

FPP02 - On-Farm Pilot Project



On-Farm Pilot Projects

On-farm pilots consist of the installation, monitoring and publicizing of projects that fit within the identified state priority areas. Pilots should be practices, components, or management techniques that have shown environmental benefits through research but are not used by farmers in the project area. Practices, components, or management techniques must be implemented, monitored and publicized according to protocols developed specifically for the project.

Benefits

Conservation activities can show promise in research but until they are proven in actual field use farmers may be reluctant to adopt them. Pilot projects will provide a mechanism to prove that a new conservation activity is viable in the project area. Publicizing the implementation of the conservation activity can help other farmers learn about new conservation techniques by observing their peers.

Criteria for Demonstrations

- Pilots should be practices, components, or management techniques that have shown environmental benefits but have not been adopted by farmers in the project area.
- The pilots must be implemented and monitored according to protocols developed specifically for the project.
- The farmer must conduct at least 3 events to publicize the project to other farmers in the area. These events can be field days conducted in Conservation Districts or other similar entities.
- Data on the costs and performance must be collected for the demonstration project. The exact data collection needs will be identified for the project.

Documentation Requirements for On Farm Research

- Documentation of the events held to publicize the demonstration.
- Data collected for the demonstration.

FPP02 – On Farm Pilot Project

Additional guidance for Pilot projects in Oregon:

NOTE: On farm pilot projects listed may be incompatible with enhancement PLT01 or PLT08. Refer to these enhancements to ensure no duplicative efforts occur.

Three different types of On-farm pilot projects are available for FY2011 in Oregon –

- A. Beetle Bank Pilots,
- B. Insectary Planting Pilots , and/or
- C. Pollinator Enhancement Pilots.

The farmer/producer is responsible for planning, installation, and maintenance of these pilots. Each pilot must be publicized in some way such as inclusion on conservation field day tours, signage, etc. These events can be field days by Conservation Districts or other similar entities. Producers will allow access to their pilot projects by NRCS and Oregon State University staff in order to evaluate pilot projects. The NRCS Plant Materials Specialist and/or Gwendolyn Ellen, at Oregon State University, will work with the producer to decide on the level of publicity required for the project.

For additional information and guidance, contact:

Oregon NRCS Plant Materials Specialist

Kathy Pendergrass

Portland, Oregon

503-414-3266

kathy.pendergrass@or.usda.gov

A. Beetle Bank Pilots

Beetle Banks are permanent habitat for predacious ground beetles in cropping systems. Please refer to this web-site and follow recommendations for creating Beetle Banks

<http://ipmnet.org/BeetleBank/index.htm>

Glendolyn Ellen at the Integrated Plant Protection Center in Corvallis, Oregon may assist with technical installation and developing field tours for your pilot project.

Glendolyn Ellen

Integrated Plant Protection Center

Oregon State University

2040 Cordley Hall

Corvallis, Oregon 97331-4501

541-737-6272

gwendolyn@science.oregonstate.edu

B. Insectary Planting Pilots

Insectary plants are most commonly described as plants that readily provide nectar and pollen food sources in a form that is attractive to natural enemies of crop pests. These plants can also provide alternate prey or host food and shelter to the natural enemies.

Please refer to this web-site and follow recommendations for creating and monitoring Insectary Plants:

http://ipmnet.org/Posters_and_Presentations/Farm_Insectary_Plant_Manual_Draft2_Pressqual1.pdf

Plant selections should generally follow recommendations provided in the Oregon Plant Materials Technical Note #13 ftp://ftp-fc.sc.egov.usda.gov/OR/Technical_Notes/Plant%20Materials/PMC13.pdf . For eastern Oregon, also refer to Idaho Plant Material Technical Note #2, “Plants for Pollinators in the Intermountain West” <ftp://ftp-fc.sc.egov.usda.gov/ID/programs/technotes/pollinators07.pdf>

C. Pollinator Enhancement Pilots

A farmer/producer has a variety of options to meet this pilot enhancement, including these three different types:

1. Strip Plantings – Strips of wildflowers are alternated with strips of native grasses. Strips may be either mixed species or single species.
2. Island Plantings – Islands of containerized native wildflowers are planted in seeded areas to provide seed sources to spread naturally within the planting.
3. Seeding of commercially-available mixes of plants – to allow for evaluation of the establishment and characteristics of a mix of plants intended to enhance conditions for pollinators.

