.) is a rhizomatous perennial invasive plant native to Eurasia that is highly competitive and invades productive habitats (Duncan 2005). It is widely established throughout the western United States, with infestations estimated at 557 000 ha in 1998 (Whitson 1999). Also, this weed is rapidly expanding its range, with annual spread in the western United States estimated between 8% and 14% (Simmons 1985; Duncan 2005). Russian knapweed can be temporally controlled with herbicides, but rapidly reinvades once the herbicide has dissipated, especially if cool-season grasses cannot be established (Whitson 1999). Consequently, complex integrated pest management programs have been developed for restoring Russian knapweed-infested rangeland (Sheley et al. 2007). However, integrated management of Russian knapweed is very difficult and expensive (Whitson 1999). Russian knapweed can produce nearly 2 200 kg·ha⁻¹ and has been reported to have protein values similar to alfalfa (Whitson 1999). Because it is often harvestable, Russian knapweed may have potential as a supplemental feedstuff for...
began to appear in the winter feed supplement for ruminant livestock. Therefore, we compared the ruminal degradation characteristics of Russian knapweed vs. alfalfa and also compared their use as protein supplements for beef cows consuming low-quality forage. Although this paper specifically discusses Russian knapweed as a feedstuff for cattle, we want to provide a caution if producers are feeding cattle and horses together. It is important that Russian knapweed not be fed to horses because of the potential for a fatal neurological disorder, equine nigeropalidial encephalomalacia or “chewing disease” (Young et al. 1970).

MATERIALS AND METHODS

Russian knapweed used in these experiments was swathed at the initiation of flowering (June), allowed to dry to about 15% moisture content, raked into a windrow, and baled. All experimental procedures used in this study were approved by the Oregon State University Institutional Animal Care and Use Committee (ACUP# 3092).

Ruminal Degradation of Alfalfa and Russian Knapweed

Experimental Design. Three ruminally cannulated Angus × Hereford steers were used in a completely randomized design to evaluate the ruminal degradation characteristics of alfalfa and Russian knapweed. Steers had ad libitum access to 6.5% (CP; DM basis) meadow hay consisting of approximately 82% meadow foxtail (Alopecurus pratensis L.) with the majority of the remaining vegetation being rushes (Juncus spp.), sedges (Carex spp.), and blue wild rye (Elymus triticoides Buckley; Wenick et al. 2008). The steers were offered the low-quality meadow hay diet for at least 90 d prior to the start of this experiment.

Data Collection. Dacron bags (10 × 20 cm; Ankom Technology Corp, Fairport, NY) were labeled with a waterproof permanent marker, weighed, and 4 g (air equilibrated) of ground (1-mm; Wiley Mill; Model 4; Arthur H. Thomas, Philadelphia, PA) alfalfa or Russian knapweed was added and the bags sealed with an impulse sealer (TISH-200; TEW Electric Heating Equipment Co, Ltd, Taipei, Taiwan). Triplicate bags for each forage source were placed in a bucket containing warm water (39 °C) and introduced into the rumen within 5 min. Bags were placed in a weighted polyester mesh bag within the rumen of each steer (0, 2, 8, 12, 24, 48, and 96 h) in reverse order, allowing all bags to be removed simultaneously. Three blank Dacron bags were incubated for 96 h and used to correct for microbial and feed contamination. Upon removal, Dacron bags were rinsed under tap water until the effluent was clear, and dried at 55 °C for 24 h. The dried triplicates were allowed to air equilibrate for 24 h at room temperature, weighed for residual DM, composited by steer, time and forage type, and analyzed for neutral detergent fiber (NDF; Robertson and Van Soest 1981) using procedures modified for use in an Ankom 200 Fiber Analyzer (Ankom Technology Corp). The NDF residue was then weighed and analyzed for nitrogen (N; Leco CN-2000; Leco Corp, St. Joseph, MI). Effective degradability of DM, NDF, and N was determined as described by Hoffman et al. (1993) using a ruminal passage rate of 2% h−1 (Mass et al. 1999). Rumen degradable protein (RDP) was calculated as described by Ørskov and McDonald (1979) with rumen undegradable protein (RUP) calculated as 1 – RDP.

Statistical Analyses. Kinetic variables for NDF and N digestibility were estimated with SAS (SAS Institute, Inc, Cary NC) using the modified nonlinear regression procedure described by Fadel (2004). Data were analyzed using the MIXED procedure of SAS. The model included hay type as the independent variable. Steer was used as random variable. Means were separated using LSD protected by a significant F-test (P ≤ 0.05).

Cow Performance

Experimental Design. Forty-eight pregnant (approximately 120 d), 3-yr-old, primiparous, Angus × Hereford cows (530 ± 5 kg) were used in an 84-d performance study. Cows were stratified by body condition score (BCS; 1 = emaciated to 5 = obese; Herd and Sprott 1986) and weight and assigned randomly, within stratification, to one of three treatments. Treatments were an unsupplemented control, alfalfa supplementation, or Russian knapweed supplementation. Cows were then sorted by treatment and allotted randomly to 1 of 12 pens (4 cows · pen −1; 4 pens · treatment −1). A trace mineralized salt mix was available free choice (7.3% Ca, 7.2% P, 27.8% Na, 23.1% Cl, 1.5% K, 1.7% Mg, 0.5% S, 2.307 ppm Mn, 3.034 ppm Fe, 1.340 ppm Cu, 3.202 ppm Zn, 32 ppm Co, 78 ppm I, 85 ppm Se, 79 IU · kg −1 · vitamin E, and 397,000 IU · kg −1 · vitamin A). Cows were bunk-fed and provided ad libitum access to hard fescue (Festuca brevipila Tracey) seed straw (Table 1). The quantity of straw provided was noted daily but was not weighed back. Alfalfa and Russian knapweed were provided Monday, Wednesday, and Friday on an iso-nitrogenous basis (approximately 0.50 kg · head −1 · d −1 averaged over a 7-d period). The amounts (DM basis) provided on Mondays and Wednesdays was 4.54 kg · head −1 and 6.80 kg · head −1 for alfalfa and Russian knapweed, respectively. On Fridays, alfalfa fed cows received 6.80 kg · head −1 and Russian knapweed fed cows received 10.21 kg · head −1.

Data Collection. Samples (approximately 200 g) of hard fescue grass seed straw, alfalfa, and Russian knapweed were collected weekly, dried at 55 °C for 48 h, ground through a Wiley mill (1-
Table 2. Ruminal degradation parameters of alfalfa and Russian knapweed.

<table>
<thead>
<tr>
<th>Degradation parameters</th>
<th>Alfalfa</th>
<th>Knapweed</th>
<th>SEM¹</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neutral detergent fiber</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fractions, %</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>18.3</td>
<td>16.3</td>
<td>1.02</td>
<td>0.24</td>
</tr>
<tr>
<td>B</td>
<td>43.2</td>
<td>47.6</td>
<td>1.22</td>
<td>0.07</td>
</tr>
<tr>
<td>C</td>
<td>38.5</td>
<td>36.1</td>
<td>0.98</td>
<td>0.16</td>
</tr>
<tr>
<td>Kd, % h⁻¹, ³</td>
<td>7.3</td>
<td>4.6</td>
<td>0.47</td>
<td>0.02</td>
</tr>
<tr>
<td>Lag, h</td>
<td>1.2</td>
<td>3.1</td>
<td>0.76</td>
<td>0.03</td>
</tr>
<tr>
<td>Effective degradability, %⁴</td>
<td>52.0</td>
<td>49.4</td>
<td>0.50</td>
<td>0.01</td>
</tr>
<tr>
<td>Nitrogen</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fractions, %</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>51.5</td>
<td>40.2</td>
<td>1.12</td>
<td>0.002</td>
</tr>
<tr>
<td>B</td>
<td>45.9</td>
<td>54.6</td>
<td>1.3</td>
<td>0.009</td>
</tr>
<tr>
<td>C</td>
<td>2.6</td>
<td>5.1</td>
<td>0.20</td>
<td>0.009</td>
</tr>
<tr>
<td>Kd, % h⁻¹, ³</td>
<td>11.6</td>
<td>8.6</td>
<td>2.72</td>
<td>0.50</td>
</tr>
<tr>
<td>RDP, %⁵</td>
<td>95.9</td>
<td>91.7</td>
<td>0.07</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td>RUP, %⁵</td>
<td>4.1</td>
<td>8.3</td>
<td>0.07</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td>Effective degradability, %⁴</td>
<td>97.4</td>
<td>94.9</td>
<td>0.20</td>
<td>0.009</td>
</tr>
</tbody>
</table>

¹SEM indicates standard error of the mean.
²A indicates fraction of total pool disappearing at a rate too rapid to measure; B fraction of total pool disappearing at a measurable rate; C, fraction of total pool unavailable in the rumen.
³Fractional rate of degradation constant.
⁴Rumen degradable protein (% of total crude protein); calculated as described by Briskov and McDonald (1979).
⁵Rumen undegradable protein (% of total crude protein); calculated as 1 – RDP.

mm screen; Model 4; Arthur H. Thomas), and composited by 42-d period for determination of CP, NDF, and acid detergent fiber (ADF). Feed samples were analyzed for dry matter (DM; AOAC, 1996), ADF (Goering and Van Soest 1970), and NDF (Robertson and Van Soest 1981) using procedures modified for use in an Ankom 200 Fiber Analyzer (Ankom Technology Corp), N (Leco CN-200; Leco Corp), and organic matter (OM; AOAC 1990). Cow body weight and BCS was independently measured every 42 d following an overnight shrink (16 h) by three trained observers. The same technicians were used throughout the experiment.

Statistical Analysis. Cow performance data were analyzed as a randomized complete block design (Cochran and Cox 1957) using the MIXED procedure of SAS (SAS Institute, Inc). The model included the effects of block and treatment. Data were analyzed using pen (treatment) as the random variable. Orthogonal contrasts (unsupplemented vs. alfalfa and Russian knapweed; alfalfa vs. Russian knapweed) were used to partition specific treatment effects.

RESULTS AND DISCUSSION

A major impediment in livestock production exists in the Intermountain West because early senescing, cool-season plants lose nutritional quality early in the fall and remain low in quality throughout the fall and winter. Compounding this problem, hay production in the United States has decreased significantly in recent years. For example, the total number of hectares harvested for hay in the United States declined from 24.2 million in 2010 to 22.8 million in 2012 (Crop Production 2012 Summary; USDA National Agricultural Statistics Service 2012). As a result, total hay production decreased from 132 million metric tons to less than 108 million metric tons over the same time period. The decreased production has resulted in greater hay prices, which poses a serious economical challenge for cattle producers. The need for less expensive forages for supplementation is substantial. One such potential feedstuff might be Russian knapweed. This rhizomatous perennial invasive weed grows in dense monocultures on some of the most accessible and productive range and wild land in the West (Whitson 1999).

Hay Quality

The nutritional quality of the hard fescue seed straw, alfalfa, and Russian knapweed is provided in Table 1. Hard fescue hay was poor quality. Russian knapweed hay was of fair quality, and alfalfa was premium quality.

Ruminal Degradation of Alfalfa and Russian Knapweed

We noted no difference (P ≥ 0.07) between alfalfa and Russian knapweed for the A (soluble fraction; total pool disappearing at a rate too rapid to measure), B (degradable pool that disappeared at a measureable rate), and C (undegradeable pool) fractions of NDF (Table 2). However, the rate of NDF disappearance was almost 60% greater for alfalfa (P < 0.05) and the lag time (period until disappearance of NDF began) was almost 2 h less for alfalfa (P < 0.05), compared with Russian knapweed.

The soluble N pool was greater for alfalfa (P = 0.002), with Russian knapweed having greater degradable (B fraction) and undegradeable (C fraction) N pools (P < 0.010). However, the rate of ruminal N degradation was not influenced by forage source (P = 0.50). In addition, alfalfa had greater RDP and effective N degradability (P < 0.01) while Russian knapweed had more RUP (P < 0.001).

Many of the ruminal degradation parameters of NDF and N in alfalfa and Russian knapweed are similar. Also, the first consideration when balancing a diet for mature beef cattle consuming low-quality forages is normally to address a deficiency of RDP (NRC 2000). This is to maximize ruminal fermentation and production of microbial protein, the primary source of N flow to the small intestine of grazing ruminants (Hannah et al. 1991; Köster et al. 1996; Bohnert et al. 2002a).

Consequently, even though alfalfa had greater RDP and effective degradability of N compared with Russian knapweed, both forages would make excellent protein supplements for beef cattle. For example, in our study, the RDP content of alfalfa and Russian knapweed was 96% and 92%, respectively. The RDP of some commonly used protein supplements for beef cattle consuming low-quality forages are 66% (soybean meal), 48% (dried distillers grains), 57% (cottonseed meal), and 68% (canola meal) based in information from NRC (2000). Cool-season forages have shown to have increased RDP over warm-season forages and this might explain the high RDP of both knapweed and alfalfa (Bohnert et al. 2011). Therefore, Russian
knapweed is potentially an excellent source of RDP for beef cattle.

**Cow Performance**

Supplementation with protein has been shown to increase cow weight gain and BCS (Clanton and Zimmerman 1970; Bohnert et al. 2002b), forage intake and digestibility (Kartchner 1980, Köster et al. 1996), and can improve reproductive performance (Sasser et al. 1988; Wiley et al. 1991). The results of the current study agree with the studies of Clanton and Zimmerman (1970) and Bohnert et al. (2002b) that protein supplementation of low-quality forage (<6% CP; DM basis) increases cow BCS and weight gain compared with unsupplemented controls. Final body weight of the cows was improved with supplementation ($P<0.001$; Table 3) whereas no difference was noted between alfalfa- and Russian knapweed-supplemented cows ($P=0.47$). The alfalfa- and Russian knapweed-supplemented cows each gained approximately 40 kg during the feeding period compared with a loss of 19 kg by the control cows ($P<0.001$; Table 3). No difference was noted between alfalfa and Russian knapweed ($P=0.87$). Likewise, final BCS of cows fed alfalfa or Russian knapweed increased 0.3 and 0.2, respectively, whereas unsupplemented cows lost 1.1 BCS ($P<0.001$). Consequently, supplemented cows had the same BCS (5.6) at the end of the 84-d feeding period ($P=0.47$) which was greater than those not supplemented (4.2; $P<0.001$). Although this is the first study aimed at evaluating Russian knapweed as a feedstuff, the improved cow performance agrees with previous work that has demonstrated increased cow BCS and weight change with alfalfa supplementation of low-quality forages (Horney et al. 1996; Weder et al. 1999).

The quantity of hard fescue straw offered was not affected by supplementation ($P=0.60$; Table 3); however, the quantity offered to the cows fed alfalfa was 1.2 kg·d$^{-1}$ greater than that offered to cows fed Russian knapweed ($P=0.03$). This was probably the result of the greater quantity of supplement DM (1.2 kg·d$^{-1}$) provided by Russian knapweed, to account for the lower CP% compared with alfalfa, which substituted for the hard fescue straw. This was verified when the total DM offered was compared. There was no difference between alfalfa and Russian knapweed ($P=0.79$; 13.2 kg·d$^{-1}$ for each); but supplemented cows had more total DM offered than the unsupplemented control cows ($P<0.001$). Horney et al. (1996) reported comparable results when comparing alfalfa and vegetative tall fescue hay as protein supplements to cattle consuming 4% CP tall fescue straw. They noted no supplementation effect on straw intake but reported an increase in total DM intake with supplementation. Also, they reported that fescue straw intake by steers was greater with alfalfa supplementation compared with those steers receiving tall fescue hay. The tall fescue hay had a lower CP concentration than the alfalfa (12% vs. 19%), which resulted in a substitution effect similar to that observed in the current study for Russian knapweed. It is worth noting that cows readily consumed Russian knapweed and seemed to find it highly palatable, especially compared to the basal diet (hard fescue grass seed straw). This contrasts with reports that nonharvested Russian knapweed will not be consumed by livestock because of its bitter flavor (Whitson 1999).

**MANAGEMENT IMPLICATIONS**

Invasive plant management will necessarily require advancing our ability to use invaders in creative ways that support the production of agricultural commodities. In addition to targeted grazing, some invasive plants might be useful as a winter feedstuff to supplement livestock fed low-quality hay. Russian knapweed hay can be safely used as a nutritional supplement for mature beef cattle consuming low-quality forages, with results similar to supplementing alfalfa when provided on an iso-nitrogenous basis. Using Russian knapweed as a nutritional supplement solves two very serious production problems by lessening the negative impacts of an invasive weed and helping to remove an impediment in livestock production systems.

**LITERATURE CITED**


Improving Hay Yield Through Distribution Uniformity

Seth Urbanowitz
Extension Educator
University of Nevada Cooperative Extension

Liebig's Law

Source: Potash and Phosphate Institute
Irrigated Hay Production

- Feed and forage costs typically constitute between 50 – 65% of the operating expenses in a cow-calf operation

- Irrigation costs typically represent the largest operating costs in hay production

- System performance influences yield, stand persistence, nutrient loss water use efficiency and profit

Making the most of every drop of water – the low hanging fruit

- Even and effective application rate
  – Flow rate, irrigation scheduling, distribution uniformity and soil moisture monitoring
Distribution Uniformity (DU)

- Ability to apply the same depth of water to all areas
  - Dependent on system design and maintenance

- Evaluating DU is often the easiest and cheapest first step in improving irrigation performance

- DU is approximately equal to potential irrigation efficiency

Irrigation Uniformity

- An 1” application should be 1” everywhere in the irrigated field

- A DU of 90% is optimal

- A 30% deviation on a field in a 45” application year will have areas receiving as little as 31.5” and as great as 58.5”
  - Over applied area will likely be over applied each application
  - Under applied areas will likely be under applied each application

- Repair all visible system leaks and problems first.
Non-uniform -- Inefficient

Over irrigation

Uniform -- Efficient

Adequate irrigation

Non-uniformity
(100% uniformity not practical)
What it looks like in the field.

- Uneven plant growth
- Visible N loss (light green or yellow streaks)
- Large patches of P or S deficiencies
- Uneven stand persistence
- Yield variance
**Good DU:**
- Better yields
- Improved crop quality (more uniform)
- Less lost fertilizers
- Chemigate or fertigate evenly / effectively

**Poor DU:**
- Waterlogging / insufficient soil moisture
- Salinization
- Loss of N / reduced nutrient availability
- Root / crown disease, stand loss
Catch Can Evaluation

• Collect enough containers to place every 10 feet the length of the system
  – Uniform (size and shape) and small

• Spread the containers every ten feet from the center point to the outside edge of the application area

• Run the machine over the containers

• Measure in a standardized container measuring ml or convert inches to ml and record the water volume caught by each container
Catch Can Evaluation - Methods

- Choose a suitable location
  - Far enough ahead
  - Ignore first and possibly second span
  - Avoid wheel tracks
  - Excessively wet areas (directly under tower components)
- Early morning to reduce chance of excessive wind
- Early or late in season to reduce evaporation
  - A drop of mineral oil will reduce evaporation

\[
DU = \frac{\text{AvgLowQuarter}}{\text{Avg}}
\]
Evaluating Irrigation System Uniformity – Lyndon Kelley

Evaluation Goals of Irrigation System Uniformity

Irrigation System Uniformity is the concept that all areas within an irrigated field receive the same amount of water. In simple terms, if the producer's goal is to apply one inch of irrigation water, the system will apply one inch of irrigation water in each area. Areas of the field that receive under or over the goal will receive under or over the goal for all applications, multiplying the error.

