

PEST MANAGEMENT (CSP Enhancements)

January 2006

Enhancement Activity Task Sheet

UT-CSP-EPM



Enhancement Activities

Enhancements activities refer to actions that provide resource benefits beyond the level prescribed by NRCS Conservation Practice Standards. Once implemented Enhancement Activities should result in an observable or measurable improvement to the condition of one or more of the soil, water, air, plant, or animal resources, or provide for more efficient resource utilization and/or energy conservation.

Enhancement Activity Benefits

Enhancement activities associated with Pest Management such as implementing an IPM plan or substituting non-chemical methods of controlling pests can result in the following benefits to the producer and the environment:

- Reduced risks to beneficial insects (e.g., honeybees, parasitic wasps, lady beetles, etc.)

- Reduced risks to ground and surface water quality
- Lower costs by limiting chemical applications to only when necessary

To learn more about Integrated Pest Management go to the following website:

<http://extension.usu.edu/files/gardpubs/ipm01.pdf>

CSP Payments

You can earn payments by participating in any of the following activities:

- Reduce pesticide use, break pest cycles and decrease pest pressure by utilizing conservation crop rotation
- Reduce environmental hazards by using non-chemical control methods such as biological, mechanical, and/or cultural controls to minimize the use of pesticides
- Reduce pesticide use by implementing scouting techniques for insects, weeds, and pests to determine economic thresholds prior to chemical application
- Reduce environmental hazards by using pesticides with “Low” or “Very Low” hazard ratings
- Reduce pesticide application by using low application rates, spot treatment, and/or banding
- Reduce pesticide spray overlap through guided measure technology.

CSP Enhancements earnings are subject to payment caps. Your actual payment will depend on your CSP Tier level and the number of acres enrolled.



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Enhancement Activity Task Sheet

UT-CSP-EPM

Client's Acknowledgement Statement:

I have elected to use the following Pest Management activities and understand the requirements of the selected activities (Check all that apply):

- Reduce pesticide use, break pest cycles and decrease pest pressure by utilizing conservation crop rotation (Worksheet 1)
- Reduce environmental hazards by using non-chemical control methods such as biological, mechanical, and/or cultural controls to minimize the use of pesticides (Worksheet 2)
- Reduce pesticide use by implementing scouting techniques for insects, weeds, and pests to determine economic thresholds prior to chemical application (Worksheet 3)
- Reduce environmental hazards by using pesticides with "Low" or "Very Low" hazard ratings (Worksheet 4)
- Reduce pesticide application by using low application rates, spot treatment, and/or banding (Worksheet 5)
- Reduce pesticide spray overlap through guided measure technology (Worksheet 6)

I agree that the following information will be provided to NRCS upon request:

- Written documentation of the activity performed (use attached worksheets or equivalent).
- Copies of dated receipts for equipment or services purchased.

I understand that CSP Enhancements earnings are subject to payment caps and that my actual payments will depend on my CSP Tier level and the number of acres enrolled.

I understand that it is my responsibility to obtain all necessary permits and to comply with all ordinances and laws pertaining to the application of these activities.

Accepted by: _____ Date: _____

USDA Nondiscrimination Statement

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PEST MANAGEMENT (CSP Enhancements)

January 2006

Enhancement Activity Task Sheet

UT-CSP-EPM

Name:

Worksheet 1 – Reduce pesticide use, break pest cycles and decrease pest pressure by utilizing conservation crop rotation

Payment = \$10/Acre for fields where crop rotation has been established specifically to break pest cycles.

For a discussion of Conservation Crop Rotation see: eFOTG/ Section I / References & Technical Notes / Agronomy / Soil Quality-Carbon Sequestration / Conservation Crop Rotation Effects on Soil Quality.

Excerpt –“Conservation Crop Rotation Effects on Soil Quality”

“Conservation practices such as Conservation Crop Rotation help maintain the sustainability and the efficiency of cropland over long periods of time. Conservation Crop Rotation is a systematic sequence of crops grown in combination with other crops or with grasses and legumes. There are fewer problems with weeds, insects, parasitic nematodes, diseases caused by bacteria, fungi, and viruses when using rotations compared to monocultures. When legumes are part of the rotation, nitrogen is supplied to the succeeding crop. With forage rotations, soil organic matter will increase as a result of longer rotations. Rotations can be simple, corn followed by soybeans, or very complex, tobacco with a cover crop for two years followed by corn - double cropped wheat and soybeans using conservation tillage. Crop yields in rotation are often higher than those grown in monoculture. Practices such as conservation tillage in combination with rotations will benefit soil quality by maintaining or increasing soil organic matter. Research has shown the use of the Moldboard plow reduced organic matter by an average of 256 lb/ac/yr (Reicosky, et al 1995).