The NRCS Plant Material Specialist will be available for Technical Assistance in planning and installation of the project. Please contact Kathy Pendergrass at kathy.pendergrass@or.usda.gov for further assistance.

Plant selections should generally follow recommendations provided in the Oregon Plant Materials Technical Note #13 ftp://ftp-fc.sc.egov.usda.gov/OR/Technical_Notes/Plant%20Materials/PMC13.pdf . For eastern Oregon, also refer to Idaho Plant Material Technical Note #2, “Plants for Pollinators in the Intermountain West” <ftp://ftp-fc.sc.egov.usda.gov/ID/programs/technotes/pollinators07.pdf>

To assist in the evaluation of pollinator plantings, NRCS needs general information about establishment and maintenance of these pilot projects. Forms are attached at the end of this document and should be completed and shared with NRCS to assist in developing successful pollinator plantings.

Figure 1. “Island” planting. Islands of containerized native wildflowers are planted in seeded areas to provide seed sources to spread naturally within the planting. In this planting scheme, a block area would be seeded to native grasses and then forb plugs or containerized stock is planted in patches in this area. Wildflower patches could be planted by time of maturity (i.e. early, mid and late blooming) thus providing more mowing options for controlling weeds. This planting scheme will allow for use of broadleaf herbicide control in the area seeded only to grasses. Weed control in the forb planting should be easier with the plants in rows (e.g. easier weeding).

