United States Department of Agriculture
NATURAL RESOURCES CONSERVATION SERVICE
Plant Materials Technical Note No. MT-70
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PLANT MATERIALS TECHNICAL NOTE

FIELD PLANTINGS

Jim Jacobs, Plant Materials Specialist
Joe Scianna, Bridger Plant Materials Center Manager

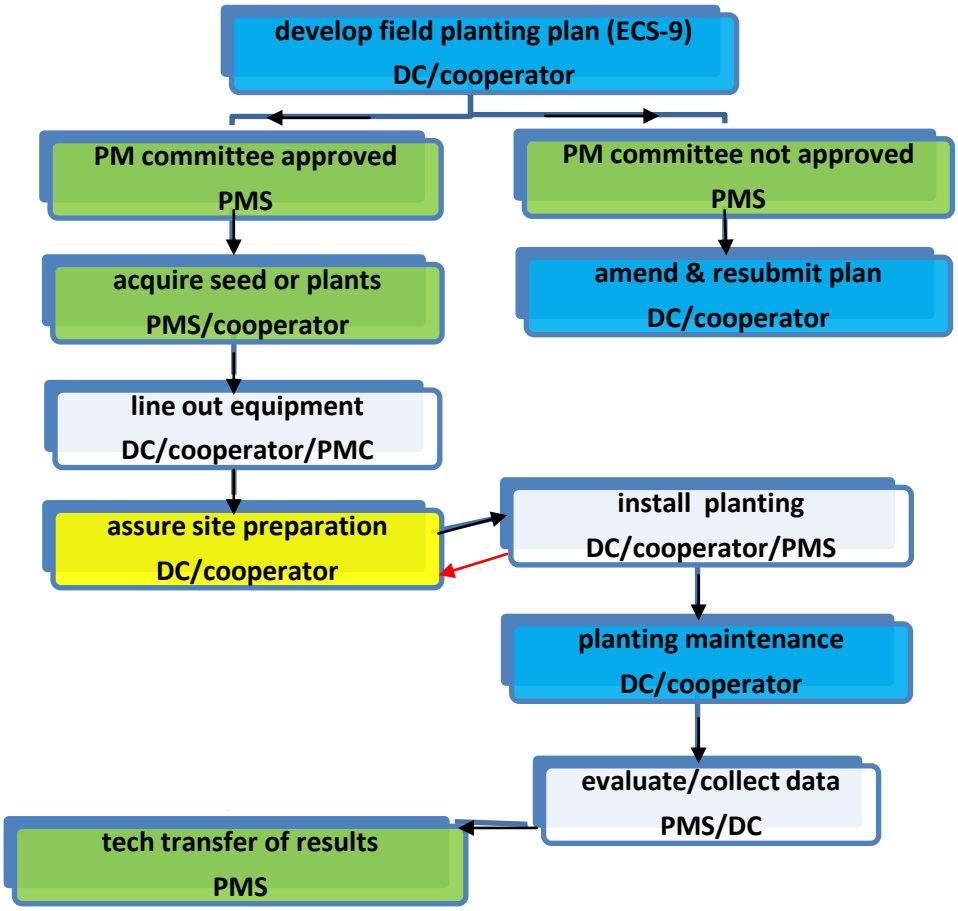

Figure 1. A flow chart of the field planting process. The Plant Materials Specialist (PMS) is responsible for the stages in the green and white shaded boxes and the District Conservationist (DC) is responsible for the blue and white shaded stages. The yellow shaded box indicates site preparation is the most important step and the red arrow indicates that if the seedbed is not properly prepared the planting will not proceed until the seedbed is ready.

Figure 2. The first year establishment of a critical area field planting.

Introduction

The Bridger Plant Materials Center (PMC) continuously works developing solutions to emerging conservation concerns through the release of new plant germplasm to the seed and nursery industries and by developing new technology to grow those plants. Off-center field plantings are an important part of this work. Field plantings evaluate new plants or new plant technology under a variety of soil, climate, and land uses. Their purpose is to assess the conservation potential of the new or developing plants and technology under actual use conditions. For the scientists at the PMC, field plantings are used as final evaluations of both proposed and selected germplasm, or for technology development. For conservation planners, they are a way to test new plant releases and technologies in their service areas. Producers, through field plantings, can try these plants and technologies on a small scale before investing in a large scale planting. Information from field plantings is used to support plant releases, provide guidance to conservation planners in the Field Office Technical Guide (FOTG), and used as demonstrations.