Tips on Conservation Crop Rotation

- Climate and economics determine the choice of crops in rotations as well as the specific farming systems. The following principles (Magdoff, 1992) should be considered when thinking about a rotation.
- Follow a legume crop by a crop that demands high amounts of nitrogen.
- Grow less nitrogen demanding crops (small grains) the second year after a legume crop.
- Do not grow the same crop in consecutive years in order to decrease insects, weeds, diseases, and nematodes.
- Follow a crop with one that is not closely related species because of insects, diseases, weeds, and nematodes.
- Where applicable use grass or legume sod in rotations or as permanent stands on sloping highly erosive soils.
- Deeply rooted crops such as alfalfa, safflower, or sunflower penetrate to depths of 5 to 6 feet and utilize nutrients and water, and leave channels from decayed roots that improve infiltration.
- To maintain organic matter, rotate high residue crops with low residue crops or use cover crops.”



PEST MANAGEMENT (CSP Enhancements)

Enhancement Activity Task Sheet

January 2006

UT-CSP-EPM

There must be at least a two year crop type change to be considered a Conservation Crop Rotation.

Use this table to document planned crop rotation and target pest controlled by rotation.

Tract & Field #s or Names	Acres	Target Pests	Planned Rotation Sequence						
			1	2	3	4	5	6	7
T486 – 1, 2, 3	320	Quackgrass, Cereal leaf beetle	Alfalfa				Winter Wheat		
T486 – 4, 5	80	Corn Rootworm, Thrips, Nematodes	Onions		Wheat		Corn		alfalfa

Example

To reduce pesticide use, break pest cycles and decrease pest pressure by utilizing conservation crop rotation

I have used a conservation crop rotation on the fields listed above.

Name: _____ Date: _____

PEST MANAGEMENT (CSP Enhancements)

January 2006

Enhancement Activity Task Sheet

UT-CSP-EPM

Name:

Worksheet 2 – Reduce environmental hazards by using non-chemical control methods such as biological, mechanical, and/or cultural controls to minimize the use of pesticides

Payment = \$15/Acre for fields where three or more non-chemical control methods are used

Cultural Controls: Examples;

1. Crop competition, Adapted crops that out compete weeds
 - a. Adjust planting dates to compete with pest i.e. spring vs. fall planting,
2. Sanitation of equipment, fence rows and ditches, includes weeds, disease, insects
3. Host plant disease control.
4. Reduce foliage density in trees, reduces powdery mildew.
5. Don't leave dead wood in orchards.
6. Utilization of certified seed.
7. Black plastic or other mulch to control weedy pests.
8. Plant varieties that are resistant to pests and/or diseases.
9. Trap Crops: Selection of plants that attract pests.
 - a. Some trap crops can be plowed down or managed in some fashion that takes advantage of a vulnerable stage in the crop pest life cycle.
 - b. Including mixed species hedgerow barriers to reduce pest immigration and enhance beneficial arthropods abundance.
10. Beneficial organisms can reduce the need for pesticides and promote pollination.

There are four types of beneficial organisms: Pollinators, Predators, Parasites, and Pathogens

To improve habitat for beneficial organisms at field edges and in odd areas:

- plant a variety of native shrubs, perennial grasses, and forbs
- allow non-noxious native weed species to bloom
- leave portions of your refuge areas untilled and un-mowed

Follow these steps to develop a successful refuge habitat for beneficial organisms:

1. Keep records of where, when, and what pests occur on the farm.
2. Learn about both the pests and the beneficial organism's life cycle and habitat requirements. Where are eggs laid and when do they hatch? Where do the pest/beneficial feed and how long does it need to develop into an adult? Where does the pest/beneficial overwinter and in what form? This information

will not only aid in designing your refuge habitat, but will also aid pest management.

3. Make a list of plants that are available to create a friendlier habitat for the beneficials (or a more unfriendly habitat for pests). Beware of aggressive or invasive plants.
4. Select those plants that are adapted to your soil and climate. Remember, permanent plantings will require annual upkeep after planting to maintain the health and vigor of the planting and to sustain the desired species mix.
5. Observe the results, fine tune the system, and if needed experiment again.

To learn more about increasing and managing biodiversity on your farm to favor beneficial organisms visit the National Sustainable Agriculture Information Service web site at: <http://attra.ncat.org/attra-pub/farmscape.html>

Mechanical Controls: Hand removal, Physical barriers,

Biological Controls: “Any activity of one species that reduces the adverse effects of another.”

1. Mating disruptors
2. Pheromone traps or baits
3. Predators / Parasites
4. Pathogens
5. Herbivorous insects of weeds.

PEST MANAGEMENT (CSP Enhancements)

January 2006

Enhancement Activity Task Sheet**UT-CSP-EPM****Name:****Worksheet 3** - Reduce pesticide use by implementing scouting techniques for insects, weeds, and pests to determine economic thresholds prior to chemical application

Payment = \$5/acre for implementing a scouting program and using economic thresholds for pest problems

Scouting or monitoring - the regular inspection of your plants or crops to determine whether pests are approaching a damaging level or economic threshold. For more information on the concept of economic thresholds go to: <http://extension.usu.edu/files/gardpubs/ipm03.pdf>

- You must provide a copy of a written scouting program and sufficient documentation to verify that plan has been implemented (maps, field notes).
- Economic-injury Level: "The lowest population density of a pest that will cause economic damage: or the amount of pest injury which will justify the cost of control." Utilize Utah State University Extension fact sheets for additional information on economic thresholds for your specific pest and crops.
- Action Threshold: "The pest density at which control measures should be implemented to prevent it from reaching the Economic-injury Level (Point where economic loss occurs)."