Areas that are under or over the average by 40 percent and will receive 0.6 inches (if under) or 1.4 inches (if over) of irrigation water each time the producer intends to apply one inch of water. By the end of the season, areas requiring eight inches of irrigation water will receive 4.8 inches (if under) or 11.2 inches (if over) of irrigation water.

Standards and Methods for Evaluation of Irrigation System Uniformity

Two commonly accepted standards or methods are available as guidelines for performing evaluations of Irrigation System Uniformity:

- ASAE Standards (436.1) — Available at: http://msue.anr.msu.edu/uploads/236/43405/ASAE_4361.pdf

Evaluation of Data

To properly evaluate data, enter data into the spreadsheet available at: http://msue.anr.msu.edu/uploads/236/43405/lyndon/Uniformity_Spreadsheet_6.11.xls or utilize the standards listed above.

Cleaning the Data:

1. Catch can data from the first 20 percent of the system lengths closest to the center pivot point should be ignored. The “average catch can (ac)” data replaces the first catch can data points. The actual “distance from center point” is entered for the first data point (remaining after deletion of other points closer to the center pivot point). Coverage near the center point of the system represents such a small amount of the total system recharge deviation from the average, that this yields little effort on the machine’s overall uniformity.

2. Catch can data from the outer edge of the wetted area is deleted from the data set when the volume is less than 70 percent of the average. Removing the data that tails off at the outer edge of the system designates the effective irrigated area, and avoids dilation of the data points representing the actual targeted irrigated area.

3. Up to three percent of the data points should be removed if it is an extreme deviation from the average. This is done after the outer edge data has been removed to define the effective irrigated area and up to 20 percent of the inner area data has been removed. A few catch cans could collect extreme data that is not representative of the system area, like water running from a trust rod or brace rod directly to the cup.

System Uniformity Coefficient

- System Uniformity Coefficient is a numeric judgment of the overall performance of an irrigation system’s ability to evenly apply water to the field.
- A System Uniformity Coefficient of 85 percent or greater, is considered not to need major adjustments to the sprinkler package, although individual sections of the irrigator may benefit from corrections.
### Rate of Application Calculator

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<th>Volume in L/ha</th>
<th>Average Application (L/ha)</th>
<th>Deviation from desired application (L/ha)</th>
<th>Deviation from desired application (%)</th>
<th>Deviation from desired application relative to desired application (%)</th>
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### Catch Can Volume

- **Distance from start (m)**: Various distances ranging from 30 to 180 m.
- **Catch Can Volume (ml)**: Data points ranging from 0 to 300 ml.
- **Graph**: A line graph showing the relationship between distance and catch can volume.
System Uniformity

- Numeric judgment of the overall performance of an irrigation system's ability to evenly apply water to the field

- A System Uniformity Coefficient of 85 percent or greater, is considered not to need major adjustments to the sprinkler package, although individual sections of the irrigator may benefit from corrections (green or black in the spreadsheet)

- System Uniformity Coefficient of 80 to 85 percent may need further analysis of the sprinkler package, and individual sections of the irrigator would benefit from corrections (yellow in the spreadsheet)

- System Uniformity Coefficient of less than 80 percent requires an adjustment to the sprinkler package design and correction of individual sections of the sprinkler package (red in the spreadsheet)

http://www.youtube.com/watch?v=dSTQE-VzMkM
## Center Pivot DU

**Common Problems**
- Poorly controlled sprinkler pressures
- Pressure regulator differences
- Nozzle plugging
- Nozzle wear
- Wind
- Travel speed variation
- Spacing / improper installation of sprinkler package
- Engine performance
- Leaks

**Common Solutions**
- Run at pressure and flow rate that the sprinkler package was designed for
- Replace nozzles every 3-5 years (inexpensive)
- Fix leaks
- Fix or unplug heads

## Practical Evaluations of Wheel Lines

**Common Problems**
- Worn / plugged nozzles
- Pressures that are too high / low
- System leaks
- Sprinkler axis of rotation not vertical

**Common Solutions**
- Replacement of gaskets and seals every 5 years
- Fix leaks
- Replace nozzles every 3-5 years / on scheduled basis
Simple Evaluations – Pitot Tube / Pressure Gauge

- Optimum operating pressure has a significant impact on irrigation uniformity
  - Straight bore nozzle should be 45 – 60 psi
  - >79 water application will be near sprinkler
  - <40 concentrated water application

- Pressure variation along laterals should be less than 20%

Simple Evaluations – Drill Bit (standard straight bore nozzle)

- Nozzle wear may not be visible
- Use a drill bit of the same size as the nozzle diameter
- Insert shank end of drill bit into nozzle while operating
  - New / no wear will yield a watertight fit
  - Slight wear results in a fine spray extending less than 10 ft.
  - Moderate wear results in large spray 10 – 15 ft.
  - Extreme wear results in a coarse spray greater than 15 ft.
Low Hanging Fruit

• Flow rate, scheduling to meet ET based on allowable soil moisture depletion, soil moisture monitors and distribution uniformity

• Simple evaluations can lead to yield improvements and cost savings
  – Among the easiest, cheapest and most effective is improving distribution uniformity

Thank you for your time

Questions?
Animal Disease Traceability
For Cattle

Traceability for Livestock Moved Interstate

This rule, effective March 11, 2013 establishes minimum national official identification and documentation requirements for the traceability of livestock. Animals moved interstate, unless otherwise exempt, must be officially identified and accompanied by an interstate certificate of veterinary inspection.

Always check with the receiving state for their import requirements when exporting livestock out of Nevada.

Official ID Requirements

Official identification is required for the following cattle:
- All sexually intact beef cattle 18 months of age or over
- All dairy cattle of any age
- All cattle used for rodeo, recreation, show or exhibition

Acceptable forms of identification:
- Official eartags: metal or 840-compliant (RFID or visual)
- Official USDA backtags for cattle moving direct to slaughter
- Registered breed tattoos when accompanied by certificate

Exempted from official identification requirements when:
- Moved under a commuter herd agreement
- Moved interstate directly to an approved tagging site and official identified before commingling with cattle from other premises. Backtags may be used while unloading to ensure the identity of the animal is maintained until permanently tagged and correlated with the owner or shipper of the livestock.
- Moved directly to a recognized slaughtering establishment or directly to no more than one approved livestock facility and then directly to a recognized slaughtering establishment, where they are harvested within 3 days of arrival; and
- Moved interstate with a USDA-approved backtag; or a USDA-approved backtag is applied to the cattle at the recognized slaughtering establishment or approved livestock facility.

Feeder/Stockeage cattle:
The official identification of beef cattle under 18 months of age (feeder / stocker cattle) will be established through a separate rule making at a later date.

Documentation Requirements

Cattle moved interstate must be accompanied by an ICVI unless:
- Moved directly to a recognized slaughtering establishment, or directly to an approved livestock facility and then directly to a recognized slaughtering establishment, and are accompanied by an owner-shipper statement
- Moved directly to an approved livestock facility with an owner-shipper statement and do not move interstate from the facility unless accompanied by an ICVI
- Moved as a commuter herd
- Moved from farm of origin for vet exam or treatment and back.

The official ID number must be recorded on the ICVI unless:
- Moved from an approved livestock facility directly to a recognized slaughtering establishment
- The cattle are sexually intact under 18 months of age, or steers or spayed heifers. This exception does not apply to female sexually intact dairy cattle of any age or to cattle used for rodeo, exhibition, or recreational purposes.
- Moved on a brand inspection between states that have entered into an agreement.
Cattle Health Issues

2015 Cattlemen’s Update

Michael Greenlee, DVM
State Veterinarian

Topics
- Antimicrobial Resistance
- Animal Disease Traceability
- Trichomoniasis
- Bovine Tuberculosis
Introduction to Antimicrobial Resistance (AMR)

- Global issue affecting both public and animal health
- Bacteria are developing resistance to important antibiotics
- Some believe that the use of antimicrobial drugs in agriculture is one of the primary drivers of AMR
- Understanding of the factors contributing to AMR is incomplete
- The issue is seen by some as becoming increasing urgent

Current Actions

- FDA has finalized 2 guidance documents
- Seek voluntary cooperation of the pharmaceutical industry
- Remove the label claims for growth promotion on antimicrobials deemed medically important
- Therapeutic uses of antimicrobial drugs in feed or water under the oversight of a veterinarian
- A veterinary feed directive is required
- No off label use in feed or water allowed
Impact on the Cattle Industry

- Use of antibiotics in feed will be restricted to therapeutic uses under a veterinary feed directive
- Does not affect injectable antibiotics that are currently available

What Can Be Done

- Limit antibiotic use by
  - Use enhanced biosecurity practices to limit disease introduction and/or spread
  - Optimize nutrition
  - Vaccinations
  - Judicious use of antimicrobials
    - Use the correct drug for the condition to be treated
    - Proper dosage and route of administration
    - Follow required withdrawal time
Animal Disease Traceability (ADT)

- Rule affecting cattle traceability put in effect on March 11, 2013
- Only affects interstate movement
- Applies to
  - Sexually intact beef cattle 18 months of age and over
  - Dairy breed cattle of any age
  - Cattle used in rodeos, recreation, shows or exhibitions.

ADT (continued)

- Stocker cattle may be addressed in the future but no current plans to update
- Acceptable ID
  - Official ear tags
  - Official USDA backtags for cattle moving direct to slaughter
  - Registered breed tattoos when accompanied by certificate
- There are some exemptions
Trichomoniasis

• Current Rules
  • Tests required on all bulls 12 months of age or older before sale or lease for reproductive purposes
  • If not tested before consignment to livestock markets, bulls must be sold for slaughter or direct movement to qualified feedlot
  • Tested bulls must bear an official tag.
    • Yellow for Oct. 1, 2014 to Sep. 30, 2015
    • White, Orange, Blue in next 3 years.

Trichomoniasis (continued)

• Current Rules
  • Tests required if test eligible bull is found estray or stray and is found commingling with cow belonging to another person.
  • Costs to be paid by the owner.
• My Bull Is Positive – What now?
  • Hold order issued
  • Herd history gathered
  • All bulls must be tested after sexual rest
  • Positive bulls must be sold to slaughter
  • Hold order released
Bovine Tuberculosis

- Eradication not yet completed
- Factors
  - Wildlife reservoir
  - Exposure to imported feeder cattle
  - Diagnostic test sensitivity
- Populations at higher risk
  - NE part of Michigan lower peninsula
  - Large dry lot dairies
FY 2014 TB Affected Herds and Slaughter Cases¹

Test-and-Remove (3)  Slaughter – Fed (4)  Beef  Dairy
Depopulated (4)  Slaughter – Adult (3)  Mixed  Cervid

1 new TB affected herd, 8 herds carried over from previous years

TB Status as of October 2011:
- TB Free
- Modified Accredited Advance
- Accredited

¹As of 03/01/2014

Granuloma Lesion Submission in “Top 40” Adult Cattle Slaughter Plants, FY 2013

★ ≥ 1 lesion/2,000 killed
Questions?

Thank you

Contact Information
(775) 353-3755
michael.greenlee@agri.nv.gov
The Agricultural Act of 2014 (the Act), also known as the 2014 Farm Bill, was signed by President Obama on Feb. 7, 2014. The Act repeals certain programs, continues some programs with modifications, and authorizes several new programs administered by the Farm Service Agency (FSA). Most of these programs are authorized and funded through 2018.

OVERVIEW

The Direct and Counter-Cyclical Program and the Average Crop Revenue Election program are repealed and two new programs are established: Price Loss Coverage (PLC) and Agricultural Risk Coverage (ARC). Upland cotton is the only covered commodity that is no longer eligible to participate in these programs, but rather, becomes eligible for the new Stacked Income Protection Plan (STAX) offered by the Risk Management Agency (RMA). Until STAX becomes available, upland cotton is eligible for transition payments made by FSA for 2014 and 2015 crops.

The Marketing Assistance Loan program and sugar loans continue mostly unchanged. The Milk Income Loss Contract Program continues through Sept. 1, 2014, unless it is replaced by the Dairy Margin Protection Program prior to that date.

The Conservation Reserve Program (CRP), USDA’s largest conservation program, continues through 2018 with an annually decreasing enrolled acreage cap. The contract portion of the Grassland Reserve Program enrollment has been merged with CRP. The Biomass Crop Assistance Program is extended and funded at $25 million per year.

The Noninsured Crop Disaster Assistance Program has been expanded to include protection at higher coverage levels, similar to buy-up provisions offered under the federal crop insurance program. The Livestock Forage Disaster Program, the Livestock Indemnity Program, the Emergency Assistance for Livestock, Honeybees, and Farm-Raised Fish, and the Tree Assistance Program are continued, with modifications starting in October 2011, and succeeding years. The Supplemental Revenue Assistance Program (SURE), which covered losses through Sept. 30, 2011, is not reauthorized.

The credit title of the Act continues and improves the direct and guaranteed loan programs that provide thousands of America’s farmers and ranchers the opportunity to obtain the credit they need to begin and continue their operations. The changes in the Act provide FSA greater flexibility in determining eligibility including expanded definitions of eligible entities, years of experience for farm ownership loans, and allowing youth loan applicants from urban areas to access loans. FSA’s popular microloan and down payment loan programs, important to furthering the Administration’s objective of assisting beginning farmers, have been improved by raising loan limits and emphasizing beginning and socially disadvantaged producers. The Act also provides greater enhancements for lenders to participate in the guaranteed conservation loan program and eliminates term limits for the guaranteed operating program, allowing farmers and ranchers the opportunity for continued credit in cases where financial setbacks may have prevented them from obtaining commercial credit.

ADJUSTED GROSS INCOME

Adjusted gross income (AGI) provisions have been simplified and modified. Producers whose average AGI exceeds $900,000 are not eligible to receive payments or benefits from most programs administered by FSA and the Natural Resources Conservation Service (NRCS). Previous AGI provisions distinguished between farm and non-farm AGI.

PAYMENT LIMITATIONS

The total amount of payments received, directly and indirectly, by a person or legal entity (except joint ventures or general partnerships) for Price Loss Coverage, Agricultural Risk Coverage, marketing loan gains, and loan deficiency payments (other than for peanuts), may not exceed $125,000 per crop year. A person or legal entity that receives payments for peanuts has a separate $125,000 payment limitation.
FACT SHEET
What’s in the 2014 Farm Bill for FSA Customers
March 2014

Cotton transition payments are limited to $40,000 per year. For the livestock disaster programs, a total $125,000 annual limitation applies for payments under the Livestock Indemnity Program, the Livestock Forage Program, and the Emergency Assistance for Livestock, Honeybees and Farm-Raised Fish program. A separate $125,000 annual limitation applies to payments under the Tree Assistance Program.

ACTIVELY ENGAGED IN FARMING

Producers who participate in the Price Loss Coverage or Agricultural Risk Coverage programs are required to provide significant contributions to the farming operation to be considered as “actively engaged in farming.” The Act requires the Secretary to promulgate regulations to define “significant contribution of active personal management” as part of this determination.

COMPLIANCE

The Act continues to require an acreage report for all cropland on the farm. The acreage report is required to be eligible for Price Loss Coverage; Agriculture Risk Coverage; transition assistance for producers of upland cotton; marketing assistance loans; and loan deficiency payments.

Compliance with Highly Erodible Land Conservation (HELC) and Wetland Conservation (WC) provisions continues to be required for participation in most FSA and NRCS programs. These provisions place restrictions on the planting of an agricultural commodity on highly erodible land or wetlands. Further, they prohibit the conversion of a wetland to make possible the production of an agricultural commodity.

The Act adds premium assistance for crop insurance as a benefit subject to compliance with HELC and WC provisions. New provisions are created for determinations, administration, and penalties relating to HELC and WC provisions that are unique to crop insurance. FSA will make HELC/WC eligibility determinations for crop insurance participants based on NRCS technical determinations of HELC/WC compliance.

PRICE LOSS COVERAGE (PLC) AND AGRICULTURAL RISK COVERAGE (ARC)

Base Reallocation and Yield Updates: Owners of farms that participate in PLC or ARC programs for the 2014-2018 crops have a one-time opportunity to: (1) maintain the farm’s 2013 bases through 2018; or (2) reallocate base acres (excluding cotton bases). Covered commodities include wheat, oats, barley, corn, grain sorghum, rice, soybeans, sunflower seed, rapeseed, canola, safflower, flaxseed, mustard seed, crambe and sesame seed, dry peas, lentils, small chickpeas, large chickpeas and peanuts. Upland cotton is no longer considered a covered commodity, but the upland cotton base acres on the farm are renamed “generic” base acres. Producers may receive payments on generic base acres if those acres are planted to a covered commodity.

A producer also has the opportunity to update the program payment yield for each covered commodity based on 90 percent of the farm’s 2008-2012 average yield per planted acre, excluding any year when no acreage was planted to the covered commodity. Program payment yields are used to determine payment amounts for the Price Loss Coverage program.

Price Loss Coverage: Payments are issued when the effective price of a covered commodity is less than the respective reference price for that commodity established in the statute. The payment is equal to 85 percent of the base acres of the covered commodity times the difference between the reference price and the effective price times the program payment yield for the covered commodity.

County ARC: Payments are issued when the actual county crop revenue of a covered commodity is less than the ARC county guarantee for the covered commodity and are based on county data, not farm data. The ARC county guarantee equals 86 percent of the previous five-year average national farm price, excluding the years with the highest and lowest price (the ARC guarantee price), times the five-year average county yield, excluding the years with the highest and lowest yield (the ARC county guarantee yield). Both the guarantee and actual revenue are computed using base acres, not planted acres. The payment is equal to 85 percent of the base acres of the covered commodity times the difference between
the county guarantee and the actual county crop revenue for the covered commodity. Payments may not exceed 10 percent of the benchmark county revenue (the ARC guarantee price times the ARC county guarantee yield).