Field plantings always have an objective related to one or more conservation practices; pasture, hayland, rangeland or wildlife habitat improvement, soil stabilization, critical area stabilization (see Figure 2), saline demonstration, pollinator demonstration, or others. The plantings can be as simple as comparing the performance of a new plant release to a common variety or a drill seeding to broadcast seeding, or evaluating various types of seedbed preparations. Alternately, plantings can be complex studies involving many cooperators with treatments, controls, and multiple species in a replicated design. They should be large enough for a producer to install with a drill, generally one to two acres per variety seeded, but generally not larger than 10 acres. Plants may be seeded to plots a fraction of an acre in size for demonstrations or studies testing multiple varieties of numerous species (see Figure 3).

Figure 3. A field planting with replicated plots of individual grass or forb species to test their adaptation and performance for restoring wildlife habitat.

Initiating a field planting can happen in several ways. A producer can go to a Field Office and request a field planting to test how alternate row seeding might increase forage production. A conservation planner in a Field Office may solicit an interested producer to plant a field border to a newly released wildflower to determine if it grows successfully and can be incorporated into a pollinator seed mix for the service area. An Area Office may be faced with a special initiative to remove an invasive species but lacks the technology to re-establish wildlife habitat after the use of a persistent herbicide. The State Office may be inundated with requests for variances to use a newly released species to increase forage production on saline sites but lacks performance data comparing it to a standard variety. Although rare, a request for a field planting could come from the regional or national office. In general, guidance for field plantings can be found on the plant materials web site under “Long Range Plans for Field Plantings.”

Field plantings are the responsibility of the Plant Materials Specialist (PMS) who develops the Long Range Plan for Field Plantings with the help of the PMC Manager and the State Plant Materials Committees. The PMS maintains a register of all field plantings by state. Data from evaluations are sent to the Specialist who maintains the data in a database. The database is used by the PMS to provide guidance to the Field Offices, update the FOTG, and for other technology transfer.

Procedure

Field Planting Plan

There is a lot of latitude in how a field planting is “put on the ground”, but there are a few procedural requirements to ensure efficiency, quality, and record keeping. The field planting plan is the first step and is born through the Field Office in cooperation with a land owner, producer, or other cooperator. This can start at any time during the year. Each year, however, the PMS releases a bulletin in the fall requesting field planting plans for consideration.

The plan is recorded on a NRCS-ECS-9 form found on the plant materials web site under “Long Range Plan for Field Plantings” or under “Plant Materials Forms” and is signed by the cooperator (ftp://ftp-fc.sc.egov.usda.gov/MT/www/technical/plants/ECS-9(July2010_revision).pdf, see Appendix A). It is important the cooperators fully understand from the start their responsibilities of providing a test site, thorough site preparation, procuring plant materials, seeding, fencing, and allowing evaluations over the life of the planting (which can be as long as 10 to 15 years). It is also important to include soil, precipitation, Major Land Resource Area (MLRA) and Ecological Site Descriptions (ESD) information on the form. This document, along with planting and site information, forms the basis of the database record, are used in plant release documentation, and to develop seeding recommendations. The site history for the previous three years is important to estimate the scope of the potential weed seed bank, if persistent herbicides were applied that may affect the species to be seeded, or other factors affecting the outcome of the planting.

The field office submits the signed plan, along with supporting documents, to the area representative of the Plant Materials Committee, in most cases the Area Range Conservationist, who reviews the plan. After Area Office approval, the plan is forwarded to the PMS. The PMS reviews the plan with the PMC Manager to ensure needed resources are available and the proposal is compatible with the Long Range Plan. After passing this review, the plan goes before the State Plant Materials Committee for final approval. At anytime during this process, changes to the plan can be recommended to the originating Field Office and approved by the cooperator. Once the plan has been approved by the committee, the Field Office creates a file with the NRCS-ESC-9 form. The file maintains records for the life of the planting, including the completed planting, site information form, and evaluation forms.