Know your action thresholds. It is important to understand that the mere presence of a pest is not enough reason to apply a control measure. The number of pests must be sufficient to cause enough harm to pay for the control measure. The number of pests required to justify a control measure is called the "action threshold." This means treating only when pests reach or exceed the action threshold. This threshold may be a certain number of damaged plants, insects in a trap, or weeds in a field.

The plan must include strategies to address the following:

- Field scouting (times, dates, method)
- Field insect population sampling
- Pesticide selection
- The amount of pesticides applied
- Evaluation procedures

PEST MANAGEMENT (CSP Enhancements)

Enhancement Activity Task Sheet

January 2006
UT-CSP-EPM

Scouting for Weeds

Scouting can generate the largest dollar return of any investment you might make in weed management. Walking fields, orchard blocks or other management units to note the location and abundance of each weed species found is essential in deciding if treatment is necessary and, if so, which control option is best. Complete this process in late season when it's still possible to walk through the crop. Repeat the process early the next season, and use the information to make last minute adjustments to your plan. Save all of your information to compare weed problems from year to year and to improve long-term planning.



A good reference guide is essential for proper weed identification.

Do's and Don'ts of Weed Identification	
Do:	Don't:
<ol style="list-style-type: none"> 1. Take the time to properly identify weeds. 2. Get a good reference guide to help identify the different species. 3. Keep records of weed problems to compare from year to year. 	<ol style="list-style-type: none"> 1. Don't forget about other control methods, in addition to chemical controls. 2. Don't think that plants cannot be identified as seedlings. 3. Don't only scout for weeds once in the season, thinking that you will find all of the problems.



PEST MANAGEMENT (CSP Enhancements)

Enhancement Activity Task Sheet

January 2006

UT-CSP-EPM

Name: _____

Worksheet 4 - Reduce environmental hazards by using pesticides with "Low" or "Very Low" hazard ratings

Payment = \$15/acre for fields where only those pesticides with a human and fish hazard rating of "Low" or "Very Low" for leaching and solution runoff are used.

Hazard ratings will be determined using the NRCS tool WIN-PST. WIN-PST (Windows **Pesticide Screening Tool**) is a computer pesticide management analysis program that estimates environmental hazards for specific pesticides, environmental conditions and application methods.

To determine which pesticides are acceptable you will need to visit the NRCS office and ask for a WIN-PST analysis tailored to your location, soils, and management system.

Attach WIN-PST printout.

Crop Grown	Tract & Field #s	Acres	Pesticide	Date
Winter Wheat	T123 Field 2	40	XXXXXX	7/04 – 7/05

Low Hazard Pesticide Use Agreement

I have used only pesticides that have a "Low" or "Very Low" hazard rating for the fields listed above.

Name: _____ Date: _____



PEST MANAGEMENT (CSP Enhancements)

Enhancement Activity Task Sheet

January 2006

UT-CSP-EPM

Name:

Worksheet 5 - Reduce pesticide application by using low application rates, spot treatment, and/or banding

Payment = \$5/acre for fields where pesticide rates are reduced for an entire year through the use of low application rates, spot treatments, and/or banding.

Low application means using the “low application rate” indicated on the pesticide label.

Spot treatment means applying pesticides to only those areas in the field where the pest is located.

Banding means to apply pesticides in defined areas (generally over crop rows where tillage is restricted)

Crop Grown	Tract & Field #s	Acres	Target Pest	Pesticide & Application Rate	Application Method Used to reduce rate.
Winter Wheat	T123 Field 2	40	broadleaf weeds	2,4-D 1 pint/Ac	<i>Example</i> low rate

Certification

I certify that I have reduced pesticide application by using low application rates, spot treatment and/or banding

Name: _____ Date: _____



PEST MANAGEMENT (CSP Enhancements)

Enhancement Activity Task Sheet

January 2006

UT-CSP-EPM

Name: _____

Worksheet 6 - Reduce pesticide spray overlap through guided measure technology

Payment = \$8/acre for cropland or pasture fields where GPS driven/guided spray equipment is used to spray pesticides with.

Crop Grown	Tract & Field #s	Acres	Target Pest	Pesticide & Application Rate	Application Method Used to reduce rate.
Winter Wheat	T123 Field 2	40	broadleaf weeds	2,4-D 1 pint/Ac	<i>Example</i> low rate

Describe the GPS equipment used or attach a photo:

Certification

I certify that I am using the GPS driven/guided spray equipment described/shown above to spray pesticides on my fields.

Name: _____ Date: _____