Individual ARC: Payments are issued when the actual individual crop revenues, summed across all covered commodities on the farm, are less than ARC individual guarantees summed across those covered commodities on the farm. The farm for individual ARC purposes is the sum of the producer’s interest in all ARC farms in the state. The farm’s ARC individual guarantee equals 86 percent of the farm’s individual benchmark guarantee, which is defined as the ARC guarantee price times the five-year average individual yield, excluding the years with the highest and lowest yields, and summing across all crops on the farm. The actual revenue is computed in a similar fashion, with both the guarantee and actual revenue computed using planted acreage on the farm. The individual ARC payment equals: 65 percent of the sum of the base acres of all covered commodities on the farm, times the difference between the individual guarantee revenue and the actual individual crop revenue across all covered commodities planted on the farm. Payments may not exceed 10 percent of the individual benchmark revenue.

Election Required: All of the producers on a farm must make a one-time, unanimous election of: (1) PLC/County ARC on a covered-commodity-by-covered-commodity basis; or (2) Individual ARC for all covered commodities on the farm. If the producers on the farm elect PLC/County ARC, the producers must also make a one-time election to select which base acres on the farm are enrolled in PLC and which base acres are enrolled in County ARC. Alternatively, if individual ARC is selected, then every covered commodity on the farm must participate in individual ARC. The election between ARC and PLC is made in 2014 and is in effect for the 2014 – 2018 crop years. If an election is not made in 2014, the farm may not participate in either PLC or ARC for the 2014 crop year and the producers on the farm are deemed to have elected PLC for subsequent crop years, but must still enroll their farm to receive coverage. If the sum of the base acres on a farm is 10 acres or less, the producer on that farm may not receive PLC or ARC payments, unless the producer is a socially disadvantaged farmer or rancher or is a limited resource farmer or rancher. Payments for PLC and ARC are issued after the end of the respective crop year, but not before Oct. 1.

In 2015, producers in PLC have an additional option. Producers enrolling in PLC, and who also participate in the federal crop insurance program, may, beginning with the 2015 crop, make the annual choice whether to purchase additional crop insurance coverage called the Supplemental Coverage Option (SCO). SCO provides the producer the option of covering a portion of his or her crop insurance deductible and is based on expected county yields or revenue. The cost of SCO is subsidized and indemnities are determined by the yield or revenue loss for the county or area.

Crops for which the producer has elected to receive ARC are not eligible for SCO benefits.

Producers who enroll their 2015 crop of winter wheat in SCO may elect to withdraw from SCO prior to their acreage reporting date without any penalty. This allows producers additional time to make an informed decision related to whether to enroll in the Agricultural Risk Coverage program (ARC) or the Price Loss Coverage (PLC) program. If they choose ARC, they will not be charged a crop insurance premium so long as they withdraw from SCO prior to their acreage reporting date.

COTTON TRANSITION PAYMENTS

For the 2014 crop year, transition payments are provided to cotton producers on farms that had cotton base acres in 2013. For the 2015 crop year, transition payments will only be offered in counties where STAX is unavailable.

MARKETING ASSISTANCE LOANS (MALS) AND SUGAR LOANS

The Act extends the authority for sugar loans for the 2014 – 2018 crop years and nonrecourse marketing assistance loans (MALs) and loan deficiency payment (LDPs) for the 2014 – 2018 crops of wheat, corn, grain sorghum, barley, oats, upland cotton, extra-long staple cotton, long grain rice, medium grain rice, soybeans, other oilseeds (including sunflower seed, rapeseed, canola, safflower, flaxseed, mustard seed, crambe and sesame seed), dry peas, lentils, small chickpeas, large chickpeas, graded and nongraded wool, mohair, honey, unshorn pelts and peanuts. Provisions are mostly unchanged from the 2008 Farm Bill.
Bill, except marketing loan gains and loan deficiency payments are subject to payment limitations.

DAIRY PROGRAMS

The Act extends the Milk Income Loss Contract Program (MILC) from Oct. 1, 2013, through the earlier of the date on which the Secretary certifies that the Dairy Margin Protection Program is operational or Sept. 1, 2014. Dairy producers who were enrolled in 2013 do not need to re-apply. MILC payments are issued when the Boston Class I milk price falls below $16.94 per hundredweight (cwt), as adjusted by a dairy feed ration formula.

The Dairy Margin Protection Program replaces MILC and will be effective not later than Sept. 1, 2014, through Dec. 31, 2018. The margin protection program offers dairy producers: (1) catastrophic coverage, at no cost to the producer, other than an annual $100 administrative fee; and (2) various levels of buy-up coverage. Catastrophic coverage provides payments to participating producers when the national dairy production margin is less than $4 per hundredweight (cwt). The national dairy production margin is the difference between the all-milk price and average feed costs. Producers may purchase buy-up coverage that provides payments when margins are between $4 and $8 per cwt. To participate in buy-up coverage, a producer must pay a premium that varies with the level of protection the producer elects.

In addition, the Act creates the Dairy Product Donation Program. This program is triggered in times of low operating margins for dairy producers, and requires USDA to purchase dairy products for donation to food banks and other feeding programs.

BIOMASS CROP ASSISTANCE PROGRAM (BCAP)

BCAP provides incentives to farmers, ranchers and forest landowners to establish, cultivate and harvest eligible biomass for heat, power, bio-based products, research and advanced biofuels. Crop producers and bioenergy facilities can team together to submit proposals to USDA for selection as a BCAP project area. BCAP has been extended through 2018 and is funded at $25 million per fiscal year.

CONSERVATION RESERVE PROGRAM (CRP)

The Act continues CRP with modifications. The acreage cap is gradually lowered to 24 million acres for fiscal years 2017 and 2018. The requirement to reduce rental payments under emergency haying and grazing is eliminated. Rental payment reductions of not less than 25 percent are required for managed haying and grazing.

Producers also are given the opportunity for an “early-out” from their CRP contracts, but only in fiscal year 2015. The rental payment portion of the Grassland Reserve Program enrollment has been incorporated into the CRP.

The Transition Incentive Program (TIP) continues to allow for the transition of CRP land to a beginning or socially disadvantaged farmer or rancher so land can be returned to sustainable grazing or crop production. TIP now includes eligibility for military veterans (i.e., veteran farmers).

NAP has been expanded to include buy-up protection, similar to buy-up provisions offered under the federal crop insurance program. Producers may elect coverage for each individual crop between 50 and 65 percent, in 5 percent increments, at 100 percent of the average market price. Producers also pay a fixed premium equal to 5.25 percent of the liability. The waiver of service fees has been expanded from just limited resource farmers also to include beginning farmers and socially disadvantaged farmers. The premiums for buy-up coverage are reduced by 50 percent for those same farmers. Grazing land is not eligible for buy-up coverage. NAP is also made available to producers that suffered a loss to a 2012 annual fruit crop grown on a bush or tree in a county declared a disaster by the Secretary due to a freeze or frost.
FACT SHEET
What’s in the 2014 Farm Bill for FSA Customers

March 2014

a disaster by the Secretary due to a freeze or frost.

**RTCP FOR GEOGRAPHICALLY DISADVANTAGED FARMERS AND RANCHERS**

The Reimbursement Transportation Cost Payment Program (RTCP) is re-authorized to provide assistance to geographically disadvantaged farmers and ranchers for a portion of the transportation cost of certain agricultural commodities or inputs.

**EMERGENCY LOANS**

A Secretarial disaster designation or a Presidential declaration provides producers with emergency loans to help cover the recovery costs for physical and production losses. Farm bill revisions expand the type of entities eligible for loans.

**FARM OPERATING LOANS AND MICROLOANS**

Farm Operating Direct and Guaranteed Loan Programs provide low-interest financing for producers to purchase farm and ranch operating inputs. The FSA is authorized to implement the program through the Consolidated Farm and Rural Development Act, also known as the Con Act. The 2014 Farm Bill revisions expand the types of entities eligible, provide favorable interest rates for joint financing arrangements, increase loan limits for microloans, make youth loans available in urban areas, and eliminate term limits for guaranteed operating loans.

**FARM OWNERSHIP LOANS**

Farm Ownership Direct and Guaranteed Loan Programs provide low-interest financing for producers to purchase farms and ranches and other real estate related needs. The FSA is authorized to implement the program through the Consolidated Farm and Rural Development Act, often referred to as the Con Act. The 2014 Farm Bill revisions expand the types of entities eligible, provide favorable interest rates for joint financing arrangements, provide a larger percent guarantee on guaranteed conservation loans, increase the loan limits for the down payment program, and authorize a relending program to assist Native American producers purchase fractionated interests of land.

**DISASTER PROGRAMS**

The following four disaster programs authorized by the 2008 Farm Bill have been extended indefinitely (beyond the horizon of the Act). The programs are made retroactive to Oct. 1, 2011. Producers are no longer required to purchase crop insurance or NAP coverage to be eligible for these programs (the risk management purchase requirement) as mandated by the 2008 Farm Bill.

**Livestock Forage Disaster Program (LFP):**

LFP provides compensation to eligible livestock producers that have suffered grazing losses due to drought or fire on land that is native or improved pastureland with permanent vegetative cover or that is planted specifically for grazing. LFP payments for drought are equal to 60 percent of the monthly feed cost for up to five months, depending upon the severity of the drought. LFP payments for fire on federally managed rangeland are equal to 50 percent of the monthly feed cost for the number of days the producer is prohibited from grazing the managed rangeland, not to exceed 180 calendar days.

**Livestock Indemnity Program (LIP):**

LIP provides benefits to livestock producers for livestock deaths in excess of normal mortality caused by adverse weather or by attacks by animals reintroduced into the wild by the federal government. LIP payments are equal to 75 percent of the average fair market value of the livestock.

**Emergency Assistance for Livestock, Honeybees, and Farm-Raised Fish (ELAP):**

ELAP provides emergency assistance to eligible producers of livestock, honeybees and farm-raised fish for losses due to disease (including cattle tick fever), adverse weather, or other conditions, such as blizzards and wildfires, not covered by LFP and LIP. Total payments are capped at $20 million in a fiscal year.

**Tree Assistance Program (TAP):**

TAP provides financial assistance to qualifying orchardists and nursery tree growers to replant or rehabilitate eligible trees, bushes, and vines damaged by natural disasters.
FACT SHEET
What’s in the 2014 Farm Bill for FSA Customers

March 2014

FEEDSTOCK FLEXIBILITY PROGRAM (FFP)

FFP is continued through fiscal year 2018. Congress authorized the FFP in the 2008 Farm Bill, allowing for the purchase of sugar to be sold for the production of bioenergy in order to avoid forfeitures of sugar loan collateral under the Sugar Program.

NON-FARM BILL PROGRAMS

The following programs continue under laws other than the 2014 Farm Bill.

Emergency Conservation Program (ECP)
ECP is authorized by Title IV of the Agricultural Credit Act of 1978, Section 401 (P.L. 95-334) (16 U.S.C. 2201). ECP provides emergency cost-share assistance to farmers and ranchers to help rehabilitate farmland and ranchland damaged by natural disasters and to carry out water conservation measures during periods of severe drought. Cost-share assistance may be offered only for emergency conservation practices to restore land to a condition similar to that existing prior to the natural disaster.

Emergency Forest Restoration Program (EFRP)
EFRP is authorized by Title IV of the Agricultural Credit Act of 1978, Section 407 (16 U.S.C. 2206). EFRP was established to provide financial and technical assistance to owners of non-industrial private forest land damaged by natural disaster to carry out emergency measures to restore damaged forests and rehabilitate forest resources.

Farm Storage Facility Loan Program (FSFL)
FSFL provides low-interest financing for producers to build or upgrade farm storage and handling facilities.

Sugar Storage Facility Loan Program (SSFL)
SSFL provides low-interest financing for processors to build or upgrade farm storage and handling facilities for raw or refined sugar.

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OVERVIEW

The Agriculture Risk Coverage (ARC) and Price Loss Coverage (PLC) programs authorized by the 2014 Farm Bill combine provisions from previous programs delivered by the Farm Service Agency (FSA) (the counter-cyclical portion of the Direct and Counter-Cyclical Program, the Supplemental Revenue Assistance Payments Program and the Average Crop Revenue Election Program) with revenue insurance delivered by the Risk Management Agency.

Owners must make a one-time election to reallocate crop bases, update program payment yields and producers select the type of coverage (price protection, county revenue protection, and/or individual revenue protection) for crop years 2014-2018.

BASE ACRE REALLOCATION

Owners of farms have a one-time opportunity to:

• Retain the farm’s 2013 base acres or;
• Reallocate base acres (excluding cotton bases).

NOTE: Upland cotton is no longer considered a covered commodity; therefore, upland cotton base acres on the farm are now considered “generic” base acres and CANNOT be reallocated. Producers may receive ARC/PLC payments on generic base acres only if those acres are planted to a covered commodity.

Base Acre Reallocation Example:

All landowners and each farm operator have been provided with a summary of all covered commodities planted or considered planted (P&CP) during the 2008-2012 crop years as reported on form FSA-578, and will have the opportunity to update those records. Once records have been updated, the landowner will have the opportunity to redistribute the farm’s base acres based on a proration of each covered commodity planted or considered planted in crop years 2009 through 2012 to the total acres of all covered commodities planted or considered planted during that time. The planting history for 2008 was provided as information for yield updates only.

In the example below, the landowner has the following options:

1. Retain the 2013 base acres of 200 wheat, 100 dry peas, 100 canola.
2. Reallocate base acres for covered commodities (based on the farm’s planted/considered planted history) to 173.33 wheat base acres (400 total base acres multiplied by 43.33 reallocation percentage), 40 barley base acres (400 total base acres multiplied by 10 reallocation percentage), 186.67 dry peas base acres (400 total base acres multiplied by 46.67 reallocation percentage).

NOTE: If a landowner elects to reallocate base acres, the TOTAL number of base acres cannot increase.

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Wheat</td>
<td>200</td>
<td>150</td>
<td>150</td>
<td>150</td>
<td>200</td>
<td>162.5</td>
<td>43.33%</td>
<td>173.33</td>
</tr>
<tr>
<td>Barley</td>
<td>0</td>
<td>0</td>
<td>50</td>
<td>50</td>
<td>50</td>
<td>37.5</td>
<td>10%</td>
<td>40.00</td>
</tr>
<tr>
<td>Dry Peas</td>
<td>100</td>
<td>200</td>
<td>150</td>
<td>150</td>
<td>150</td>
<td>175</td>
<td>46.67%</td>
<td>186.67</td>
</tr>
<tr>
<td>Canola</td>
<td>100</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0%</td>
<td>0</td>
</tr>
<tr>
<td>Upland Cotton</td>
<td>100</td>
<td>100</td>
<td>50</td>
<td>100</td>
<td>150</td>
<td>N/A</td>
<td>2/</td>
<td>100 **generic base</td>
</tr>
<tr>
<td>TOTAL (excl. cotton)</td>
<td>400</td>
<td>350</td>
<td>350</td>
<td>400</td>
<td>400</td>
<td>375.00</td>
<td>100</td>
<td>500</td>
</tr>
</tbody>
</table>

1/ P&CP = Planted and Considered Planted
2/ Former upland cotton base is now generic base and is not part of the reallocation calculation.
GENERIC BASE ACRES AND COTTON TRANSITION ASSISTANCE PROGRAM (CTAP)

The 2014 Farm Bill removed upland cotton as a covered commodity for the ARC/PLC programs.

Upland cotton base acres, as adjusted, are the basis for payment acres under the Cotton Transition Assistance Program and beginning Oct. 1, 2013 (fiscal year 2014), upland cotton base acres become generic base acres for use in ARC/PLC. CTAP is a temporary program that provides payments to producers of upland cotton on farms for which cotton base acres were in existence for the 2013 crop year. It will operate only for the 2014 crop year and in certain counties for the 2015 crop years.

Upland cotton is no longer a covered commodity and upland cotton base acres now exist as generic base acres.

Generic base acres are retained on the farm at the tract level and may:
- Not be reallocated
- Be planted to any crop
- Receive ARC or PLC payments, if triggered, for the acres planted to a covered commodity
- Be reduced for Conservation Reserve Program participation
- Be reduced when taken out of agricultural production
- Be reduced on farms having more base acres than available cropland

TREATMENT OF GENERIC BASE ACRES FOR PAYMENT

Generic base acres planted to a covered commodity are eligible for ARC/PLC payments, if triggered, and will be attributed to a covered commodity as follows:
- If a single covered commodity is planted on the farm and the total acreage planted equals or exceeds the generic base acres on the farm, the generic base acres are attributed to that covered commodity in an amount equal to the total number of generic base acres on the farm.
- If multiple covered commodities are planted on the farm and the total number of acres planted to all covered commodities on the farm exceeds the generic base acres on the farm, the generic base acres will be attributed to each of the covered commodities on the farm on a pro rata basis to reflect the ratio of:
  - The acreage planted to a covered commodity on the farm; to
  - The total acreage planted to all covered commodities on the farm.
- If the total number of acres planted to all covered commodities on the farm does not exceed the generic base acres on the farm, the total acres planted to each covered commodity are attributed to that covered commodity.

Example 1 – Single Covered Commodity Planted in Excess of Generic Base Acres

FSN 10 – Producer elects PLC. The farm consists of:
- 300 acres cropland
- 100 acres corn base
- 100 acres wheat base
- 100 acres generic base

The producer plants 250 acres of corn and no other covered commodities. PLC payments in this example are calculated using a total of 200 corn base acres (100 acres of corn base acres plus 100 acres of corn planted on generic base acres) and 100 wheat base acres. In this example, 50 acres of cropland are left idle or planted to a non-covered commodity.

Example 2 – Multiple Covered Commodities Planted on Farm in Excess of Generic Base Acres

FSN 30 – Producer elects PLC:
- 300 acres cropland
- 100 acres corn base
- 100 acres wheat base
- 100 acres generic base

Producer plants:
- 200 acres of corn
- 50 acres grain sorghum
- 50 acres of soybeans
- 300 total acres

Generic base acres are attributed to the covered commodities as follows:
- 200 acres of corn planted divided by 300 acres (total covered commodities planted on the farm) multiplied by 100 generic base acres equals 66.67 generic base acres attributable to corn.
50 acres of grain sorghum planted divided by 300 acres (total covered commodities planted on the farm) multiplied by 100 generic base acres equals 16.67 generic base acres attributable to grain sorghum.

50 acres of soybeans planted divided by 300 acres (total covered commodities planted on the farm) multiplied by 100 generic base acres equals 16.67 generic base acres attributable to soybeans.

YIELD UPDATE

Land owners are provided a one-time opportunity to update program payment yields for each covered commodity for which they have base acres using 90 percent of the farm’s 2008-2012 average yield per planted acre, excluding any year in which the covered commodity was not planted. Producers with a yield in any of the 2008-2012 years that is less than 75 percent of the county average yield can substitute that yield in the calculation with a yield equal to 75 percent of the county average yield. Program payment yields are used to determine payment amounts for the PLC program; however, all farm owners have the option of updating yields regardless of program participation.