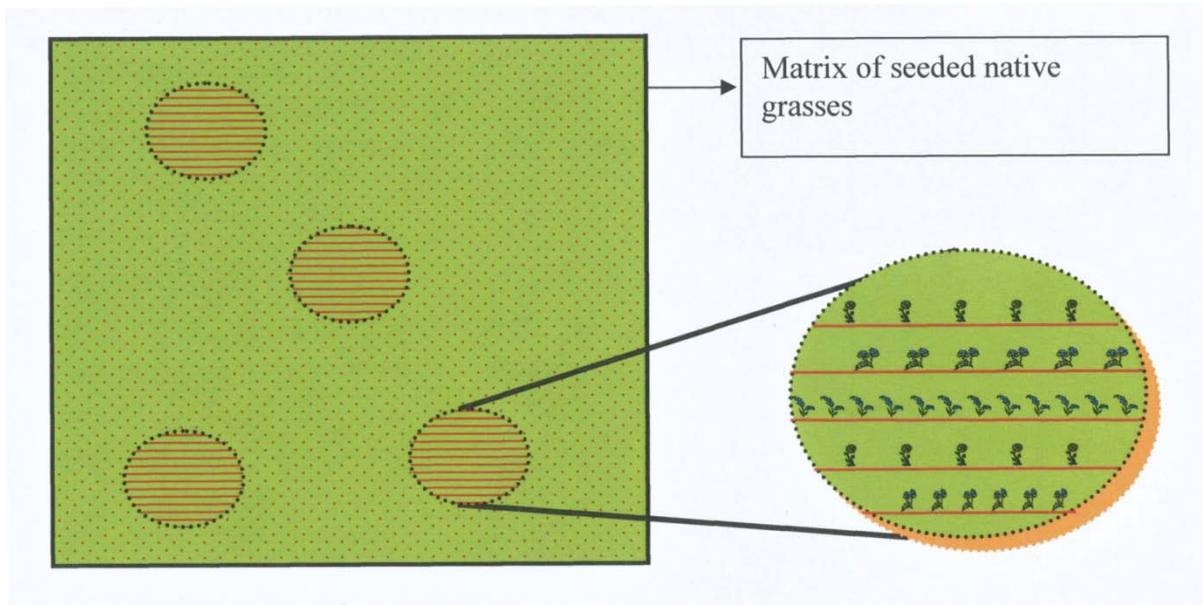


Figure 2. Strip planting. Strips of wildflowers are alternated with strips of native grasses. Strips may be either mixed species or single species in separate rows. This is where a block area would be seeded alternately with native grasses and wildflowers to help simplify maintenance. Broadleaf weed control could be used in the grass strips and grass-specific herbicide could be used in the wildflower strips. The wildflower mixtures would be planting according to bloom timing with each strip-planting containing only early, mid and late blooming wildflowers. Wildflowers are planted by time of maturity providing more mowing options (e.g. mowing could occur in blocks before or after flower blooming, thus providing a greater number of options for weed control).

| |
|------------------------------------|
| Native Grasses |
| Wildflower Mix (Fall) |
| Native Grasses |
| Wildflower Single Species (Summer) |
| Native Grasses |
| Wildflower Single Species (Spring) |

Further Information

Planting Flower-Rich Pollinator Habitats

Establishing pollinator habitat from seed can be a challenging experience, particularly when using native flowering species. In most areas of the country, native wildflowers planted in the late summer and fall have the best chance of success. Many native plants need to go through a rosette stage during the winter or have developed adaptations that require exposure to cold temperatures and damp conditions for germination to occur (cold stratification). These types of seed planted in the fall will not emerge until the following spring.

Site Selection: Weed competition is the most common cause for stand failure when direct seeding native pollinator species. Scout your prospective planting site during the growing season prior to planting. Knowing what weeds may be present will assist you in selecting site preparation methods that minimize weed problems. Perhaps the best way to handle weeds is to avoid sites with heavy weed stands. Selecting a site that is already in a good, weed free stand of crop plants, introduced turf or pasture species may be easier to convert to wild flowers and other native species than old row crop ground that has not had weed control in several years. If using native plants in a planting, avoid sites that have higher levels of inherent fertility or have been fertilized heavily in the recent past. Many wildflowers prefer low or poor soil fertility and are often out competed by weeds in loose, well-drained, nutrient-rich soils.

Species Selection: Species choice affects the probability of successful stand establishment. It is crucial to use species that are native to your state and/or adapted to your site conditions to achieve initial establishment and long-term success. Soil type, moisture, cold and/or heat tolerance, and sun or shade preference all need to be considered. The NRCS Plant Material Specialist or personnel at your local Plant Materials Center can provide technical assistance in determining species selection for Pilot projects.

In addition to species selection, seed source can also affect success, particularly when using native plants. When discussing seed purchase with a supplier, ask about the origin of the seed. Studies have shown that seed derived from wildflower populations that originate close to your state or ecoregion often have better growth, survival, and flowering than seed of the same species collected in other areas of the country. Most wildflower seed has not been selected for wide adaptability and thus is most adapted to its area of origin. If seed or plants are not available from sources within your region, you may consider purchasing seeds or plants from a nearby ecological region similar in climate and elevation to the project site (or the next harsher region nearby).

Seeds may also be found from a number of vendors as pre-mixed assemblages (i.e. prairie mix, butterfly mix, etc.); many of these mixtures may be good selections for using as a pollinator planting. If you have questions about appropriate mixtures or species selections, please contact Kathy Pendergrass at kathy.pendergrass@or.usda.gov; Plant Material Specialist for Oregon NRCS. Please also refer to a summary of vendors at our website: ftp://ftp-fc.sc.egov.usda.gov/OR/Technical_Notes/Plant%20Materials/PMC09.pdf

Site Preparation: The goal of site preparation is to minimize interference from weeds and forage/turf grasses while maximizing wildflower seed germination and growth. The more time and effort spent on reducing the weed-seed bank in the soil and preparing the site prior to planting will generally determine whether a planting fails or succeeds. We recommend at least one-full season of site clean-up prior to planting any pollinator enhancement. After soil has been cultivated, the seedbed may need to be firmed prior to seeding/planting by cultipacking or rolling to produce a firm mineral-soil seedbed. A good rule of thumb for checking seedbed firmness is that a footprint leaves an impression no deeper than ¼ inch. It is preferable to prepare the seedbed and then plan to minimized soil disturbance for a period of time and with continued weed and seed-bank removal (e.g. several seasons of chemical fallow) until the desired plants are seeded or planted.