Approval

The Montana and Wyoming Plant Materials Committees meet annually to, among other things, review field planting plans. Each representative presents plans from their area to the committee. Following discussion, there is a vote for approval. Approval is based on the justification that the planting is needed and meets the objectives of the Long Range Plan, and there is enough detail in the methods to support success. In order for the representative to “sell” the planting to the committee, it is important to involve the representative in the planning process. It is difficult for the representative to make a convincing presentation if they receive the plan at the last minute. Some areas prefer internal review before sending the plan to the plant materials committee. If the plan is not approved, the reasons are detailed and the DC and cooperator can decide whether to amend and resubmit the plan, or abandon it. It is better to scrap an inadequate plan at this point than to invest the time, effort, and expense of putting in a planting that is likely to fail.

Acquiring Seed and Woody Plant Stock

The plant materials prescribed in the plan are either provided by the PMC or purchased by the cooperator. In general, the PMC provides seed of new and developing plant releases that need testing, whereas the cooperator purchases seed of the standard for comparison. Sometimes the PMC can provide all seed for a planting depending on seed availability at the Center or the PMS can request seed from other PMCs in our region. Most woody planting stock will need to be purchased by the cooperator. However, woody planting stock is occasionally available from a PMC. The PMS arranges for plant materials provided by PMCs to be shipped to the Field Office.

Equipment

Nearly all field plantings require farming equipment for their instalation. In general, the cooperator provides all seedbed preparation, seeding implements, and a tractor to pull and power the equipment. The most common exception to this rule is a drill or seeder. Many Conservation Districts own a drill seeder and make it available to cooperators in their district to rent or borrow. The PMC has drills and a plot seeder, and depending on budget and time constraints, can

contribute this equipment, and an operator, to install the planting. Some field plantings will require the plot seeder. For woody plantings, a bare-root seedling planter may be required. Such details must be addressed in the planning process and approved at the Plant Materials Committee Meeting.

Figure 4. A producer-prepared disced seedbed for a winterfat/forage kochia field planting in Montana with the objective of improving winter forage. This field planting tested the effect of harrowing, discing, discing and rolling, and no seedbed preparation treatments on establishment in a replicated design.

Site Preparations

Once a plan is approved, the cooperator prepares the site for the planting as detailed in the plan unless otherwise arranged during the planning process (see Figure 4). This includes seedbed preparation, weed control, fencing, and any fertilizer, irrigation, or other cultural practices required in the plan.

Seedbed preparation for both herbaceous and woody plantings cannot be stressed enough. A poor seedbed is the most common preventable cause of seeding failure. Unless otherwise detailed in the plan, the seedbed should be firm and weed-free. “Weed free” can be more complex than just spraying or tilling out of existing weeds. Weed populations include not only visible plants, but also seeds stored in the soil (seed bank) that may not be visible. This is one reason why site history data is so important. If the site has a history of unmanaged weeds, with a strong likelihood of a large seed bank, than one or more seasons of cover cropping with weed control may be needed to reduce the seed bank.

Another important factor in successful establishment of a field planting is a firm seedbed. A firm seedbed facilitates proper seeding depth and good seed-to-soil contact. You know a seedbed is firm enough when the foot print of an adult is not more than ¼-inch deep, or a child can bounce a basketball on it. The soil of a firm seedbed is pulverized and does not have large clods. There are a number of Technical Notes on the Montana NRCS and national Plant Materials websites

providing guidance on seedbed preparation. And while you are there, check the Bridger PMC-TV page for videos about seedbed preparation and related equipment.

Installing the Planting

Planting and Site Information: After the seedbed has been properly prepared and before seeding or planting, a "Planting and Site Information" form must to be completed. There are separate forms for herbaceous (ftp://ftp-fc.sc.egov.usda.gov/MT/www/forms/ecs/montana/herbsite.pdf, see Appendix B) and woody plantings (ftp://ftp-fc.sc.egov.usda.gov/MT/www/forms/ecs/montana/woodysite.pdf, see Appendix C) and they are located on the state plant materials web site in the same location as the NRCS-ECS-9 form. Because seedbed quality has a significant influence on successful establishment of seedings and plantings, it is best to complete this evaluation at the time of seeding or planting. This information is important when assessing the success or failure of the planting. Copies should be filed in the Field Office and sent to the area representative and the PMS.