The decision to update yields is made on a covered commodity-by-covered commodity basis. If the landowner chooses not to update farm yields and/or does not make the necessary updates before the deadline (deadline to be determined), the farm’s 2013 Counter-Cyclical (CC) yields will be carried forward as the payment yields for 2014-2018.

The decision to reallocate base acres and/or update crop yields must be a unanimous decision by all owners on the farm.

ARC/PLC ELECTION REQUIRED

All producers, including owners and the operator on a farm, must make a one-time, unanimous election of:

• PLC or ARC-County on a covered commodity-by-covered commodity basis or;
• ARC-Individual for all covered commodities on the farm.

The election between ARC and PLC is made in the election period and is in effect for the life of the farm bill. If a valid election is not made in the election period, the farm will be ineligible for any 2014 ARC/PLC crop year payments and the producers on the farm are deemed to have elected PLC for the life of the farm bill. Producers must still annually enroll their farm to receive coverage. Producers with multiple farms in a state can have ARC-individual coverage on one farm and ARC-county/PLC coverage on others.

There are two types of ARC coverage:

• ARC County Coverage (ARC-CO)
• ARC Individual Coverage (ARC-IC)

Payments for PLC, ARC-CO, and ARC-IC are issued after the end of the respective crop year for each covered commodity, but not before Oct. 1 (2014 program year payments will not be issued until after Oct. 1, 2015).

SUPPLEMENTAL COVERAGE OPTION (SCO)

Starting in crop year 2015, producers who have elected PLC and who also participate in the federal crop insurance program, may purchase additional crop insurance coverage called the Supplemental Coverage Option (SCO). SCO provides the producer with the option of covering a portion of his or her crop insurance deductible and is based on expected county yields or revenue. The cost of SCO is subsidized and indemnities are determined by the yield or revenue loss for the county or area.

Crops for which the producer has elected to receive ARC-CO or ARC-IC are not eligible for SCO benefits.

Producers applying for SCO for the 2015 winter wheat crop may withdraw coverage on any farm where they have elected, or where they intend to elect, ARC for winter wheat by the earlier of their acreage reporting date or Dec. 15, without penalty. This allows producers additional time to make an informed decision related to whether to elect to participate in either the ARC or Price Loss Coverage (PLC) programs for their winter wheat. If producers withdraw SCO coverage for a farm by the earlier of their acreage reporting date or Dec. 15, they will not be charged a crop insurance premium. In order to withdraw coverage without penalty, producers must notify their agents of their intended election for ARC by the earlier of their winter wheat acreage reporting date or Dec. 15.

PRICE LOSS COVERAGE (PLC)

PLC program payments are issued when the effective price of a covered commodity is less than the respective reference price for that commodity. The effective price equals the higher of the market year average price (MYA) or the national average loan rate for the covered commodity.
<table>
<thead>
<tr>
<th>Crop</th>
<th>Reference Prices</th>
<th>National Loan Rates</th>
<th>Maximum PLC Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barley 1/</td>
<td>$4.95 per bu.</td>
<td>$1.95 per bu.</td>
<td>$3.00 per bu.</td>
</tr>
<tr>
<td>Chickpeas, Large</td>
<td>$21.54 per cwt.</td>
<td>$11.28 per cwt.</td>
<td>$10.26 per cwt.</td>
</tr>
<tr>
<td>(Garbanzo Bean, Kabuli)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chickpeas, Small</td>
<td>$19.04 per cwt.</td>
<td>$7.43 per cwt.</td>
<td>$11.61 per cwt.</td>
</tr>
<tr>
<td>(Garbanzo Bean, Desi)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corn</td>
<td>$3.70 per bu.</td>
<td>$1.95 per bu.</td>
<td>$1.75 per bu.</td>
</tr>
<tr>
<td>Dry Peas</td>
<td>$11.00 per cwt.</td>
<td>$5.40 per cwt.</td>
<td>$5.60 per cwt.</td>
</tr>
<tr>
<td>Grain Sorghum</td>
<td>$3.95 per bu.</td>
<td>$1.95 per bu.</td>
<td>$2.00 per bu.</td>
</tr>
<tr>
<td>Lentils</td>
<td>$19.97 per cwt.</td>
<td>$11.28 per cwt.</td>
<td>$8.69 per cwt.</td>
</tr>
<tr>
<td>Oats</td>
<td>$2.40 per bu.</td>
<td>$1.39 per bu.</td>
<td>$1.01 per bu.</td>
</tr>
<tr>
<td>Canola</td>
<td>$20.15 per cwt.</td>
<td>$10.09 per cwt.</td>
<td>$10.06 per cwt.</td>
</tr>
<tr>
<td>Crambe</td>
<td>$20.15 per cwt.</td>
<td>$10.09 per cwt.</td>
<td>$10.06 per cwt.</td>
</tr>
<tr>
<td>Flaxseed</td>
<td>$11.28 per bu.</td>
<td>$5.65 per bu.</td>
<td>$5.63 per bu.</td>
</tr>
<tr>
<td>Mustard</td>
<td>$20.15 per cwt.</td>
<td>$10.09 per cwt.</td>
<td>$10.06 per cwt.</td>
</tr>
<tr>
<td>Rapeseed</td>
<td>$20.15 per cwt.</td>
<td>$10.09 per cwt.</td>
<td>$10.06 per cwt.</td>
</tr>
<tr>
<td>Safflower</td>
<td>$20.15 per cwt.</td>
<td>$10.09 per cwt.</td>
<td>$10.06 per cwt.</td>
</tr>
<tr>
<td>Sesame Seed</td>
<td>$20.15 per cwt.</td>
<td>$10.09 per cwt.</td>
<td>$10.06 per cwt.</td>
</tr>
<tr>
<td>Sunflower</td>
<td>$20.15 per cwt.</td>
<td>$10.09 per cwt.</td>
<td>$10.06 per cwt.</td>
</tr>
<tr>
<td>Peanuts</td>
<td>$535.00 per ton</td>
<td>$355.00 per ton</td>
<td>$180.00 per ton</td>
</tr>
<tr>
<td>Rice, Long Grain</td>
<td>$14.00 per cwt.</td>
<td>$6.50 per cwt.</td>
<td>$7.50 per cwt.</td>
</tr>
<tr>
<td>Rice, Medium Grain 2/</td>
<td>$14.00 per cwt.</td>
<td>$6.50 per cwt.</td>
<td>$7.50 per cwt.</td>
</tr>
<tr>
<td>Rice, Temperate Japonica</td>
<td>$16.10 per cwt.</td>
<td>$6.50 per cwt.</td>
<td>$8.60 per cwt.</td>
</tr>
<tr>
<td>Soybeans</td>
<td>$8.40 per bu.</td>
<td>$5.00 per bu.</td>
<td>$3.40 per bu.</td>
</tr>
<tr>
<td>Wheat</td>
<td>$5.50 per bu.</td>
<td>$2.94 per bu.</td>
<td>$2.56 per bu.</td>
</tr>
</tbody>
</table>

1/ Barley price is based on the price of “all barley.” Previously the price was based on the “feed barley” price.

2/ Includes short grain; excludes temperate japonica.

The PLC payment amount for a covered commodity is equal to 85 percent times the base attributable to the covered commodity, times the payment rate for the covered commodity. The base attributed to the covered commodity is the covered commodity base plus the generic base attributed to the covered commodity. The payment rate for the covered commodity is the difference between the reference price and the effective price times the program payment yield for the covered commodity.

PLC payments are not dependent on the crops planted and/or considered planted (except for generic base acres as noted above) for the current crop year.
PLC Payment Example

Farm Number 1200:

<table>
<thead>
<tr>
<th>Crop</th>
<th>Base Acres</th>
<th>Planted Acres</th>
<th>PLC Yield</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wheat</td>
<td>100</td>
<td>0</td>
<td>30 bu.</td>
</tr>
<tr>
<td>Corn</td>
<td>100</td>
<td>110</td>
<td>80 bu.</td>
</tr>
<tr>
<td>Alfalfa</td>
<td>0</td>
<td>165</td>
<td>N/A</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>200</td>
<td>275</td>
<td></td>
</tr>
</tbody>
</table>

**Payment Rate Calculation:**

<table>
<thead>
<tr>
<th>Crop</th>
<th>Reference Price</th>
<th>Effective Price</th>
<th>PLC Payment Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MYA Price</td>
<td>Loan Rate</td>
<td></td>
</tr>
<tr>
<td>Wheat</td>
<td>$5.50</td>
<td>$5.00</td>
<td>$2.94</td>
</tr>
<tr>
<td>Corn</td>
<td>$3.70</td>
<td>$4.00</td>
<td>$1.95</td>
</tr>
</tbody>
</table>

*MYA Prices are hypothetical in this example*

In this example, the MYA prices are HIGHER than the loan rate, so the MYA prices are the effective prices.

For wheat, the PLC payment rate is $0.50 ($5.50 reference price minus the $5.00 effective price)

For corn, the PLC payment rate is $0.00 because the effective price ($4.00) is greater than the reference price ($3.70)

**Payment Calculation:**

<table>
<thead>
<tr>
<th>Crop</th>
<th>Base Acres</th>
<th>Payment %</th>
<th>Payment Rate</th>
<th>PLC Yield</th>
<th>PLC Payment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wheat</td>
<td>100</td>
<td>85</td>
<td>$0.50</td>
<td>30 bu.</td>
<td>$1,275</td>
</tr>
<tr>
<td>Corn</td>
<td>100</td>
<td>85</td>
<td>$0.00</td>
<td>80 bu.</td>
<td>$0</td>
</tr>
</tbody>
</table>

Note that a payment is triggered for wheat even though no wheat has been planted in the crop year.

**COUNTY AGRICULTURE RISK COVERAGE (ARC-CO)**

The ARC-CO program provides revenue loss coverage at the county level. ARC-CO payments are issued when the actual county crop revenue of a covered commodity is less than the ARC-CO guarantee for the covered commodity. The ARC-CO guarantee equals 86 percent of the previous five-year national MYA price, excluding the years with the highest and lowest price (the ARC guarantee price), multiplied by the five-year average county yield, excluding the years with the highest and lowest yield (the ARC county guarantee yield). If the county yield in any of the five years is below 70 percent of the county transitional yield (T yield), then 70 percent of the T yield is substituted for each year the county yield is less than 70 percent of the T yield.

The ARC-CO payment is equal to 85 percent of the base acres of the covered commodity times the difference between the county guarantee and the actual county crop revenue for the covered commodity. Payments may not exceed 10 percent of the ARC-CO guarantee price multiplied by the ARC-CO guarantee yield. Generic base consideration also applies to ARC-CO in the same manner as PLC.

**ARC-CO Example:**

Joe Farmer has 100 percent interest in this farm participating in ARC-CO.
Determination of ARC-CO Payment Rates

The two following charts provide the steps that are used to calculate the ARC-CO payment rate for the two covered commodities on Joe’s farm. The county yields in the example are hypothetical and do not represent a specific county. The historic MYA prices for the 2009-2012 crops are NASS estimates; the 2013 and 2014 MYA prices are hypothetical to demonstrate alternative outcomes for the ARC-CO payment rates.

ARC-CO Payment Rate Determination: Wheat Example

<table>
<thead>
<tr>
<th>Crop Year</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014 Payment Factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1. Calculation of Benchmark Revenue</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(A) County Yield (bu/acre)</td>
<td>44</td>
<td>51</td>
<td>65</td>
<td>31</td>
<td>46</td>
<td>(D) ARC-CO County Guarantee Yield 1/</td>
</tr>
<tr>
<td>(B) 70 percent of T-yield</td>
<td>32</td>
<td>32</td>
<td>32</td>
<td>32</td>
<td>32</td>
<td></td>
</tr>
<tr>
<td>(C) Higher of (A) or (B)</td>
<td>44</td>
<td>51</td>
<td>65</td>
<td>32</td>
<td>46</td>
<td>47</td>
</tr>
<tr>
<td>(E) MYA Price 2/</td>
<td>4.87</td>
<td>5.70</td>
<td>7.24</td>
<td>7.77</td>
<td>6.50</td>
<td>(H) ARC-CO Benchmark Price 3/</td>
</tr>
<tr>
<td>(F) Reference Price 4/</td>
<td>5.50</td>
<td>5.50</td>
<td>5.50</td>
<td>5.50</td>
<td>5.50</td>
<td></td>
</tr>
<tr>
<td>(G) Higher of (E) or (F)</td>
<td>5.50</td>
<td>5.70</td>
<td>7.24</td>
<td>7.77</td>
<td>6.50</td>
<td>6.48</td>
</tr>
<tr>
<td>(I) ARC-CO Benchmark Revenue, (D) times (H) 4/</td>
<td>304.56</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step 2. Calculation of Actual Revenue</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(J) 2014 Price</td>
<td>6.50</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(K) 2014 Loan Rate</td>
<td>2.94</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(L) Higher of (J) or (K)</td>
<td>6.50</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(M) 2014 County Yield</td>
<td>29.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(N) Actual County Revenue, (L) times (M)</td>
<td>188.50</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step 3. Calculation of ARC-CO Payment Rate</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(O) ARC-CO Guarantee, (I) times 0.86 5/</td>
<td>261.92</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(P) Maximum ARC-CO Payment Rate, (I) times 0.10 6/</td>
<td>30.46</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Q) Revenue Shortfall, (O) minus (N)</td>
<td>73.42</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(R) ARC-CO Payment Rate, Lesser of (P) or (Q)</td>
<td>30.46</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1/ The ARC-CO Guarantee Yield is the 2009-2013 Olympic average of the higher of the county yield or 70 percent of T-yield for each year.

2/ The Market Year Average (MYA) price is the season average farm price for the covered commodity as published by NASS or determined by the WAOB.

3/ The ARC-CO Benchmark Price is the 2009-2013 Olympic average of the higher of the Market year Average (MYA) Price or the 2014 loan rate for each year.

4/ ARC-CO Benchmark Revenue is the product of ARC-CO Guarantee Yield and ARC-CO Benchmark Price.

5/ ARC-CO Guarantee is 86 percent of the ARC-CO Benchmark Revenue.

6/ The maximum ARC-CO payment rate is 10 percent of the ARC-CO Benchmark Revenue.
Note that in the above examples, wheat base on Joe’s farm receives an ARC-CO payment even though he did not plant wheat on the farm, and conversely, corn base on his farm will not receive an ARC-CO payment.

**Calculation of Payment:**

**Calculation of Farm Total Payment: Joe Farmer Example**

<table>
<thead>
<tr>
<th>Crop</th>
<th>Base Acres</th>
<th>Payment Percentage</th>
<th>Payment Rate</th>
<th>ARC-CO Payment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wheat</td>
<td>100.00</td>
<td>85 percent</td>
<td>$30.46</td>
<td>$2,589.10</td>
</tr>
<tr>
<td>Corn</td>
<td>100.00</td>
<td>85 percent</td>
<td>0.00</td>
<td>0</td>
</tr>
</tbody>
</table>

**Total ARC-CO Payments for Joe Farmer** $2,589.10
INDIVIDUAL AGRICULTURE RISK COVERAGE (ARC-IC)

The ARC-IC program provides revenue loss coverage at a farm level. An ARC-IC farm is defined as the sum of the interests of a producer in all FSA farms that are enrolled in the individual coverage option for ARC in a state. Producers that have interests in multiple farms in multiple states that are enrolled in ARC-IC have a separate ARC-IC farm in each state.

ARC-IC revenue loss payments are made to the ARC-IC farm when the current year revenue for all covered commodities planted on the ARC-IC farm falls below 86 percent of the farm benchmark revenue.

All ARC-IC farms in the state in which the producer has an interest are included in a single ARC-IC revenue calculation to determine a payment rate. The payment rate for the ARC-IC farm is capped at 10 percent of the farm’s benchmark revenue.

The ARC-IC farm’s guarantee equals 86 percent of the ARC-IC farm’s individual benchmark guarantee, defined as the five-year average of a ARC-IC farm’s annual ARC-IC benchmark revenue (farm’s yield for each crop year, multiplied by the higher of the reference price or the MYA price) for all covered commodities, excluding the high and low annual revenues. Actual revenue is computed using the ARC-IC farm’s actual yield times the higher of the MYA price or the national average loan rate.

ARC-IC payments are calculated by multiplying:

- The ARC-IC payment rate, multiplied by
- The total base acres of the ARC-IC farm(s), multiplied by 65 percent.

Producers on farms that have both elected and enrolled into ARC-IC will need to work with FSA to establish yields for each of the current year planted covered commodities on the ARC-IC farm(s) for the immediately preceding five years. The yields established for the immediately preceding five years are known as the benchmark yields. If prior yields are not available for each of the current year covered commodities, a yield will be assigned by FSA for each of the missing years, up to five years, to allow the farm benchmark revenue to be calculated for the farm.

After harvest in the current year, the producer is required to report current production to FSA for calculation of the current year revenue on the farm. The reported production multiplied by the higher of the reference price or the national marketing year average (MYA) price for all covered commodities on the ARC-IC participating farm(s) are totaled and then divided by the total planted acreage of all covered commodities on the participating ARC-IC farm(s), resulting in an actual revenue per acre. The result will be either a revenue loss or gain per acre. If a loss is determined, the ARC-IC revenue loss per acre is the ARC-IC payment rate and it is used to make the ARC-IC payment on the farm.

The ARC-IC payment on the farm will be calculated as follows:

- The ARC-IC payment rate, multiplied by
- The total base acres of the ARC-IC farm(s), multiplied by 65 percent.

Payment shares are then taken into account for each producer who had an interest in the covered commodities on the farm.

ARC-IC Example:

The following is an example of how an ARC-IC payment is calculated. Payments are made on base acres in proportion to the planting of covered commodities on the farm; however, payment acres are limited to 65 percent of the total base acres on the farm.

Consider the following farm information for the 2014 crop. Jane Farmer has 100 percent interest in this farm, which is her only farm enrolled in ARC-IC. Jane planted three covered commodities on her farm in 2014, and the farm has 200 acres of covered commodity base and no generic base. This ARC-IC farm information for Jane Farmer is shown in the following chart, including the production of the covered commodities for the 2014 crop.