Seed/plant Purchase: Purchase seed that has been tested by a registered seed laboratory. This seed should have a label that lists percent germination and percent purity. This will enable you to calculate pure live seed (PLS) by using the following formula:

$$\text{PLS} = \frac{\% \text{ purity} \times \% \text{ germination}}{100}$$

Seeding rates developed using bulk pounds do not provide the desired seed/ft². Only by calculating seeding rates using PLS can you be assured that you are planting correct rates.

One of the best place to find seeds of native plants is at the Native Seed Network website: <http://www.nativeseednetwork.org/> ; this is a native seed clearing-house for connecting seed sellers to seed buyers. The California Flora website also has a vendor finder search that may help in finding plants that you may be looking for: <http://www.cnplx.info/query.html> . A list of plant vendors that supply plants and seed appropriate for Oregon is available from your Plant Material Specialist at: kathy.pendergrass@or.usda.gov . Please also refer to a summary of vendors at our website: ftp://ftp-fc.sc.gov.usda.gov/OR/Technical_Notes/Plant%20Materials/PMC09.pdf

Seeding Methods: To get good soil to seed contact, seeding with a no-till seed drill may be the optimum method to use, however these drills may not be available to all customers. Alternative methods may be used that take advantage of equipment available to customers. Many native wildflower species have small seed that may require light to germinate, so they can easily be buried too deep to germinate and establish – broadcast seeding may be the optimum method to use when using small-seeded species. Broadcasting may also be an optimum way to get a site entirely occupied by desired seeded plants as there are no unseeded inter-row spaces where only weed seeds will be present to germinate. After broadcast seeding, a roller should be used to press seed to the soil for good germination and establishment.

1. Frost Seeding (where applicable)

In areas with snowfall, seed may be “frost seeded” directly onto a surface of snow on a warm, sunny late winter day. Seed warmed in the sun, melt through the snow and are gradually deposited on the soil surface. Melting spring snow will further settle the seed, ensuring good seed to soil contact and providing moisture for germination. When performed correctly, frost seeding can result in rapid and very successful plant establishment. Frost seeding works well on bare soil.

2. Scattering By Hand

If the planting site is well prepared (see Site Preparation above), broadcasting seed by hand can be a low cost, low tech option. Wildflower seed are often very small and may need to be mixed with a carrier to achieve even distribution. Carriers such as sawdust, coarse sand, peat moss, rice hulls, clay-based cat litter or vermiculite may be used.

If possible, when broadcasting seed, divide the seed into lots of large seed and small seed. These lots should be broadcast separately for even distribution. Divide the lots into two equal portions, apply half of the mix walking in one direction. Take the second half of the mix and spread walking in the perpendicular direction. This will result in a relatively equal distribution of seed over the planting site.

After planting, running a cultipacker or turf roller over the planted area is essential to ensure seed to soil contact and will assist in preventing seed loss. Applying a thin (half inch or less) layer of weed and seed-free straw (straw from forages such as fescue or ryegrass is typically not seed free) or mulch after cultipacking will also help prevent seed from being lost to seed predation or blown or washed away.

3. Mechanical Broadcaster

A hand-operated, broadcast seed spreader or one mounted on an ATV can be used for small areas. For larger areas, a tractor-mounted spreader or drop seeder may be preferred. A tractor mounted drop seeder (i.e., Brillion seeder) typically used for alfalfa or grass mixtures may be used, however, use of this equipment may require replacing the standard seed box agitators with special native seed, bristle agitators. Depending on the planting equipment and the seed mix, inert carrier material, as described in the hand broadcasting section, may be needed to ensure proper seed distribution. This method should only be used on well prepared sites or bare ground.