If all the details of a good plan are addressed and weather conditions are favorable, than the probability of planting success should be high.

Planting Maintenance

There is no entry on the ECS-9 form for cultural practices after a field planting has been established. However, some follow-up maintenance may be needed. Fences will need to be maintained where livestock and wildlife are to be excluded. Cultivation or herbicide weed control around woody plantings is recommended. Where weed fabric is used, it may require maintenance. Herbaceous field plantings may need mowing to reduce weed seed production during establishment or between row cultivation. This should be discussed with the cooperator during planning. Demonstrations require a maintenance plan and a cooperator committed to carrying it out (see Appendix D).

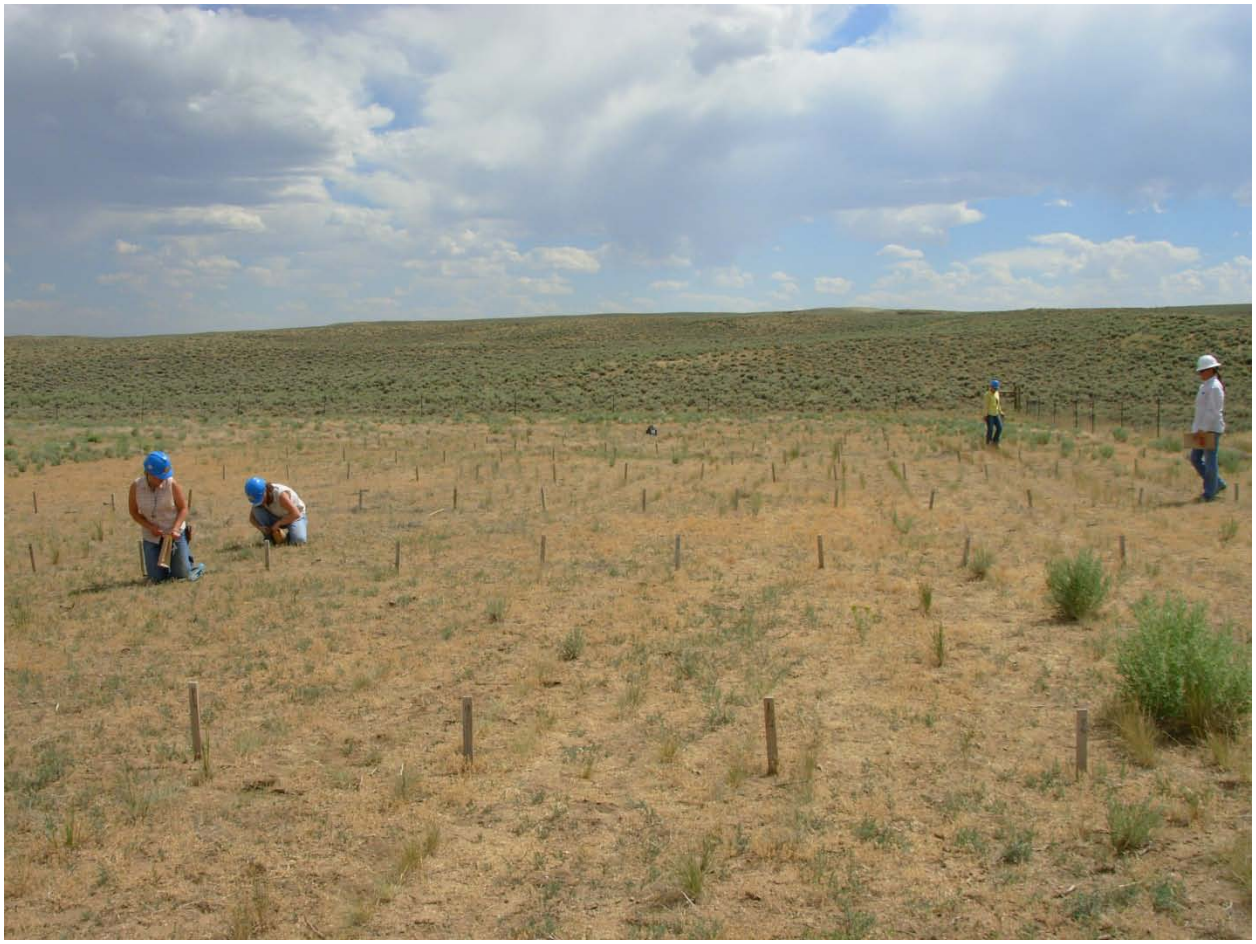

Figure 5. Clipping biomass to measure grass production on a replicated field planting. Replicated field plantings generally require more extensive evaluations than the information requested on the standard form.

Evaluation

Field plantings are evaluated the first growing season after planting (year one), and in years two, three, five and 10 for herbaceous plantings, and years one, two, three, five, 10 and 15 for woody plantings. In most cases, the evaluations are conducted by the Field Office where the field planting originated. Sometimes the area representative of the Plant Materials Committee will participate in the evaluation. The PMS will participate in evaluations upon request for assistance by the Field or Area Office. The PMS sends out a bulletin requesting field planting evaluations in late-summer and sends evaluations forms for all active plantings on the register to the Field Office of origin at the same time. Evaluation forms for herbaceous (ftp://ftp-fc.sc.egov.usda.gov/MT/www/forms/ecs/montana/herbeval.pdf, see Appendix E) and woody plantings (ftp://ftp-fc.sc.egov.usda.gov/MT/www/technical/plants/Evaluation_of_Woody_Plantings.pdf, see Appendix F) are on the state plant materials web site under “Long Range Plans for Field Plantings” or “Plant Materials Forms”. Replicated field plantings usually require density or biomass evaluations and will have more detailed data sheets than standard evaluation forms (see Figure 5). Once the plantings are evaluated, completed forms or data sheets are filed in the Field Office and copies sent to the Area plant materials representative. The Area representative also maintains copies in the Area Office and forwards copies to the PMS.