<table>
<thead>
<tr>
<th>Crop</th>
<th>Base Acres</th>
<th>2014 Planted Acres</th>
<th>Percentage of Crop Planted</th>
<th>2014 Crop Production</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corn</td>
<td>100.00</td>
<td>110.00</td>
<td>36.67 percent</td>
<td>11,550 bushels</td>
</tr>
<tr>
<td>Soybeans</td>
<td>100.00</td>
<td>25.00</td>
<td>8.33 percent</td>
<td>1,000 bushels</td>
</tr>
<tr>
<td>Grain Sorghum</td>
<td>0.0</td>
<td>165.00</td>
<td>55.00 percent</td>
<td>9,900 bushels</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>200.00</strong></td>
<td><strong>300.00</strong></td>
<td><strong>100.00 percent</strong></td>
<td></td>
</tr>
</tbody>
</table>

1/ Percentage of covered commodity for each crop is the planted and considered planted acres divided by the total acres of covered commodities planted and considered planted on the ARC-IC farm.
The following charts illustrate how Jane Farmer’s benchmark revenue, ARC-IC guarantee, maximum ARC-IC payment rate are calculated for her ARC-IC enrolled farm. Each of these ARC-IC program factors are calculated on a per acre basis. Thus, each factor reflects a value weighed by the plantings of covered commodities on the farm for the 2014 crop.

**ARC-IC Benchmark Revenue: Calculations for Jane Farmer's ARC-IC Farm**

<table>
<thead>
<tr>
<th>Crop/Program Year</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Step 1. Calculation of the 5-Year Olympic Average Revenue for Covered Commodities</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Corn</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(A) Yield</td>
<td>125</td>
<td>100</td>
<td>165</td>
<td>110</td>
<td>95</td>
</tr>
<tr>
<td>(B) 70 percent of T-Yield</td>
<td>85</td>
<td>85</td>
<td>85</td>
<td>85</td>
<td>85</td>
</tr>
<tr>
<td>(C) MYA Price 1/</td>
<td>3.55</td>
<td>5.18</td>
<td>6.22</td>
<td>6.89</td>
<td>4.50</td>
</tr>
<tr>
<td>(D) Reference Price</td>
<td>3.70</td>
<td>3.70</td>
<td>3.70</td>
<td>3.70</td>
<td>3.70</td>
</tr>
<tr>
<td>(E) Annual Revenue 2/</td>
<td>462.50</td>
<td>518.00</td>
<td>1,926.30</td>
<td>757.90</td>
<td>427.50</td>
</tr>
<tr>
<td><strong>Soybeans</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(A) Yield</td>
<td>38</td>
<td>41</td>
<td>29</td>
<td>48</td>
<td>33</td>
</tr>
<tr>
<td>(B) 70 percent of T-Yield</td>
<td>27</td>
<td>27</td>
<td>27</td>
<td>27</td>
<td>27</td>
</tr>
<tr>
<td>(C) MYA Price</td>
<td>9.59</td>
<td>11.30</td>
<td>12.50</td>
<td>14.40</td>
<td>12.95</td>
</tr>
<tr>
<td>(D) Reference Price</td>
<td>8.40</td>
<td>8.40</td>
<td>8.40</td>
<td>8.40</td>
<td>8.40</td>
</tr>
<tr>
<td>(E) Annual Revenue</td>
<td>364.42</td>
<td>463.30</td>
<td>362.50</td>
<td>691.20</td>
<td>427.35</td>
</tr>
<tr>
<td><strong>Grain Sorghum</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(A) Yield</td>
<td>90</td>
<td>40</td>
<td>75</td>
<td>80</td>
<td>99</td>
</tr>
<tr>
<td>(B) 70 percent of T-Yield</td>
<td>65</td>
<td>65</td>
<td>65</td>
<td>65</td>
<td>65</td>
</tr>
<tr>
<td>(C) MYA Price</td>
<td>3.22</td>
<td>5.02</td>
<td>5.99</td>
<td>6.33</td>
<td>4.25</td>
</tr>
<tr>
<td>(D) Reference Price</td>
<td>3.95</td>
<td>3.95</td>
<td>3.95</td>
<td>3.95</td>
<td>3.95</td>
</tr>
<tr>
<td>(E) Annual Revenue</td>
<td>355.50</td>
<td>326.30</td>
<td>449.25</td>
<td>506.40</td>
<td>420.75</td>
</tr>
<tr>
<td><strong>Step 2. Calculation of Benchmark Revenue, Guarantee, and Maximum Payment Rate.</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Crop</strong></td>
<td>Olympic Avg. Rev.</td>
<td>2014 Percent Planted</td>
<td>Weighted Revenue (F) 4/</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corn</td>
<td>579.47</td>
<td>36.67</td>
<td>212.49</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Soybeans</td>
<td>418.36</td>
<td>8.33</td>
<td>34.85</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grain Sorghum</td>
<td>408.50</td>
<td>55.00</td>
<td>224.68</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(G) ARC-IC Benchmark Revenue (per acre), Sum items (F)</td>
<td>472.02</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(II) ARC-IC Guarantee, (G) times 86 percent</td>
<td>405.94</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(I) Maximum ARC-IC Payment Rate, 10 percent times (G)</td>
<td>47.20</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1/ MYA price is the season average farm price for the covered commodity as published by NASS or determined by the WAOB.
2/ The 5-year Olympic Average Revenue is the average of the 2009-2013 crop revenues dropping the years with the highest and lowest revenue.
3/ The annual revenue for a crop is the higher of the crops actual yield (A) or 70 percent of the T-Yield (B) times the higher of the MYA price (C) or the crop's reference price (D). Strike throughs indicate the values excluded in the calculations.
4/ Weighted Revenue is Olympic average revenue for a crop times the percent planted.
The ARC-IC actual revenue is also calculated on a per acre basis by determining the total revenue for the farm and dividing it by the total planted acres on the farm. The per acre ARC-IC revenue for Jane Farmer’s ARC-IC farm is illustrated in the following chart.

Actual Revenue Calculation: Jane Farmer's ARC-IC Farm, 2014 Crop

<table>
<thead>
<tr>
<th>Crop</th>
<th>2014 Production</th>
<th>MYA Price 1/</th>
<th>National Average Loan Rate</th>
<th>Crop Revenue 2/</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corn</td>
<td>11,550</td>
<td>5.25</td>
<td>1.95</td>
<td>60,637.50</td>
</tr>
<tr>
<td>Soybeans</td>
<td>1,000</td>
<td>8.50</td>
<td>5.00</td>
<td>8,500.00</td>
</tr>
<tr>
<td>Grain Sorghum</td>
<td>9,900</td>
<td>4.98</td>
<td>1.95</td>
<td>49,302.00</td>
</tr>
<tr>
<td>(A) Total Farm Revenue, sum of crop revenues</td>
<td></td>
<td></td>
<td></td>
<td>118,439.50</td>
</tr>
<tr>
<td>(B) ARC-IC Actual Revenue, (A) divided by total planted acres 3/</td>
<td></td>
<td></td>
<td></td>
<td>394.80</td>
</tr>
</tbody>
</table>

1/ MYA price is the season average farm price for the covered commodity as published by NASS or determined by the WAOB.

2/ Crop revenue is the product of planted acres times the higher of the MYA Price or the national average loan rate. The national average loan rate is struck out because it is lower than the MYA price.

3/ Total planted acres of covered commodities on the ARC-IC farm for the 2014 Crop.

To determine if Jane Farmer earns ARC-IC payments on her farm for the 2014 crop, the farm’s actual revenue is compared to the ARC-IC guarantee. If the ARC-IC actual revenue is less than the guarantee, then Jane earns ARC-IC payments. The ARC-IC payment on a farm may be limited by the maximum ARC-IC payment rate. The determination and calculation of payments that Jane Farmer is due on her ARC-IC farm are illustrated in the chart below. For 2014, Jane’s ARC-IC payment rate is $11.40 per acre which is below the maximum payment rate.

ARC-IC Payment Calculation: Jane Farmer's ARC-IC Farm

<table>
<thead>
<tr>
<th>ARC-IC Payment Item</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>(A) Benchmark Revenue, Item (G) from Benchmark Revenue Chart</td>
<td>472.02</td>
</tr>
<tr>
<td>(B) ARC-IC Guarantee, Item (H) from Benchmark Revenue Chart</td>
<td>405.94</td>
</tr>
<tr>
<td>(C) ARC-IC Actual Revenue, Item (B) from Actual Revenue Chart</td>
<td>394.80</td>
</tr>
<tr>
<td>(D) ARC-IC Revenue Shortfall, Item (B) minus (C)</td>
<td>11.14</td>
</tr>
<tr>
<td>(E) Maximum ARC-IC Payment Rate, Item (I) from Benchmark Revenue Chart</td>
<td>47.20</td>
</tr>
<tr>
<td>(F) ARC-IC Payment Rate, Lessor of (D) or (E)</td>
<td>11.14</td>
</tr>
<tr>
<td>(G) 2014 Base Acres (Jane Farmer's ARC-IC Farm)</td>
<td>200</td>
</tr>
<tr>
<td>(I) ARC-IC Payment Percentage</td>
<td>0.65</td>
</tr>
<tr>
<td>(J) ARC-IC Payment, (F) times (G) times (I)</td>
<td>1,448.20</td>
</tr>
</tbody>
</table>
FOR MORE INFORMATION

For more information on ARC/PLC, contact your local USDA Service Center, Farm Service Agency (FSA) office, or online at www.fsa.usda.gov.

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Livestock Forage Disaster Program (LFP)

OVERVIEW

The Agricultural Act of 2014 (2014 Farm Bill) makes the Livestock Forage Disaster Program (LFP) a permanent program and provides retroactive authority to cover eligible losses back to Oct. 1, 2011. LFP provides compensation to eligible livestock producers that have suffered grazing losses for covered livestock on land that is native or improved pastureland with permanent vegetative cover or is planted specifically for grazing. The grazing losses must be due to a qualifying drought condition during the normal grazing period for the county. LFP also provides compensation to eligible livestock producers that have suffered grazing losses on rangeland managed by a federal agency if the eligible livestock producer is prohibited by the federal agency from grazing the normal permitted livestock on the managed rangeland due to a qualifying fire.

The grazing losses must have occurred on or after Oct. 1, 2011.

LFP is administered by the Farm Service Agency (FSA) of the U.S. Department of Agriculture.

ELIGIBLE COUNTIES FOR DROUGHT

An eligible livestock producer that owns or leases grazing land or pastureland physically located in a county rated by the U.S. Drought Monitor as having a:

- D2 (severe drought) intensity in any area of the county for at least eight consecutive weeks during the normal grazing period is eligible to receive assistance in an amount equal to one monthly payment;
- D3 (extreme drought) intensity in any area of the county at any time during the normal grazing period is eligible to receive assistance in an amount equal to three monthly payments;
- D3 (extreme drought) intensity in any area of the county for at least four weeks during the normal grazing period or is rated a D4 (exceptional drought) intensity at any time during the normal grazing period is eligible to receive assistance in an amount equal to four monthly payments;
- D4 (exceptional drought) in a county for four weeks (not necessarily four consecutive weeks) during the normal grazing period is eligible to receive assistance in an amount equal to five monthly payments.

A map of eligible counties for LFP drought may be found at http://disaster.fsa.usda.gov.

ELIGIBLE LIVESTOCK

Eligible livestock types under LFP include alpacas, beef cattle, buffalo, beefalo, dairy cattle, deer, elk, emus, equine, goats, llamas, poultry, reindeer, sheep or swine that have been or would have been grazing the eligible grazing land or pastureland:

- During the normal grazing period for the specific type of grazing land or pastureland for the county or;
- When the federal agency excluded the livestock producer from grazing the normally permitted livestock on the managed rangeland due to fire.

Eligible livestock must:

- Have been owned, purchased or entered into a contract to purchase during the 60 days prior to the beginning date of a qualifying drought or fire condition;
- Have been held by a contract grower or sold or otherwise disposed of due to a qualifying drought condition during the current production year or one or both of the two production years immediately preceding the current production year;
- Have been maintained for commercial use as part of a farming operation on the beginning date of the eligible drought or fire condition;
- Not have been produced and maintained for reasons other than commercial use as part of a
farming operation. Such excluded uses include, but are not limited to, wild free roaming ani-
mals or animals used for recreational purposes
such as pleasure, hunting, pets, roping or for
show;
• Not have been livestock that were or would
have been in a feedlot on the beginning date
of the qualifying drought or fire as part of the
normal business operation of the producer.

ELIGIBLE PRODUCERS

To be eligible for LFP, producers must:

• Own, cash or share lease, or be a contract
grower of covered livestock during the 60
calendar days before the beginning date of a
qualifying drought or fire;
• Provide pastureland or grazing land for
covered livestock, including cash-rented
pastureland or grazing land that is either:
  ° Physically located in a county affected by a
    qualifying drought during the normal
grazing period for the county, or;
  ° Rangeland managed by a federal agency
    for which the otherwise eligible livestock
    producer is prohibited by the federal agency
    from grazing the normally permitted live-
    stock because of a qualifying fire.
• Certify that they have suffered a grazing loss
because of a qualifying drought or fire;
• Timely file an acreage report for all
grazing land for which a loss of grazing is be-
ing claimed.

PAYMENTS

FSA will calculate LFP payments for an eligible
livestock producer for grazing losses because of a
qualifying drought equal to 1, 3, 4 or 5 times the
LFP monthly payment rate. The LFP monthly
payment rate for drought is equal to 60 percent of
the lesser of the monthly feed cost:

• For all covered livestock owned or leased by
  the eligible livestock producer;
• Calculated by using the normal carrying
  capacity of the eligible grazing land of the
  eligible livestock producer.

Total LFP payments to an eligible livestock
producer in a calendar year for grazing losses will
not exceed five monthly payments for the same
livestock.

In the case of an eligible livestock producer who
sold or otherwise disposed of livestock because
of drought conditions in one or both of the two
previous production years immediately preceding
the current production year, the payment rate will
equal 80 percent of the monthly payment rate.

FSA will calculate LFP payments for eligible
livestock producers for losses suffered because of a
qualifying fire on federally managed rangeland for
which the producer is prohibited from grazing the
normally permitted livestock. The payment begins
on the first day the permitted livestock are
prohibited from grazing the eligible rangeland and
ending on the earlier of the last day of the federal
lease of the eligible livestock producer or the day
that would make the period a 180 calendar day
period. The payment rate is 50 percent of the
monthly feed cost for the number of days the
producer is prohibited from grazing the managed
rangeland because of a qualifying fire, not to
exceed 180 calendar days.

PAYMENT LIMITATION

For 2012 and subsequent program years, no person
or legal entity, excluding a joint venture or general
partnership, may receive directly or indirectly,
more than $125,000 total in payments under LFP,
ELAP, and LIP combined.

For 2011, no person or legal entity, excluding a
joint venture or general partnership, may receive
directly or indirectly more than $125,000 total in
the 2011 program year in payments under the LFP,
ELAP, LIP, and Supplemental Revenue Assistance
Payments (SURE) program, when at least $25,000
of such total 2011 program payments is from LFP
or LIP, for losses from Oct. 1, 2011, through
Dec. 31, 2011.
In applying the limitation on average adjusted gross income (AGI), an individual or legal entity is ineligible for payment under LFP if the individual’s or legal entity’s average AGI exceeds $900,000.

Direct attribution provisions apply to LFP for 2011 and subsequent years. Under direct attribution, any payment to a legal entity also will be considered for payment limitation purposes to be a payment to persons or legal entities with an interest in the legal entity or in a sub-entity.

**SIGN-UP**

For grazing losses that occurred between Oct. 1, 2011 through Dec. 31, 2014, sign-up will begin on April 15, 2014, and end on Jan. 30, 2015. For 2015 and subsequent calendar years, producers must provide a completed application for payment and required supporting documentation to their FSA office within 30 calendar days after the end of the calendar year in which the grazing loss occurred.

The producer should include a copy of the grower contract if the producer is a contract grower and any other supporting documents required for determining eligibility. Supporting documents must show evidence of loss, current physical location of livestock in inventory, evidence that grazing land or pastureland is owned or leased and evidence that if the loss of grazing was due to a fire that the producer was prohibited by the federal agency from grazing the normal permitted livestock on the managed rangeland due to a fire.

**PAYMENTS ON BEHALF OF DECEASED PRODUCERS**

Payments may be made for eligible losses suffered by an eligible producer who is now deceased or for a dissolved entity if a currently authorized representative signs the application for payment. Proof of authority to sign for a deceased individual or dissolved entity must be provided. If a producer is a dissolved entity, all former members at the time of dissolution or their duly authorized representative(s) must sign the application for payment.

FSA will use data furnished by the applicant to determine eligibility for program benefits. Furnishing the data is voluntary; however, without all required data, program benefits will not be approved or provided.

The table on page 4 provides the monthly payment rate per head by covered livestock category.

**MORE INFORMATION**

To find more information about FSA programs, contact your local FSA office or USDA Service Center, or visit FSA online at www.fsa.usda.gov.

The U.S. Department of Agriculture (USDA) prohibits discrimination against its customers, employees, and applicants for employment on the bases of race, color, national origin, age, disability, sex, gender identity, religion, reprisal, and where applicable, political beliefs, marital status, familial or parental status, sexual orientation, or all or part of an individual’s income is derived from any public assistance program, or protected genetic information in employment or in any program or activity conducted or funded by the Department. (Not all prohibited bases will apply to all programs and/or employment activities.) Persons with disabilities, who wish to file a program complaint, write to the address below or if you require alternative means of communication for program information (e.g., Braille, large print, audiotape, etc.) please contact USDA’s TARGET Center at (202) 720-2600 (voice and TDD). Individuals who are deaf, hard of hearing, or have speech disabilities and wish to file either an EEO or program complaint, please contact USDA through the Federal Relay Service at (800) 877-8339 or (800) 845-6136 (in Spanish).

If you wish to file a Civil Rights program complaint of discrimination, complete the USDA Program Discrimination Complaint Form, found online at http://www.ascr.usda.gov/complaint_filing_cust.html, or at any USDA office, or call (866) 632-9992 to request the form. You may also write a letter containing all of the information requested in the form. Send your completed complaint form or letter by mail to U.S. Department of Agriculture, Director, Office of Adjudication, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410, by fax (202) 690-7442 or email at program.intake@usda.gov.