Following the same method as with hand broadcasting, the seed mixture should be divided in half and planted in perpendicular passes to ensure proper seed distribution. Broadcast seedings should be cultipacked or rolled and can additionally be protected by a thin layer of weed free mulch as described in the previous section or by use of a cultipacker or turf roller.

4. No-till native and Conventional Seed Drill

Specialized native seed planters are the best way to plant flower rich habitats, however these may not be available in many areas. These native seed drills are able to plant seed in rough, untilled soil. Using this technique is advantageous in areas where large amount of dormant weed seed are present and may germinate when brought to the surface by conventional cultivation. Use of a no-till drill for a Pilot planting will be useful if the site had not been cultivated for some time (e.g. if last cultivated in previous Fall and didn't want to disturb the soil again - and seedbed was prepared and ready for planting) and had been repeatedly chemical fallowed. Use of a no-till drill would help minimize soil disturbance and thus the redistribution of viable weed seeds to the soil surface to germinate and compete with your new seeding. Seed drills, which provide better planting depth and spacing control, usually require half the amount of seed than broadcasting requires for the same area. The negative aspect of drill seeding is equipment availability. In some locations, these machines can be rented from private conservation organizations. Large native seed producers may have this equipment and provide custom planting on a contract basis. Examples of common native seed drill manufacturers include the Tye, Truax, Great Plains, etc.

On-Farm Assessment & Evaluation for Flower Rich Pollinator Habitat

| | | |
|-----------------|---|---------------------------------|
| Client | Cooperating Plant Materials Specialist or Center | Cooperating Field Office |
| Name: | Name: | Name: |
| Address: | Address: | Address: |
| Email: | Email: | Email: |
| Phone: | Phone: | Phone: |

Documentation

Use the following table for documentation and attach a plan map showing the location of the field(s) where the planting is being implemented.

| Farm | Tract | Field | Acres |
|------|-------|-------|-------|
| | | | |
| | | | |
| | | | |
| | | | |

Client Certification

I certify that I have established On-farm plantings in the fields listed above.