Figure 6. The fifth year of a field planting testing native seed mix composition and broadcast and drill seeding for wildlife habitat improvement. Establishment of this planting was not evident until year three.

Duration

Herbaceous field plantings have target durations of 10 years whereas woody field plantings are expected to last 15 years. However, the cooperator can terminate a field planting at any time and for any reason. The most common reason for terminating a field planting is failure to establish. This information is just as important as growth and productivity over the life of a successful planting. For herbaceous plantings, it is best to allow the seeding three years to establish before considering it a failure, particularly when seeding slow establishing native species (see Figure 6). Trees and shrubs that die during a field planting can be replaced at the cooperators discretion.

Technology Transfer of Results

Field Planting Database: All field planting information is maintained by year in the field planting database (EXCEL file) which is located on the Montana State Office share drive. This is the responsibility of the PMS. There are separate files for Montana and Wyoming, and for herbaceous and woody plantings. A record is created from the information recorded on the field planting plan and the planting and site information form filled out at the time of seeding or planting, which is why this information is so important. Climate, physiographic, edaphic, seedbed preparation, and seeding conditions will influence plant survival and performance. When site information is combined with plant performance evaluations, relationships between performance and site conditions are identified and used to improve seeding recommendations. As the PMS receives evaluation forms, the database is updated. The PMS uses the data for the development of reports,

Technical Notes, and presentations, and to update the FOTG. Data from replicated field plantings can be analyzed and reported in Technical Notes and journal articles, and to update the FOTG.