USDA is an equal opportunity provider and employer.
## Livestock Payment Rates

<table>
<thead>
<tr>
<th>Kind</th>
<th>Type</th>
<th>Weight Range</th>
<th>Payment Rate Per Head</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beef</td>
<td>Adult</td>
<td>Bulls, Cows</td>
<td>$34.57 $51.81 $57.27 $52.56</td>
</tr>
<tr>
<td></td>
<td>Non-adult</td>
<td>500 pounds or more</td>
<td>$25.93 $38.86 $42.96 $39.42</td>
</tr>
<tr>
<td>Dairy</td>
<td>Adult</td>
<td>Bulls, Cows</td>
<td>$89.89 $134.71 $148.90 $136.66</td>
</tr>
<tr>
<td></td>
<td>Non-adult</td>
<td>500 pounds or more</td>
<td>$25.93 $38.86 $42.96 $39.42</td>
</tr>
<tr>
<td>Buffalo/Beefalo</td>
<td>Adult</td>
<td>Bulls, Cows</td>
<td>$34.57 $51.81 $57.27 $52.56</td>
</tr>
<tr>
<td></td>
<td>Non-adult</td>
<td>500 pounds or more</td>
<td>$25.93 $38.86 $42.96 $39.42</td>
</tr>
<tr>
<td>Sheep</td>
<td>All</td>
<td></td>
<td>$8.64   $12.96 $14.32 $13.14</td>
</tr>
<tr>
<td>Goats</td>
<td>All</td>
<td></td>
<td>$8.64   $12.96 $14.32 $13.14</td>
</tr>
<tr>
<td>Deer</td>
<td>All</td>
<td></td>
<td>$8.64   $12.96 $14.32 $13.14</td>
</tr>
<tr>
<td>Equine</td>
<td>All</td>
<td></td>
<td>$25.58  $38.34 $42.38 $38.90</td>
</tr>
<tr>
<td>Swine</td>
<td></td>
<td>Less than 45 pounds</td>
<td>$1.03   $1.55 $1.72 $1.56</td>
</tr>
<tr>
<td></td>
<td></td>
<td>45 to 124 pounds</td>
<td>$2.41   $3.63 $4.01 $3.67</td>
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<tr>
<td></td>
<td></td>
<td>125 to 234 pounds</td>
<td>$4.15   $6.22 $6.87 $6.31</td>
</tr>
<tr>
<td></td>
<td>Sow</td>
<td>235 pounds or more</td>
<td>$14.18  $21.24 $23.48 $21.56</td>
</tr>
<tr>
<td></td>
<td>Boar</td>
<td>235 pounds or more</td>
<td>$8.31   $12.43 $13.74 $12.63</td>
</tr>
<tr>
<td>Elk</td>
<td></td>
<td>Less than 400 pounds</td>
<td>$7.61   $11.40 $12.60 $11.58</td>
</tr>
<tr>
<td></td>
<td></td>
<td>400 to 799 pounds</td>
<td>$14.18  $21.24 $23.48 $21.56</td>
</tr>
<tr>
<td></td>
<td></td>
<td>800 pounds or more</td>
<td>$18.67  $27.98 $30.93 $28.39</td>
</tr>
<tr>
<td>Poultry</td>
<td>Less than 3 pounds</td>
<td></td>
<td>$0.22   $0.33 $0.36 $0.33</td>
</tr>
<tr>
<td></td>
<td>3 to 7.9 pounds</td>
<td></td>
<td>$0.44   $0.65 $0.72 $0.66</td>
</tr>
<tr>
<td></td>
<td>8 pounds or more</td>
<td></td>
<td>$0.99   $1.48 $1.64 $1.50</td>
</tr>
<tr>
<td>Reindeer</td>
<td>All</td>
<td></td>
<td>$7.61   $11.40 $12.60 $11.58</td>
</tr>
<tr>
<td>Alpacas</td>
<td>All</td>
<td></td>
<td>$28.48  $42.68 $47.18 $43.30</td>
</tr>
<tr>
<td>Emus</td>
<td>All</td>
<td></td>
<td>$17.69  $26.52 $29.31 $26.90</td>
</tr>
<tr>
<td>Llamas</td>
<td>All</td>
<td></td>
<td>$12.62  $18.91 $20.90 $19.18</td>
</tr>
</tbody>
</table>
Livestock Indemnity Program (LIP)

OVERVIEW

The Agricultural Act of 2014 (2014 Farm Bill) authorized the Livestock Indemnity Program (LIP) to provide benefits to livestock producers for livestock deaths in excess of normal mortality caused by adverse weather. In addition, LIP covers attacks by animals reintroduced into the wild by the federal government or protected by federal law, including wolves and avian predators. LIP payments are equal to 75 percent of the market value of the applicable livestock on the day before the date of death of the livestock as determined by the Secretary.

The 2014 Farm Bill makes LIP a permanent program and provides retroactive authority to cover eligible livestock losses back to Oct. 1, 2011.

LIP is administered by the Farm Service Agency (FSA) of the U.S. Department of Agriculture.

<table>
<thead>
<tr>
<th>Cattle</th>
<th>Poultry</th>
<th>Swine</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adult Beef Bulls</td>
<td>Chickens, Broilers, Pullets (regular size)</td>
<td>Swine, Feeder Pigs (less than 50 pounds)</td>
<td>Alpacas, Deer, Elk, Emus, Equine, Goats, Bucks, Goats, Nannies, Goats, Slaughter, Goats/Kids, Llamas, Reindeer, Sheep, Ewes, Sheep, Lambs, Sheep, Rams</td>
</tr>
<tr>
<td>Adult Beef Cows</td>
<td>Chickens, Chicks</td>
<td>Swine, Sows, Boars, Barrows, Gilts (50 to 150 pounds)</td>
<td></td>
</tr>
<tr>
<td>Adult Buffalo, Beefalo Bulls</td>
<td>Chickens, Layers, Pullets/Cornish Hens (small size)</td>
<td>Swine, Sows, Boars, Barrows, Gilts (151 to 450 pounds)</td>
<td></td>
</tr>
<tr>
<td>Adult Buffalo, Beefalo Cows</td>
<td>Ducks</td>
<td>Swine, Sows, Boars (over 450 Pounds)</td>
<td></td>
</tr>
<tr>
<td>Adult Dairy Bulls</td>
<td>Ducks, Ducklings</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adult Dairy Cows</td>
<td>Geese, Goose</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-Adult Beef Cattle</td>
<td>Geese, Goslings</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-Adult Buffalo/Beefalo</td>
<td>Turkeys, Poults</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-Adult Dairy Cattle</td>
<td>Turkeys, Toms, Fryers, Roasters</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

ELIGIBLE LIVESTOCK OWNERS

To be eligible for LIP, a livestock producer must have legally owned the eligible livestock on the day the livestock died.

Owners of the following types of livestock in the table below may be eligible for LIP:

To be eligible for LIP, an owner’s livestock must:

• Have died as a direct result of an eligible adverse weather event occurring;
  ° On or after Oct. 1, 2011, and;
  ° No later than 60 calendar days from the ending date of the applicable adverse weather event, and;
  ° In the calendar year for which benefits are requested.
• Have been maintained for commercial use as part of a farming operation on the day they died and;
• Not have been produced for reasons other than commercial use as part of a farming operation. Excluded livestock includes wild free roaming animals, pets or animals used for recreational purposes, such as hunting, roping or for show.

ELIGIBLE LIVESTOCK CONTRACT GROWERS

To be eligible for LIP, a contract grower must have had the following on the day the livestock died:

• Possession and control of the eligible livestock and;
• A written agreement with the eligible livestock owner setting the specific terms, conditions and obligations of the parties involved regarding the production of livestock.

In addition to the requirements listed for livestock owners above, the only eligible livestock of contract growers under LIP are poultry and swine.

PAYMENTS

LIP payments are calculated by multiplying the national payment rate for each livestock category by the number of eligible livestock in each category. National payment rates are found at the end of this fact sheet.

LIP national payment rate for eligible livestock owners are based on 75 percent of the average fair market value of the livestock.

The LIP national payment rate for eligible livestock contract growers are based on 75 percent of the average income loss sustained by the contract grower with respect to the dead livestock.

A contract grower’s LIP payment will be reduced by the amount of monetary compensation received from their contractor for the loss of income suffered from the death of livestock under contract.

PAYMENT LIMITATIONS AND ADJUSTED GROSS INCOME (AGI)

For 2012 and subsequent program years, no person or legal entity, excluding a joint venture or general partnership, may receive directly or indirectly, more than $125,000 total in payments under LFP, ELAP, and LIP combined.

For 2011, no person or legal entity, excluding a joint venture or general partnership, may receive directly or indirectly more than $125,000 total in the 2011 program year in payments under the LFP, ELAP, LIP, and Supplemental Revenue Assistance Payments (SURE) program, when at least $25,000 of such total 2011 program payments is from LFP or LIP, for losses from October 1, 2011, through December 31, 2011.

In applying the limitation on average adjusted gross income, an individual or entity is ineligible for payment under LIP if the average AGI of the individual or entity exceeds $900,000. Direct attribution provisions apply to LIP for 2011 and subsequent years. Under direct attribution, any payment to a legal entity also will be considered for payment limitation purposes to be a payment to persons or legal entities with an interest in the legal entity or in a sub-entity.

APPLYING FOR LIP

Producers may apply to receive LIP benefits at local FSA offices.

Producers who suffer livestock death losses should submit a notice of loss and an application for payment to the local FSA office maintains their farm records.

To be eligible, the notice of loss must be submitted the earlier of:

• 30 calendar days of when the loss of livestock is apparent to the producer; or
• 30 calendar days after the end of the calendar year in which the loss of livestock occurred.
The following table provides the final dates to file a notice of loss and application for payments:

<table>
<thead>
<tr>
<th>Date of Livestock Death</th>
<th>Final Date to File Notice of Loss</th>
<th>Final Date to Submit an Application for Payment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calendar Years 2015- and</td>
<td>30 days after death is apparent</td>
<td>Jan. 30 of each year</td>
</tr>
<tr>
<td>subsequent years</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The producer must include a copy of the grower contract if he/she is a contract grower and any other supporting documents required for determining eligibility. Supporting documents must show evidence of loss, current physical location of livestock in inventory and location of the livestock at the time of death.

Payments may be made for eligible losses suffered by an eligible producer who is now deceased or for a dissolved entity if a currently authorized representative signs the application for payment. Proof of authority to sign for a deceased individual or dissolved entity must be provided. If a producer is a dissolved entity, all former members at the time of dissolution or their duly authorized representative(s) must sign the application for payment.

**LIVESTOCK DEATH LOSS DOCUMENTATION**

Documentation requirements for livestock deaths that occurred after Oct. 1, 2011 through Dec. 31, 2014 have been relaxed from the rules outlined below. Contact a local FSA county office for additional information.

Livestock owners should record all pertinent information of livestock death losses due to adverse weather and attacks by animals reintroduced into the wild by the federal government or protected by federal law.

Documentation of the number and kind of livestock that have died, supplemented if possible by such items as, but not limited to:

- Photographs or video records to document the loss, dated if possible;
- Purchase records, veterinarian records, production records, bank or other loan documents;
- Written contracts, records assembled for tax purposes, private insurance documents, and other similar reliable documents.

Applicants must provide adequate proof that the eligible livestock deaths occurred as a direct result of an eligible adverse weather event or eligible attack by an eligible animal or avian predator in the calendar year for which benefits are being requested. The quantity and kind of livestock that died as a direct result of the eligible event may be documented by:

- Purchase records;
- Veterinarian records;
- Bank or other loan documents;
- Rendering truck receipts or certificates;
- Federal Emergency Management Agency records;
- National Guard records;
- Written contracts;
- Production records;
- Records assembled for tax purposes;
- Property tax records;
- Private insurance documents;
- Similar documents.
If adequate verifiable proof of death records documentation is not available, FSA will accept reliable records in conjunction with verifiable beginning and ending inventory records as proof of death. Reliable records may include, but are not limited to:

- Contemporaneous producer records existing at the time of the adverse weather event;
- Pictures(s) with a date;
- Brand inspection records;
- Dairy herd improvement records; and
- Similar reliable documents.

FSA will accept certifications of livestock deaths by third parties on form CCC-854 along with verifiable beginning and ending inventory documentation if the following conditions are met:

- The livestock owner or livestock contract grower, as applicable, certifies in writing:
  - That there is no other documentation of death available;
  - The number of livestock in inventory at the time of the adverse weather event.
- The third party provides their telephone number, address and a written statement containing:
  - Specific details about their knowledge of the livestock deaths;
  - Their affiliation with the livestock owner;
  - The accuracy of the deaths claimed by the livestock owner.

FSA will use data furnished by the applicant to determine eligibility for program benefits. Furnishing the data is voluntary; however, without all required data program benefits will not be approved or provided.

**MORE INFORMATION**

To find more information about FSA programs, contact your local FSA office or USDA Service Center, or visit FSA online at www.fsa.usda.gov
## Table 1: LIP Payment Rates for Eligible Livestock Owners (rates have been reduced by the required 75%)

<table>
<thead>
<tr>
<th>Kind</th>
<th>Type</th>
<th>Weight Range</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>2011</td>
<td>2012</td>
<td>2013</td>
<td>2014</td>
</tr>
<tr>
<td>Alpacas</td>
<td></td>
<td></td>
<td>$280.53</td>
<td>$262.50</td>
<td>$267.87</td>
<td>$270.00</td>
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<tr>
<td>Beef</td>
<td>Adult</td>
<td>Bull</td>
<td>$971.03</td>
<td>$1,369.17</td>
<td>$1,381.63</td>
<td>$1,590.49</td>
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<tr>
<td></td>
<td></td>
<td>Cow</td>
<td>$746.95</td>
<td>$1,053.21</td>
<td>$1,062.79</td>
<td>$1,223.45</td>
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<tr>
<td></td>
<td>Nonadult</td>
<td>Less than 400 pounds</td>
<td>$336.04</td>
<td>$460.96</td>
<td>$454.46</td>
<td>$553.77</td>
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<tr>
<td></td>
<td></td>
<td>400 to 799 pounds</td>
<td>$490.68</td>
<td>$669.14</td>
<td>$641.18</td>
<td>$748.34</td>
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<tr>
<td></td>
<td></td>
<td>800 pounds or more</td>
<td>$766.03</td>
<td>$972.47</td>
<td>$967.99</td>
<td>$1,149.39</td>
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<tr>
<td>Buffalo/Beefalo</td>
<td>Adult</td>
<td>Bull</td>
<td>$1,232.82</td>
<td>$1,738.30</td>
<td>$1,754.12</td>
<td>$2,019.28</td>
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<tr>
<td></td>
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<td>Cow</td>
<td>$657.50</td>
<td>$927.09</td>
<td>$935.53</td>
<td>$1,076.95</td>
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<tr>
<td></td>
<td>Nonadult</td>
<td>Less than 400 pounds</td>
<td>$319.24</td>
<td>$437.91</td>
<td>$431.73</td>
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<tr>
<td></td>
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<td>400 to 799 pounds</td>
<td>$466.15</td>
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<tr>
<td></td>
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<td>800 pounds or more</td>
<td>$727.73</td>
<td>$923.84</td>
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<tr>
<td>Chickens</td>
<td>Broilers, Pullets (regular size)</td>
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<td>$2.39</td>
<td>$2.42</td>
<td>$2.60</td>
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<tr>
<td></td>
<td>Chicks</td>
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<td>$0.23</td>
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<tr>
<td></td>
<td>Layers</td>
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<td>$13.63</td>
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<td></td>
<td>Pullets, Cornish Hens (small size)</td>
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<td>$1.72</td>
<td>$1.70</td>
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<td></td>
<td>Roasters</td>
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<td>$2.81</td>
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<td>Dairy</td>
<td>Adult</td>
<td>Bull</td>
<td>$997.50</td>
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<td>$1,035.00</td>
<td>$1,080.00</td>
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<tr>
<td></td>
<td></td>
<td>Cow</td>
<td>$997.50</td>
<td>$1,087.50</td>
<td>$1,035.00</td>
<td>$1,080.00</td>
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<tr>
<td></td>
<td>Nonadult</td>
<td>Less than 400 pounds</td>
<td>$249.38</td>
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<td>$270.00</td>
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<td></td>
<td>400 to 799 pounds</td>
<td>$498.75</td>
<td>$543.75</td>
<td>$517.50</td>
<td>$540.00</td>
</tr>
<tr>
<td></td>
<td></td>
<td>800 pounds or more</td>
<td>$766.03</td>
<td>$878.37</td>
<td>$835.96</td>
<td>$872.31</td>
</tr>
<tr>
<td>Deer</td>
<td></td>
<td></td>
<td>$412.50</td>
<td>$412.50</td>
<td>$420.93</td>
<td>$429.53</td>
</tr>
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<td>Ducks</td>
<td>Ducklings</td>
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<td>$0.61</td>
<td>$0.66</td>
<td>$0.66</td>
<td>$0.66</td>
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<td>Ducks</td>
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<td>$3.82</td>
<td>$4.15</td>
<td>$4.12</td>
<td>$4.12</td>
</tr>
<tr>
<td>Elk</td>
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<td></td>
<td>$572.59</td>
<td>$572.59</td>
<td>$584.29</td>
<td>$596.23</td>
</tr>
<tr>
<td>Emus</td>
<td></td>
<td></td>
<td>$150.00</td>
<td>$150.00</td>
<td>$153.07</td>
<td>$171.34</td>
</tr>
<tr>
<td>Equine</td>
<td></td>
<td></td>
<td>$637.50</td>
<td>$637.50</td>
<td>$650.53</td>
<td>$728.18</td>
</tr>
<tr>
<td>Geese</td>
<td>Goose</td>
<td></td>
<td>$19.35</td>
<td>$12.88</td>
<td>$21.31</td>
<td>$21.31</td>
</tr>
<tr>
<td></td>
<td>Gosling</td>
<td></td>
<td>$4.06</td>
<td>$2.70</td>
<td>$4.47</td>
<td>$4.47</td>
</tr>
<tr>
<td>Goats</td>
<td>Bucks</td>
<td></td>
<td>$89.91</td>
<td>$121.17</td>
<td>$121.97</td>
<td>$125.58</td>
</tr>
<tr>
<td></td>
<td>Nannies</td>
<td></td>
<td>$68.15</td>
<td>$98.51</td>
<td>$98.54</td>
<td>$105.55</td>
</tr>
<tr>
<td></td>
<td>Slaughter Goats/Kids</td>
<td></td>
<td>$58.89</td>
<td>$66.72</td>
<td>$46.72</td>
<td>$80.25</td>
</tr>
<tr>
<td>Llamas</td>
<td></td>
<td></td>
<td>$210.00</td>
<td>$210.00</td>
<td>$214.29</td>
<td>$217.50</td>
</tr>
<tr>
<td>Reindeer</td>
<td></td>
<td></td>
<td>$412.50</td>
<td>$412.50</td>
<td>$420.93</td>
<td>$429.53</td>
</tr>
<tr>
<td>Sheep</td>
<td>Ewes</td>
<td></td>
<td>$117.39</td>
<td>$175.98</td>
<td>$104.86</td>
<td>$119.83</td>
</tr>
<tr>
<td></td>
<td>Lambs</td>
<td></td>
<td>$126.84</td>
<td>$143.70</td>
<td>$100.63</td>
<td>$172.85</td>
</tr>
<tr>
<td></td>
<td>Rams</td>
<td></td>
<td>$116.04</td>
<td>$173.96</td>
<td>$136.33</td>
<td>$140.19</td>
</tr>
<tr>
<td>Swine</td>
<td>Feeder Pigs</td>
<td>Less than 50 pounds</td>
<td>$48.12</td>
<td>$43.90</td>
<td>$42.60</td>
<td>$68.76</td>
</tr>
<tr>
<td></td>
<td>Lightweight Barrows, Gilts</td>
<td></td>
<td>$67.73</td>
<td>$67.73</td>
<td>$73.93</td>
<td>$88.70</td>
</tr>
<tr>
<td></td>
<td>Sows, Boars, Barrows, Gilts</td>
<td></td>
<td>$87.33</td>
<td>$104.61</td>
<td>$105.25</td>
<td>$108.64</td>
</tr>
<tr>
<td></td>
<td>Boars, Sows</td>
<td>450 pounds or more</td>
<td>$201.03</td>
<td>$221.80</td>
<td>$234.38</td>
<td>$292.11</td>
</tr>
<tr>
<td>Turkeys</td>
<td>Poults</td>
<td></td>
<td>$1.14</td>
<td>$1.10</td>
<td>$1.13</td>
<td>$1.15</td>
</tr>
<tr>
<td></td>
<td>Toms, Fryers, roasters</td>
<td></td>
<td>$12.20</td>
<td>$14.45</td>
<td>$13.49</td>
<td>$13.68</td>
</tr>
</tbody>
</table>
## Table 2: LIP Payment Rates for Eligible Livestock for Livestock Contract Growers