Client Name: _____

Signature: _____ Date: _____

Reviewed By: _____ Date: _____

PLANTING INSTALLATION

Date: _____

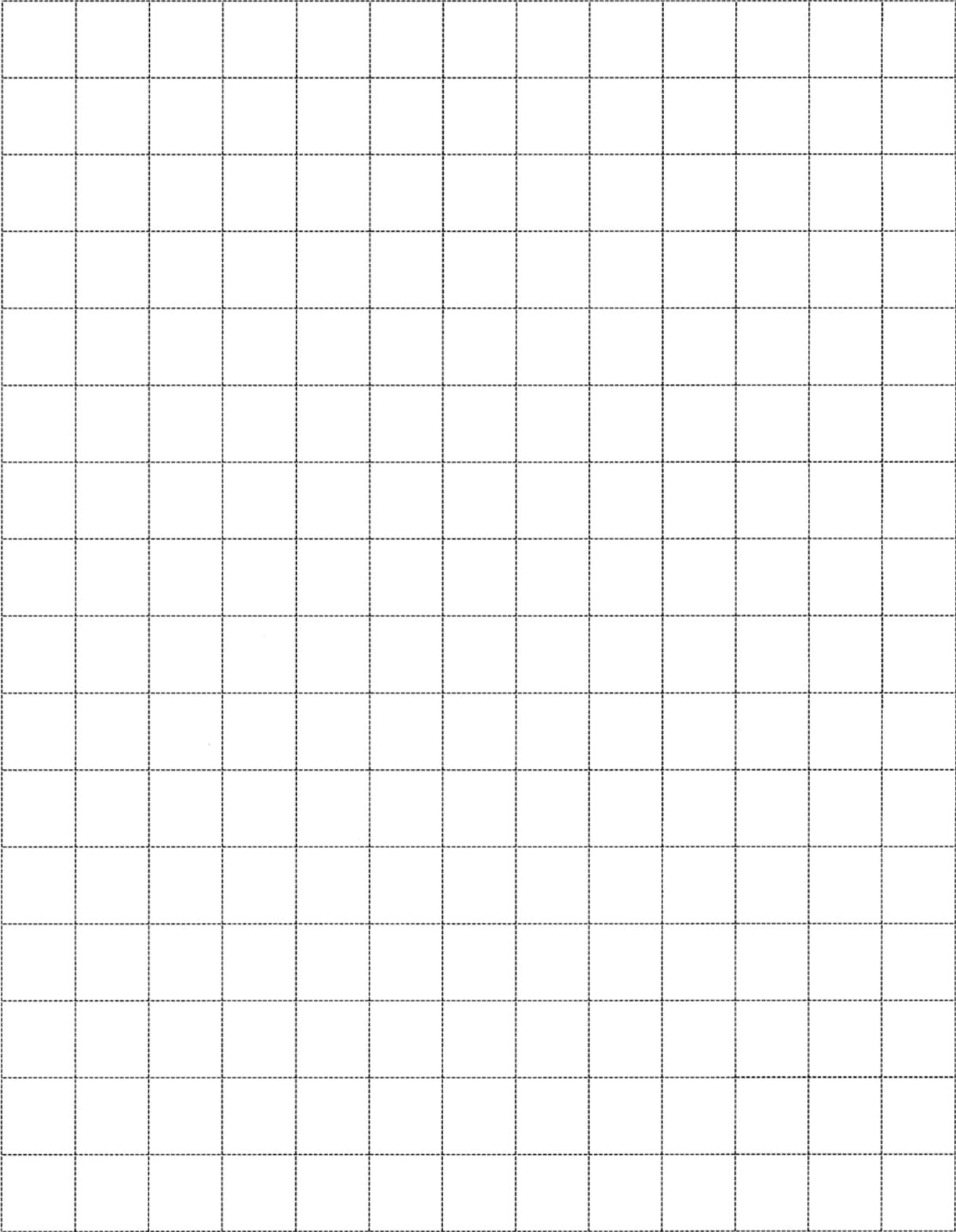
| Please rate the following conditions. | Excellent | Good | Fair | Poor | Very poor |
|---|-----------|------|------|------|-----------|
| • Condition of plant materials (seed or containerized) when received | | | | | |
| • Site preparation at time of planting (a well prepared, firm, weed free seed bed is excellent) | | | | | |
| • Moisture conditions at time of planting | | | | | |

| | |
|---------------------------|--|
| • Soil Series | |
| • Soil Texture | |
| • Soil pH level (ex: 6.4) | |

| | | | | |
|---|--|-----|--|----|
| • Planting Method: DR = Drill BR = Broadcast HP = hand plant PL= plugs OT = Other (<i>specify</i>) | | | | |
| • Kind of material: S = Seed, CT = Containerized, OT = Other (<i>specify</i>) | | | | |
| • Container size (type/size) i.e. pot/1gallon; cone-tainer/6 inch) | | | | |
| • Spacing between plants and rows (ex: 10' X 10') | | | | |
| • Did you use mulch or fabric? | | YES | | NO |

| | | | | |
|---|--|-----|--|----|
| • Did you irrigate the planting? | | YES | | NO |
| • Did you apply pre or post emergence herbicides | | YES | | NO |
| If YES, indicate kind and rate | | | | |
| • Did you apply fertilizer at planting? | | YES | | NO |
| If YES, indicate analysis and amount (ex: 15-10-5 at 200lbs/acre) | | | | |

Sketch of Project Layout (Scale 0.5" = _____ ft.).



Installation shall be in accordance with the specified drawings, specifications, and special requirements. **No changes are to be made in the drawings or specifications without prior approval from the technical specialist developing the plan.**