U.S. DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

NRCS-ECS-9
July 2010

PLANTING PLAN FOR FIELD, SPECIAL AND INCREASE PLANTINGS

Planting No. _____ Field Office _____

Cooperator _____ Phone Number _____

Address _____

State _____ County _____ MLRA _____

Township _____ Range _____ Section _____

Latitude _____ Longitude _____ Location Map Provided ☐ Yes

Soil _____ Texture _____ Soil Modifier _____

Slope % _____ Aspect ☐N ☐S ☐E ☐ W Elevation ☐ ft or ☐ m _____

Annual Precipitation ☐ in or ☐ mm _____ Irrigation Available ☐ Yes ☐ No

Number of Acres to be Planted/Seeded _____

	Cultivar/Release Name	Scientific Name or Common Name	Accession Number	Seeding or Planting Rate	Amount Needed	Supplied By
1						
2						
3						
4						
5						

Site History Previous Three Years

20____ _____

20____ _____

20____ _____

Purpose of Planting

_____

_____

Proposed Planting Date or Period _____

Method of Planting to be Used

_____

_____

_____

Materials Needed	Rate/Acre	Notes
Lime		
Fertilizer		
Herbicide		
Mulch		

PLANTING PLAN FOR FIELD, SPECIAL AND INCREASE PLANTINGS

(CONTINUED)

To Be Completed by the Assisting Conservationist

Does the cooperator understand the purpose of planting?	**Yes**	**No**
Does the cooperator understand the cultural practices needed?	**Yes**	**No**
Does the site meet the requirements in the planting guide?	**Yes**	**No**
Is it conveniently located?	**Yes**	**No**
Is site separated with a fence?	**Yes**	**No**
Is it on the soil identified in the plan?	**Yes**	**No**
Will the planting be grazed?	**Yes**	**No**
When	_____	
Has the cooperator agreed to properly manage the planting?	**Yes**	**No**
Are weed control measures needed?	**Yes**	**No**
Will weeds be managed?	**Yes**	**No**
Will field and equipment be checked prior to planting?	**Yes**	**No**
Does the cooperator need assistance with planting?	**Yes**	**No**
Will NRCS personnel assist with planting?	**Yes**	**No**
Will follow-up assistance be provided?	**Yes**	**No**
To periodically check on the planting?	**Yes**	**No**
To complete required evaluations?	**Yes**	**No**

Attach additional notes and instructions to this form as needed

Evaluations to be conducted:

_____

_____

_____

Comments:

_____

_____

_____

I understand that this planting is for research and demonstration purposes and agree to participate in the establishment, maintenance and evaluation of this planting.

Cooperator:	**Name/Signature**	**Date**
Submitted By:	**Name/Signature**	**Date**
Approved (SCD):	**Name/Signature**	**Date**
Approved (PM):	**Name/Signature**	**Date**

PLANTING PLAN FOR FIELD, SPECIAL AND INCREASE PLANTINGS

FORM INSTRUCTIONS

These instructions will assist in completing form NRCS-ECS-9.

Planting Number
Enter the unique number assigned by the Plant Materials Center staff or Plant Materials Specialist for this planting. The format for field plantings is identified in the National Plant Materials Manual, sections 540.14(F)(5) and 520.66. This number should correspond to a POMS database record if applicable.

Field Office
The name of the primary field office involved with the planting (if applicable).

Cooperator
The name of the land owner, individual or organization cooperating with this planting

Phone Number
The phone number and/or email address of the cooperator

Address
The address of the cooperator where the planting will occur

State
The state where the planting will occur

County
The county where the planting will occur

MLRA
Major Land Resource Area; enter the MLRA code of the area where the planting will occur. MLRAs can be found at http://soils.usda.gov/survey/geography/mlra/

Township
Township name where the planting is planned (if applicable). This is used in the Public Land Survey System (PLSS). For more information and online access to PLSS maps, go to http://www.geocommunicator.gov/GeoComm/lsis_home/home/index.html

Range
Range where the planting is planned (if applicable). This is used in the Public Land Survey System (PLSS). For more information and online access to PLSS maps, go to http://www.geocommunicator.gov/GeoComm/lsis_home/home/index.html

Section
Section where the planting is planned (if applicable). This is used in the Public Land Survey System (PLSS). For more information and online access to PLSS maps, go to http://www.geocommunicator.gov/GeoComm/lsis_home/home/index.html

Latitude
The geographic latitude of the planting location in decimal degrees or degrees, minutes, and seconds

Longitude
The geographic longitude of the planting location in decimal degrees or degrees, minutes, and seconds

Location Map Provided
A separate location map should be included with this plan. Check the box if you provided a map.2