(rates have been reduced by the required 75%)

<table>
<thead>
<tr>
<th>Kind</th>
<th>Type</th>
<th>Weight Range</th>
<th>Payment Rate Per Head</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chickens</td>
<td>Broilers, Pullets (regular size)</td>
<td></td>
<td>2011</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>$0.26</td>
</tr>
<tr>
<td></td>
<td>Layers</td>
<td></td>
<td>$0.69</td>
</tr>
<tr>
<td></td>
<td>Pullets, Cornish Hens (small size)</td>
<td></td>
<td>$0.19</td>
</tr>
<tr>
<td></td>
<td>Roasters</td>
<td></td>
<td>$0.31</td>
</tr>
<tr>
<td>Ducks</td>
<td></td>
<td></td>
<td>$0.42</td>
</tr>
<tr>
<td>Geese</td>
<td></td>
<td></td>
<td>$2.84</td>
</tr>
<tr>
<td>Swine</td>
<td>Feeder pigs</td>
<td>Less than 50 pounds</td>
<td>$5.47</td>
</tr>
<tr>
<td></td>
<td>Lightweight Barrows, Gilts</td>
<td>50 to 150 pounds</td>
<td>$10.17</td>
</tr>
<tr>
<td></td>
<td>Sows/Boars/Barrows, Gilts</td>
<td>151 to 450 pounds</td>
<td>$13.11</td>
</tr>
<tr>
<td></td>
<td>Boars, Sows</td>
<td>450 pounds or more</td>
<td>$82.61</td>
</tr>
<tr>
<td>Turkeys</td>
<td>Toms, Fryers, Roasters</td>
<td></td>
<td>$0.34</td>
</tr>
</tbody>
</table>
### Farm Loan Information Chart

The following chart summarizes FSA farm loan information. Additional details are available at local FSA offices and on FSA’s website: www.fsa.usda.gov.

<table>
<thead>
<tr>
<th>Program</th>
<th>Maximum Loan Amount</th>
<th>Rates and Terms</th>
<th>Use of Proceeds</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct Farm Ownership (FO)</td>
<td>$300,000</td>
<td>• Rate based on agency borrowing costs</td>
<td>• Purchase farm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Term up to 40 years</td>
<td>• Construct buildings or other capital improvements</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Soil and water conservation</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Pay closing costs</td>
</tr>
<tr>
<td>Direct Farm Ownership (FO)</td>
<td>$300,000</td>
<td>• Rate is direct FO rate less 2% with a floor of 2.5% if at least 50% of loan amount provided by other lender</td>
<td>Same as Direct FO</td>
</tr>
<tr>
<td>Participation</td>
<td></td>
<td>• Term up to 40 years</td>
<td></td>
</tr>
<tr>
<td>Direct Down Payment</td>
<td>The lesser of:</td>
<td>• Rate is direct FO rate less 4% with a floor of 1.5%</td>
<td>• Purchase of farm by a beginning or socially disadvantaged farmer</td>
</tr>
<tr>
<td>Farm Ownership Program</td>
<td>• 45% of the purchase price,</td>
<td>• Term of 20 years</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• 45% of the appraised value,</td>
<td>• Down payment of at least 5%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• $300,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Direct Operating (OL)</td>
<td>$300,000</td>
<td>• Rate based on agency borrowing cost</td>
<td>• Purchase livestock, poultry, equipment, feed, seed, farm chemicals and supplies</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Term from 1 to 7 years</td>
<td>• Soil and water conservation</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Refinance debts with certain limitations</td>
</tr>
<tr>
<td>Direct Operating Microloan (ML)</td>
<td>$50,000</td>
<td>Same as Direct OL</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Direct Emergency</td>
<td>100% actual or physical losses $500,000 maximum program indebtedness</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Rate is based on the OL rate plus 1%</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Term from 1 to 7 years</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Term up to 40 years for physical losses on real estate</td>
<td></td>
</tr>
<tr>
<td>Guaranteed Operating</td>
<td>$1,392,000 (Amount adjusted annually for inflation)</td>
<td>• Rate determined by the lender</td>
<td>Same as direct OL</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Term from 1 to 7 years</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Loan guarantee fee is 1.5%</td>
<td></td>
</tr>
<tr>
<td>Guaranteed Farm Ownership</td>
<td>$1,392,000 (Amount adjusted annually for inflation)</td>
<td>• Rate determined by the lender</td>
<td>Same as direct FO except loan may be used to refinance debts</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Term from 1 to 7 years</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Loan guarantee fee is 1.5%</td>
<td></td>
</tr>
<tr>
<td>Guaranteed Conservation Loan (CL)</td>
<td>$1,392,000 (Amount adjusted annually for inflation)</td>
<td>• Rate determined by the lender</td>
<td>Implement any conservation practice in an NRCS approved conservation plan</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Term not to exceed 30 years, or shorter period, based on the life of the security</td>
<td>• May be used to refinance debts related to implementing an NRCS approved conservation plan</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Loan guarantee fee is 1.5%</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Eligibility requirements expanded to include large and financially strong operations</td>
<td></td>
</tr>
<tr>
<td>Land Contract (LC) Guarantee</td>
<td>The purchase price of the farm cannot exceed the lesser of: $500,000, the current market value of property</td>
<td>• Rate cannot exceed the direct FO interest rate plus 3%</td>
<td>• Sell real estate through a land contract to a beginning or socially disadvantaged farmer</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Amortized over a minimum of 20 years with no balloon payments during the first 10 years of loan</td>
<td>• Guarantee is with the seller of the real estate</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Down payment of at least 5%</td>
<td></td>
</tr>
</tbody>
</table>

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Livestock Risk Protection

The Livestock Risk Protection Insurance Plan for Feeder Cattle (LRP-Feeder Cattle) is designed to insure against declining market prices. You may choose from a variety of coverage levels and insurance periods that match the time your feeder cattle would normally be marketed (ownership may be retained).

You may buy LRP-Feeder Cattle insurance throughout the year from Risk Management Agency (RMA)-approved livestock insurance agents. Premium rates, coverage prices, and actual ending values are posted online daily.

You may choose coverage prices ranging from 70 to 100 percent of the expected ending value. At the end of the insurance period, if the actual ending value is below the coverage price, you will be paid an indemnity for the difference between the coverage price and actual ending value.

Visit RMA’s website to see the LRP-Feeder Cattle program’s coverage prices, rates, actual ending values, and per hundredweight insurance cost on (see useful links below). Actual ending values are based on weighted average prices, from the Chicago Mercantile Exchange Group Feeder Cattle Index. Actual ending values are posted on RMA’s website at the end of the insurance period.

Useful Links


Approved livestock agents and insurance companies: [www.rma.usda.gov/tools/agent.html](http://www.rma.usda.gov/tools/agent.html)

Related AMS online livestock reports: [marketnews.usda.gov/portal/lg?paf_dm](http://www.marketnews.usda.gov/portal/lg?paf_dm)

Availability

You submit a one-time application for LRP-Feeder Cattle coverage. After the application is accepted, you can buy specific coverage endorsements throughout the year for up to 1,000 head of feeder cattle that are expected to weigh up to 900 pounds at the end of the insurance period. The annual limit for LRP-Feeder Cattle is 2,000 head per producer per year (July 1 to June 30). All insured calves and cattle must be located in a state approved for LRP-Feeder Cattle at the time you buy an insurance policy.

The length of insurance coverage available for each specific coverage endorsement is 13, 17, 21, 26, 30, 34, 39, 43, 47, or 52 weeks. Coverage is available for:

- Calves;
- Steers;
- Heifers;
- Predominantly Brahman cattle; and
- Predominantly dairy cattle.

You may also choose from two weight ranges - under 600 pounds and 600-900 pounds.


Buying a Policy

You must buy LRP-Feeder Cattle insurance through a livestock insurance agent. You may fill out an application at any time. However, insurance does not attach until you buy a specific coverage endorsement. Coverage will not attach unless the premium is paid on the day you buy coverage. You may buy multiple, specific, coverage endorsements with one application. Insurance coverage starts the day you buy a specific coverage endorsement and RMA approves the purchase.

There are funding limitations for all livestock programs. The Risk Management Agency tracks total policy sales against available underwriting capacity using a real-time, web-based program. Sales end when the livestock insurance policy underwriting capacity is reached.

This fact sheet gives only a general overview of the crop insurance program and is not a complete policy. For further information and an evaluation of your risk management needs, contact a crop insurance agent.
Where to Buy Crop Insurance
All multi-peril crop insurance, including Catastrophic Risk Protection policies, are available from private insurance agents. A list of crop insurance agents is available at all USDA service centers and on the RMA website at: www3.rma.usda.gov/apps/agents/.

Contact Us
USDA/RMA
1400 Independence Ave., SW, Stop 0801
Washington, D.C. 20250-0801
Phone: (202) 690-2803
Fax: (202) 690-2818
RMA Website: www.rma.usda.gov
E-mail: RMA.CCO@rma.usda.gov

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United States Department of Agriculture; Office of the Assistant Secretary for Civil Rights; 1400 Independence Ave., SW; Washington, DC 20250-9410. Or call toll free at (866) 632-9992 (voice) to obtain additional information, the appropriate office or to request documents. Individuals who are deaf, hard of hearing, or have speech disabilities may contact USDA through the Federal Relay service at (800) 877-8339 or (800) 845-6136.
Livestock Risk Protection

The Livestock Risk Protection Insurance Plan for Fed Cattle (LRP-Fed Cattle) is designed to insure against declining market prices. Beef producers may choose from a variety of coverage levels and insurance periods that correspond with the time your market-weight cattle would normally be sold.

You may buy LRP-Fed Cattle throughout the year from Risk Management Agency (RMA)-approved livestock insurance agents. Premium rates, coverage prices, and actual ending values are posted online daily.

You may choose coverage prices ranging from 70 to 100 percent of the expected ending value. At the end of the insurance period, if the actual ending value is below the coverage price, you may receive an indemnity payment for the difference between the coverage price and actual ending value.

Visit RMA’s website to see the LRP-Fed Cattle program’s coverage prices, rates, actual ending values, and per hundredweight insurance cost (see useful links below). The actual ending values are based on weighted prices from USDA’s Agricultural Marketing Service. Actual ending values are posted on the RMA’s website at the end of the insurance period.

Useful Links

<table>
<thead>
<tr>
<th>Description</th>
<th>URL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Approved livestock agents and insurance companies</td>
<td><a href="http://www.rma.usda.gov/tools/agent.html">www.rma.usda.gov/tools/agent.html</a></td>
</tr>
<tr>
<td>Related AMS online livestock reports</td>
<td><a href="http://marketnews.usda.gov/portal/lg?paf_dm">marketnews.usda.gov/portal/lg?paf_dm</a></td>
</tr>
</tbody>
</table>

Availability

You submit a one-time application for LRP-Fed Cattle coverage. After the application is accepted, you may buy specific coverage endorsements for up to 2,000 head of heifers and steers (weighing between 1,000 and 1,400 pounds) that will be marketed for slaughter near the end of the insurance period. The annual limit for LRP-Fed Cattle is 4,000 head per producer for each crop year (July 1 to June 30). All insured cattle must be located in a state approved for LRP-Fed Cattle at the time you buy insurance coverage.

The length of insurance coverage available for each specific coverage endorsement is 13, 17, 21, 26, 30, 34, 39, 43, 47, or 52 weeks.


Buying a Policy

You must buy LRP-Fed Cattle insurance through a livestock insurance agent. You can fill out an application at any time. However, insurance does not attach until you buy a specific coverage endorsement. You must pay the insurance premium the day you buy insurance coverage for coverage to start. You may buy multiple specific coverage endorsements with one application. Your insurance coverage starts the day you buy a specific coverage endorsement and RMA approves the purchase.

There are funding limitations for all livestock programs. Therefore, RMA tracks total policy sales against available underwriting capacity using a real-time, web-based program. Sales stop when underwriting capacity is reached.

Where to Buy Crop Insurance

All multi-peril crop insurance, including Catastrophic Risk Protection policies, are available from private insurance agents. A list of crop insurance agents is available at all USDA service centers and on the RMA website at: [www3.rma.usda.gov/apps/agents/](http://www3.rma.usda.gov/apps/agents/)

Contact Us

USDA/RMA
1400 Independence Ave., SW, Stop 0801
Washington, D.C. 20250-0801
Phone: (202) 690-2803
Fax: (202) 690-2818
RMA Website: [www.rma.usda.gov](http://www.rma.usda.gov)
E-mail: RMA.CCO@rma.usda.gov

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A Risk Management Agency Fact Sheet

Livestock Risk Protection

Lamb

August 2009
Slightly Revised July 2012

General Background
Livestock Risk Protection (LRP)-Lamb is designed to insure against unexpected declines in market prices. Sheep producers may select from a variety of coverage levels and insurance periods that match general feeding, production, and marketing practices.

LRP-Lamb may be purchased weekly throughout the year from RMA-approved livestock insurance agents. Premium rates, coverage prices, and actual ending values are posted online weekly.

Coverage Availability
Sheep producers submit a one-time application for LRP-Lamb coverage. After the application is accepted, specific coverage endorsements may be purchased. The number of lambs insured under a specific coverage endorsement is limited to 2,000 head. The annual limit for LRP-Lamb is 28,000 head per producer for each reinsurance year (July 1 to June 30). All insured lambs must be located in a State approved for LRP-Lamb at the time insurance is purchased.

The length of insurance available for each Specific Coverage Endorsement is 13, 20, 26, or 39 weeks. Lambs covered under the policy are feeder or slaughter lambs that are expected to weigh between 50 and 150 pounds by the ending period.

LRP-Lamb is available to sheep producers with lambs in the following 28 States: Arizona, California, Colorado, Idaho, Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Montana, Nebraska, Nevada, New Mexico, North Dakota, Ohio, Oklahoma, Oregon, Pennsylvania, South Dakota, Texas, Utah, Virginia, Washington, West Virginia, Wisconsin, and Wyoming.

Coverage Levels, Prices, and Rates
Sheep producers may select coverage prices ranging from 80 to 95 percent of the expected ending value. At the end of the insurance period, if the actual ending value is below the coverage price, an indemnity will be paid for the difference between the coverage price and actual ending value.

The LRP-Lamb program’s coverage prices, rates, actual ending values, and per hundredweight cost of insurance may be viewed on the Risk Management Agency’s Web site. The actual ending values are based upon the weekly average prices using the “Calculated Formula Live Price,” as reported by USDA’s Agricultural Marketing Service. Actual ending values will be posted on the Risk Management Agency’s Web site at the end of the insurance period.

About the Application Process
LRP-Lamb insurance must be purchased through a livestock insurance agent. An application can be filled out at any time; however, insurance does not attach until a Specific Coverage Endorsement is purchased. Coverage will not start unless the premium is paid on the day insurance coverage is purchased.

This fact sheet gives only a general overview of the crop insurance program and is not a complete policy. For further information and an evaluation of your risk management needs, contact a crop insurance agent.
purchased. Multiple Specific Coverage Endorsements may be purchased with one application. Insurance coverage starts the day a Specific Coverage Endorsement is purchased and approved by the Risk Management Agency.

There are funding limitations for all livestock programs; therefore, the Risk Management Agency tracks total policy sales against available underwriting capacity using a real-time, Web-based program. Sales will cease when underwriting capacity is reached.

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The Risk Management Agency’s (RMA) Pasture, Rangeland, Forage (PRF) Pilot Insurance Program is designed to provide insurance coverage on your pasture, rangeland, or forage acres. This innovative pilot program is based on either biomass (Vegetation Index) or precipitation (Rainfall Index) depending on the index available in your area. This program is designed to give you the ability to buy insurance protection for losses of forage produced for grazing or harvested for hay, which result in increased costs for feed, destocking, depopulating, or other covered actions.

PRF is available in selected states and counties. You can see the states and counties where the Rainfall Index and the Vegetation Index are available at: www.rma.usda.gov/policies/pasturerangeforage/2013prfavailabilitymap.pdf.

The Rainfall Index uses National Oceanic and Atmospheric Administration Climate Prediction Center (NOAA CPC) data and each grid is 0.25 degrees in latitude by 0.25 degrees in longitude, which translate to approximately 17 x 17 miles at the equator. You must select at least two, 2-month time periods where precipitation is important to your operation. These time periods are called index intervals.

Your insurance payments are determined by using NOAA CPC data for the grid(s) and index interval(s) you have chosen to insure. When the final grid index falls below your “trigger grid index”, you may receive an indemnity. This insurance coverage is for a single peril—lack of precipitation. Coverage is based on losses within the grid rather than on an individual producer’s losses. Losses for the Vegetation Index are paid based on the difference between the normal NDVI data (expected grid index) and the actual grid index experience during the index interval(s) you have chosen to insure. When the final grid index falls below your “trigger grid index”, you may receive a loss payment.

Pasture, Rangeland, Forage insurance was designed to help protect your operation from the risks of forage losses that are produced for grazing or harvested for hay resulting in increased costs for feed, destocking, depopulating, etc. The program is designed to allow maximum flexibility to meet the risk management needs of your operation. You are not required to insure all your acres, but you cannot exceed the total number of grazing or haying acres you operate. The program provides protection while allowing you to insure only those acres that are important to your grazing program or hay operation. By selecting a productivity factor, you can establish a value between 60 and 150 percent of the county base value and match the amount of your protection to the value of forage that best represents your specific grazing or hay operation.

You will be asked to make several choices when insuring your grazing or hay production, including coverage level, index intervals, productivity factor, and number of acres. You should work with your crop insurance agent to view the Grid ID Locator map and index grids for your area, and assign acreage to one or more grids.