PLANTING PLAN FOR FIELD, SPECIAL AND INCREASE PLANTINGS

FORM INSTRUCTIONS

(Continued)

Soil
Web versions of soil survey maps can be obtained at http://soils.usda.gov/survey/online_surveys. List the soil series or soil complex at planting location

Texture
List the dominant soil texture at the planting location

Soil Modifier
List the dominant soil modifier at the planting location - if applicable

Slope
The slope at the planting location, as a percentage

Aspect
The exposure of the site; check the box(es) corresponding to the planting location exposure - N = north, S = south, E = east, W = west; more than one box may be checked

Elevation
The site elevation at the planting location. Check one box, either “ft” for feet or “m” for meters to indicate the unit of measurement represented

Annual Precipitation
Indicate the site’s mean annual precipitation. The range in precipitation assigned to the soil series or soil complex is recommended. Check one box, either “in” for inches or “mm” for millimeters to indicate the unit of measurement represented

Irrigation Available
Check “yes” or “no” to indicate if irrigation water is available for the site

Number of acres to be Planted/Seeded
Indicate the number of acres that will be planted. If less than an acre, note square feet instead.

Scientific Name/Common Name
The Latin scientific name or the common name of the plant to be used

Cultivar/Release Name
The cultivar or release name of the plant to be used, if applicable

Accession Number
The assigned accession number of the accession to be planted (example 9076517 western wheatgrass), if applicable

Seeding/Planting Rate
Indicate the seeding rate or the planting rate. For example, for seed - pounds per acre, or number of plants per acre

Amount Needed
The quantity of material necessary to complete the planting for the site (seed should be listed in PLS (pure live seed

Supplied By
The name of the PMC, individual, organization or company that will provide the planting materials3

PLANTING PLAN FOR FIELD, SPECIAL AND INCREASE PLANTINGS

FORM INSTRUCTIONS

(Continued)

Site History Previous Three Years

20__ Enter the year number; then in the space provided, describe the site's use and/or condition for the year indicated. Enter this data for the past three years, one year per row.

Purpose of Planting

Describe the purpose of the planting

Proposed Planting Date or Period

Indicate the date or range of dates when the planting will take place

Method of Planting

Indicate how the material will be planted – drill, broadcast (hand-planted), aerial, hydro-seed, etc.

Materials Needed

Listed are the most common materials that may be required for the planting. Lime, Fertilizer, Herbicide and Mulch are identified – if these materials are recommended, indicate the quantity needed in the **Rate/Acre** field. In the **Notes** field, indicate any specific instructions, directions or methods of application. There is one additional line available to record materials needed or recommended that are not listed.

To be Completed by the Assisting Conservationist

Answer Yes or No to each question and fill in any blanks as applicable

Evaluations to be conducted

Indicate what plant parameters will be evaluated with this planting, e.g. rate of seedling emergence, rate of growth, rate of spread, mature height, flowering date, seed maturity date, seed shatter, drought tolerance, insect or disease problems, overwinter survival, etc.

Comments

Include any important comments related to the Planting Plan

Signatures

Fill in appropriate names and obtain signatures to finalize the agreement and responsibilities for planning the planting.

APPENDIX B

United States Department of Agriculture
Natural Resources Conservation Service

10/03

PLANTING AND SITE INFORMATION FOR HERBACEOUS PLANTINGS

COOPERATOR:_____ PURPOSE:_____

FIELD OFFICE:_____ AREA:_____ PLANTING NUMBER:_____

GENUS:_____ SPECIES:_____ BOTANICAL VARIETY:_____

COMMON NAME:_____ CULTIVAR:_____

COMPUTER CODE:_____ ACCESSION NO(S):_____

Instructions: Check appropriate box or write in data.