This fact sheet gives only a general overview of the crop insurance program and is not a complete policy. For further information and an evaluation of your risk management needs, contact a crop insurance agent.
based on the location and use of the acreage to be insured. RMA also encourages you to use the Grid ID Locator and decision support tools available on RMA’s website to help you decide whether PRF is the right insurance coverage for your operation. The vegetation and rainfall indices do not measure your direct production or loss. You are insuring a rainfall or vegetation index that is expected to estimate your production. Please review the historical indices tools for your grid along with past production records to determine if these programs will work for your operation.

Please visit your crop insurance agent for more information. If you do not have an agent, you can find one online using the RMA agent locator at: www.rma.usda.gov/tools/agent.html.

**Contact Us**
USDA/RMA
Mail Stop 0801
1400 Independence Ave., SW
Washington, DC 20250
**Phone:** (202) 690-2803
**Fax:** (202) 690-2818
**E-mail:** RMA.CCO@rma.usda.gov
Forage Production
Nevada

Crop Insured
Alfalfa is insurable in a county if it is grown for one or more years after the stand is established. Two types of alfalfa are insurable: pure alfalfa and alfalfa grass mixture.

Alfalfa is defined as:
- A pure stand of perennial alfalfa (including alfalfa seeded with a cover crop or nurse crop);
- At least four living alfalfa plants per square foot, depending on age; and
- Age up to and including eight years.

Alfalfa grass mixture is defined as:
- A mixture of perennial alfalfa and perennial grasses;
- At least 1.2 living alfalfa plants per square foot;
- No maximum age limitations; and
- Including all alfalfa stands that are nine years and older.

Alfalfa with stands that are at least nine years old or with less than the required amount of plants per square foot are insurable as the alfalfa-grass mixture type as long as there are at least 1.2 living alfalfa plants per square foot. There is no maximum age limit. See a crop insurance agent for more details on age and stand requirements.

Counties Available
Forage production insurance is available in Carson City, Churchill, Clark, Douglas, Elko, Eureka, Esmeralda, Humboldt, Lander, Lincoln, Lyon, Mineral, Nye, Pershing, Storey, Washoe, and White Pine counties. Forage production may be insurable in other counties by written agreement if specific criteria are met. Contact an agent for more details.

Causes of Loss
You are protected against the following:
- Adverse weather conditions;
- Failure of irrigation water supply, if caused by an insured peril during the insurance year;
- Fire;
- Insects or plant disease, but not damage due to insufficient or improper application of control measures; or
- Wildlife.

Insurance Period
Insurance begins on acreage with an adequate stand on the later of the date we accept your application or:
- April 15 for spring seeded; or
- October 15 for fall seeded and established stand.

Insurance ends at the earliest occurrence of one of the following:
- Total destruction;
- Removal from the windrow or the field for each cutting;
- Final adjustment of a loss;
- Date grazing commences on the forage crop;
- Abandonment of the forage crop; or
- October 15.

Important Dates
- Sales Closing/Cancellation........October 31, 2014
- Acreage Report.....................December 15, 2014
- Premium Billing........................July 1, 2015
- Termination............................October 31, 2015

Coverage Levels and Premium Subsidies
The forage production guarantee is an individual amount of annual production measured in tons of air dried alfalfa or alfalfa grass depending on the type. An individual guarantee is based on your past production. You will be asked to provide your

This fact sheet gives only a general overview of the crop insurance program and is not a complete policy. For further information and an evaluation of your risk management needs, contact a crop insurance agent.
insurance agent 4 to 10 years of production and planting history. This history is used to determine your average yield per acre. Coverage levels range from 50 to 75 percent of your approved yield. Crop insurance premiums are subsidized as shown in the following table. For example, if you choose the 65-percent coverage level, your premium share would be 41 percent of the base premium.

<table>
<thead>
<tr>
<th>Item</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coverage Level</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>55</td>
</tr>
<tr>
<td></td>
<td>60</td>
</tr>
<tr>
<td></td>
<td>65</td>
</tr>
<tr>
<td></td>
<td>70</td>
</tr>
<tr>
<td>Premium Subsidy</td>
<td>75</td>
</tr>
<tr>
<td>Your Premium Share</td>
<td>33</td>
</tr>
<tr>
<td></td>
<td>36</td>
</tr>
<tr>
<td></td>
<td>36</td>
</tr>
<tr>
<td></td>
<td>41</td>
</tr>
<tr>
<td></td>
<td>41</td>
</tr>
<tr>
<td></td>
<td>45</td>
</tr>
</tbody>
</table>

Catastrophic Risk Protection (CAT) coverage is fixed at 50 percent of your approved yield and 55 percent of the price election. CAT is 100-percent subsidized with no premium cost to you. There is, however, an administrative fee of $300 per crop per county, regardless of the acreage.

**Loss Example**

Assume an average yield of 6 tons per acre, 65-percent coverage on 100 acres, 100-percent price election of $205, and 100-percent share.

\[
\begin{align*}
6 & \quad \text{Tons per acre average yield} \\
\times & \quad 0.65 \quad \text{Coverage level} \\
\quad & \quad 3.9 \quad \text{Tons per acre guarantee} \\
- & \quad 1.0 \quad \text{Tons per acre actually produced} \\
\quad & \quad 2.9 \quad \text{Tons per acre loss} \\
\times & \quad $ 205 \quad \text{Price election} \\
\$595 & \quad \text{Gross indemnity per acre}
\end{align*}
\]

Price used above is for example only. Contact a crop insurance agent for current information.

**Where to Buy Crop Insurance**

All multi-peril crop insurance, including CAT policies, are available from private insurance agents. A list of crop insurance agents is available at all USDA service centers and on the RMA website at: [www3.rma.usda.gov/apps/agents/](http://www3.rma.usda.gov/apps/agents/).

**Contact Us**

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Crop Insured
Small grains are insurable as barley, oats and wheat. Insurable for grain production, not forage. Irrigated and non-irrigated production practices are insurable, as are fall and spring planted crops. Additional coverage endorsements are available for winter wheat. Coverage for all types of small grains may not be available in all counties.

You must insure all or none of your acreage of each type of small grain in the county but you do not have to insure all types of small grain. For example, you may insure all of your wheat and none of your barley. The insurance coverage level on one type of small grain can differ from coverage level on another small grain insured by the same producer.

Counties Available
Small grains are insurable in multiple counties, by type. Small grains in other counties may be insurable by written agreement if specific criteria are met. Contact a crop insurance agent for more details.

Causes of Loss
You are protected against the following:
- Adverse weather conditions;
- Failure of irrigation water supply, if caused by an insured peril during the insurance year;
- Fire;
- Insects or plant disease, but not damage due to insufficient or improper application of control measures;
- Volcanic eruption; or
- Wildlife.

Insurance Period
Insurance coverage begins when the crop is planted and ends no later than the following October 31.

Important Dates

Barley
Sales Closing
Humboldt and Pershing..............October 31, 2013
All Other Counties....................March 15, 2014
Acreage Report
Humboldt and Pershing......December 15, 2013
Most Insured Counties..............July 15, 2014
Premium Billing....................August 15, 2014

Wheat
Sales Closing.....................October 31, 2013
Acreage Report
Winter Coverage
Endorsement..................November 15, 2013
Winter..........................December 15, 2013
Premium Billing....................August 15, 2014

Oats
Sales Closing......................March 15, 2014
Acreage Report...................July 15, 2014
Premium Billing....................August 15, 2014

Definitions
You can insure oats under the Actual Production History (APH) plan. You can choose one of three plans for barley and wheat:

Yield Protection - The yield protection guarantee is determined by multiplying the production guarantee by the projected price.

Revenue Protection - The revenue protection guarantee is determined by multiplying the production guarantee by the greater of the projected price or the harvest price. (Not applicable to oats)

Revenue Protection with Harvest Price Exclusion - The revenue protection guarantee is determined by multiplying the production guarantee by the projected price. (Not applicable to oats)

This fact sheet gives only a general overview of the crop insurance program and is not a complete policy. For further information and an evaluation of your risk management needs, contact a crop insurance agent.
Coverage Levels and Premium Subsidies
Your production measured in bushels of grain. Your approved average yield is based from 4 to 10 years of production records. Coverage levels range from 50 to 75 percent of your approved yield. Crop insurance premiums are subsidized as shown in the following table. For example, if you choose the 65-percent coverage level, your premium share would be 41 percent of the base premium.

<table>
<thead>
<tr>
<th>Item</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coverage Level</td>
<td>50  55  60  65  70  75</td>
</tr>
<tr>
<td>Premium Subsidy</td>
<td>67  64  64  59  59  55</td>
</tr>
<tr>
<td>Your Premium Share</td>
<td>33  36  36  41  41  45</td>
</tr>
</tbody>
</table>

Catastrophic Risk Protection (CAT) coverage is fixed at 50 percent of your approved yield and 55 percent of the price election. CAT is 100-percent subsidized with no premium cost to you. There is, however, an administrative fee of $300 per crop per county, regardless of the acreage.

Price Elections
Prices below are used to calculate your premium or indemnity.

<table>
<thead>
<tr>
<th>Crop</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barley</td>
<td>$4.22</td>
</tr>
<tr>
<td>Oats</td>
<td>$2.70</td>
</tr>
<tr>
<td>Wheat</td>
<td>$6.72</td>
</tr>
</tbody>
</table>

Harvest Price for Revenue Coverage

- Barley: To be announced
- Wheat: To be announced

Contact a crop insurance agent for current information.

Loss Example
Wheat Indemnity - Assume a Yield Protection plan, an average yield of 90 bushels per acre, a projected price of $6.72, and 100-percent share.

\[
\frac{90 \text{ Bushels per acre average yield}}{0.65 \text{ Coverage level percentage}} - 14 \text{ Bushels per acre actually produced} = \frac{59 \text{ Bushels per acre guarantee}}{45 \text{ Bushels per acre loss}} \times 6.72 \text{ Projected Price} = 302 \text{ Gross indemnity per acre}
\]

Price used above is for example only. Contact a crop insurance agent for current information.

Where to Buy Crop Insurance
All multi-peril crop insurance, including CAT policies, are available from private insurance agents. A list of crop insurance agents is available at all USDA service centers and on the RMA website at: www3.rma.usda.gov/apps/agents/.

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New Whole-Farm Revenue Insurance Protection Available in Nevada

DAVIS, Calif., Nov. 21, 2014 — USDA’s Risk Management Agency (RMA) announced that the new Whole-Farm Revenue Protection insurance policy is now available for the 2015 crop year in all Nevada counties.

The Agricultural Act of 2014 (the 2014 Farm Bill) allowed RMA to create the whole-farm crop insurance policy. The policy allows producers to insure between 50 to 85 percent of their whole farm revenue and makes crop insurance more affordable for producers, including fruit and vegetable growers and organic farmers and ranchers. It allows these growers to insure a variety of crops at once instead of one commodity at a time. That gives them the option of embracing more crop diversity and helps support the production of a wider variety of foods.

With Nevada’s significant boom in high-desert farming, this program could be an essential risk management tool in helping growers mitigate revenue losses. In addition to the major commodities of alfalfa, grains, dairy and livestock grown in Nevada, growers with other commodities can benefit from this program. This includes diversified operations that may be growing artichokes, apples, pistachios, salad greens, and other crops.

The Whole-Farm Revenue Protection insurance includes a wide range of available coverage levels, coverage for replanting, provisions that increase coverage for expanding operations, a higher maximum amount of coverage, and the inclusion of market readiness costs in the coverage. This policy is tailored for any farm with up to $8.5 million in insured revenue, including farms with specialty or organic commodities (both crops and livestock), or those marketing to local, regional, farm-identity preserved, specialty, or direct markets.

The new policy will also provide a whole-farm premium subsidy to farms with two or more commodities as long as minimum diversification requirements are met, which means purchasing crop insurance will be more affordable for producers. Whole-Farm Revenue Protection can be purchased in conjunction with individual crop policies as long as those policies are at a buy-up coverage level.

More information, including availability of the product, can be found on the RMA website at www.rma.usda.gov/policies/wfrp.html.
Crop insurance is sold and delivered solely through private crop insurance agents. A list of crop insurance agents is available at all USDA Service Centers and online at www.rma.usda.gov/tools/agents/. Producers can use the RMA Cost Estimator to get a premium amount estimate of their insurance needs online at ewebapp.rma.usda.gov/apps/costestimator/.

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TREATING SICK CALVES?
Stop missing genetic potential.
Immediate Immunity® with First Defense.

2015 Cattlemen's Update
Scours and Scour Prevention (10 min)

Janie Sustaita
Regional Sales and Marketing Manager
ImmuCell Corporation

The Sun Will Come Out, After Every Storm

"commercial cattle are selling like registered cattle, and registered cattle are selling like racehorses."
—Jay Carlson, BEEF Magazine

TREATING SICK CALVES?
Stop missing genetic potential.
Immediate Immunity® with First Defense.

What we will cover
• Now is not the time to gamble with calf health
  - Value of a scour preventative program
    ▪ Market Every Calf
    ▪ Make Every Calf a Powerhouse

2015 Cattlemen's Update Page 112
Market Every Calf

- Scours causes 14% of deaths within the first 3 weeks
- E. coli and coronavirus are two diseases calves are exposed to immediately after birth
- Calves are not born with an active immune system
  - Colostrum is critical to provide passive immunity
  - Specific antibodies can be administered with colostrum to bind and neutralize E. coli and coronavirus pathogens.

ImmuCell

Immediate Immunity

- One bolus or gel tube after birth
- USDA proven to protect against E. coli and coronavirus
- Compatible with colostrum
- No vaccination stress

ImmuCell

Within the first 45 days, a calf is programmed to become a productive contributor or a resource drain.
Make Every Calf A Powerhouse

Your genetic investment to get a calf crop on the ground is diminished if your calves experience a health set back.

ImmuCell

Developers of First Challenge

Lasting Impact

One scour break leads to:

• Increase subsequent disease
• Increase treatment costs

• Reduce avg daily gain in feedlot
• Delayed breeding age of seedstock

ImmuCell

Developers of First Challenge

<table>
<thead>
<tr>
<th>Dam Scour Vaccines</th>
<th>Oral Calf Vaccines</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increases colostrum antibody levels</td>
<td></td>
</tr>
<tr>
<td>Requires nursing cows through the chute</td>
<td></td>
</tr>
<tr>
<td>Vaccination response is variable</td>
<td></td>
</tr>
<tr>
<td>Triggers immune response to develop protective antibodies within the calf</td>
<td></td>
</tr>
<tr>
<td>Requires a 1 hr colostrum delay (colostrum antibodies inhibit oral vaccines)</td>
<td></td>
</tr>
<tr>
<td>Time delay (risk of infection) while antibodies are being developed</td>
<td></td>
</tr>
<tr>
<td>Vaccination stress on newborn</td>
<td></td>
</tr>
<tr>
<td>Antibodies consumed orally bind to and neutralize disease organisms</td>
<td></td>
</tr>
<tr>
<td>Requires administration within 24 hrs of birth</td>
<td></td>
</tr>
</tbody>
</table>
Don’t take a gamble with newborn calf health
By Janie Sustaita, calf specialist and regional sales and marketing manager with ImmuCell

One of my favorite quotes that I’ve heard recently is, “commercial cattle are selling like registered cattle, and registered cattle are selling like racehorses.” For cattlemen having survived drought, high-input costs, low beef prices and anything else that’s been thrown at them, the current scenario is a nice one to enjoy. But like any true businessman (or woman!) we should always look for a way to capitalize on the favorable prices. One way is to make certain every calf born is a fast-growing powerhouse that is set-up to meet its genetic potential.

Marketing every calf

If you consider that day-old dairy bulls are bringing around $300-450 each, it’s never been more critical for every calf born to make it to market. Digestive problems, such as scouring, cause 14 percent of losses in calves less than 3 weeks old according to a 2007-08 beef study conducted by the National Animal Health Monitoring System (NAHMS). While scours are certainly a problem many of us face, there are ways to combat the challenge such as making sure your calves are receiving the immediate immunity they need from the get go.

Dam body condition score and health status is important to insure quality colostrum is available for that calf, but just as important is being sure each calf consumes specific antibodies that bind and neutralize common calf-hood scour pathogens such as *E. coli* and coronavirus.

But, there are many unknowns about the quality and quantity of colostrum that a newborn beef calf actually receives. It’s important to note that antibody levels are not guaranteed by the cow, even if a pre-calving vaccine program is in place. It’s also difficult to determine whether a calf will get right up and drink, or if the cow will even allow the calf to nurse.

Administering a USDA-approved antibody product, like First Defense®, as a complement to colostrum is a great way to provide your calves with a consistent and dependable amount of protection. First Defense® is a USDA licensed and verified antibody product, available in bolus, gel or powder form, which can be administered to newborn calves in a single dose providing immediate immunity to scours pathogens.

Creating a powerhouse

There has been much talk lately at research meetings about the importance of the first two weeks in a calf’s life. Those first two weeks can either set the calf up to be a valuable, profitable contributor to the herd, or a drain on resources. Keeping every calf alive is critical but taking steps to avoid any performance speed bumps really drives profitability.

USDA-approved antibody products can help prevent mortality and help reduce potential treatment costs, as well as susceptibility to secondary diseases. When a calf’s immune system
isn't compromised early on from fighting pathogens, there is more energy available for calves to grow, putting on lean muscle faster.

With the way the markets are today, it's never been more important to have healthy, growing calves with heavy weaning weights.

**Avoid unnecessary risks**

If you are only relying on momma's colostrum to keep calves alive and thriving, you're gambling at a time when the stakes are very high. Implementing a scours prevention program that includes First Defense® will complement the general mass of antibodies found in maternal colostrum with specific antibodies needed to inactivate the first two scours diseases calves are likely to encounter, *E. coli* and coronavirus.

Investing a few dollars that first day of life can result in hundreds of dollars down the road when a healthy, growthy calf has never been more valuable. Keep every calf alive, and make every marketed calf a powerhouse.

*For more information, contact Janie Sustaita, sales and marketing regional manager with ImmuCell Corporation, at (559) 679-5482, or jsustaita@immucell.com.*

**SIDEBAR:**

**The economic impact of scours**

Scours can be an extremely costly challenge for a calf's health, both immediately and long-term. The same can also be said of the expense of scours on bottom-line! The dollars and cents add up with just a single incidence of scours. These are just a few ways scours can be costly:

- Antibiotic cost
- Electrolyte cost
- Labor cost for treating and drenching
- Potential death loss
- Increased chance of being culled
- Decreased chance of survival
- Reduced ability to meet genetic potential

When all of these costs can be easily countered by making sure you're calves have immediate immunity, it makes sense to invest in a product that can help. Consider using USDA-approved antibody products in your calf management program, and combat scours head-on.
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