EVALUATION DATE	(190)	_____(MONTH/DAY/YEAR)
SEEDBED PREPARATION*	(191)	_____
CONDITION OF SEEDBED	(192)	☐ EXCELLENT ☐ GOOD ☐ FAIR ☐ POOR
KIND OF MATERIAL	(210)	☐ SEED ☐ SOD ☐ CLONES ☐ CUTTINGS
		☐ GRAFTS ☐ SPRIGS ☐ LAYERS
METHOD OF PLANTING**	(193)	☐ DRILL ☐ BROADCAST ☐ BROADCAST AND HARROW
		☐ HAND PLANT ☐ SPRIGGER ☐ AERIAL
		☐ ALTERNATE ROW
SOIL MOISTURE	(194)	☐ ADEQUATE ☐ TOO DRY ☐ TOO WET
WEED INFESTATION	(195)	☐ NONE ☐ LIGHT ☐ MEDIUM ☐ SEVERE
IRRIGATION	(221)	☐ NONE ☐ PRE-PLANTING ☐ POST-PLANTING
FERTILIZATION - NITROGEN	(530)	_____POUNDS OF N PER ACRE RATE
FERTILIZATION - PHOSPHOROUS	(531)	_____POUNDS OF P_2O_5 PER ACRE RATE
FERTILIZATION - POTASSIUM	(532)	_____POUNDS OF K_2O PER ACRE RATE
FERTILIZATION - OTHER	(533)	_____(RATE) KIND_____
HERBICIDE - KIND	(540)	_____
HERBICIDE - APPLICATION	(541)	☐ PRE-PLANT – PRE-EMERGENCE (CROPS AND WEEDS)
		☐ PRE-PLANT (CROP) – POST-EMERGENCE (WEEDS)
HERBICIDE - RATE	(542)	_____POUNDS PER ACRE OF ACTIVE INGREDIENT

*Describe method such as plowing, harrowing, disking, raking, herbicide.

**Check 3 for broadcast and hand raking.

UNITED STATES DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

10/03

PLANTING AND SITE INFORMATION FOR WOODY PLANTINGS

COOPERATOR:_____ PURPOSE:_____

FIELD OFFICE:_____ AREA:_____ PLANTING NUMBER:_____

GENUS:_____ SPECIES:_____ BOTANICAL VARIETY:_____

COMMON NAME:_____ CULTIVAR:_____

COMPUTER CODE:_____ ACCESSION NO(S):_____

Instructions: Check appropriate box or write in data.

EVALUATION DATE	(1290)	_____(MONTH/DAY/YEAR)
PLANTING STOCK	(1140)	☐ SEED ☐ POTTED ☐ BAREROOT ☐ CUTTINGS ☐ GRAFTS ☐ CONTAINER ☐ LAYERS
AGE OF STOCK	(1145)	_____
HEIGHT OF STOCK (AVERAGE)	(1150)	NEAREST INCH_____
CALIPER	(1155)	NEAREST ONE-SIXTEENTH INCH_____
CONTAINER SIZE	(1160)	_____
POT SIZE	(1165)	_____
STANDARD OF COMPARISON	(1230)	☐ YES ☐ NO
PLANTING DATE	(1120)	_____(MONTH/DAY/YEAR)
SITE PREPARATION*	(1100)	_____
SITE CONDITION	(1105)	☐ EXCELLENT ☐ GOOD ☐ FAIR ☐ POOR ☐ VERY POOR
WEED INFESTATION	(1106)	☐ NONE ☐ LIGHT ☐ MEDIUM ☐ SEVERE
SOIL MOISTURE AT PLANTING	(1110)	☐ EXCELLENT ☐ GOOD ☐ FAIR ☐ POOR ☐VERY POOR
METHOD OF PLANTING	(1115)	☐ HAND ☐ TREE PLANTER ☐ OTHER_____
SPACING, WITHIN ROW	(1125)	_____
SPACING, BETWEEN ROWS	(1130)	_____
QUALITY OF STOCK	(1170)	☐ EXCELLENT ☐ GOOD ☐ FAIR ☐ POOR ☐ VERY POOR
NUMBER PLANTED	(1180)	_____
IRRIGATED	(1070)	☐ FULL ☐ LIMITED
DRYLAND	(1075)	☐ YES
SUB-IRRIGATED	(1080)	☐ YES
OTHER SUPPLEMENTAL MOISTURE	(1085)	_____

*Describe method such as plowing, harrowing, disking, herbicide, summer fallow.

APPENDIX D

Attachment: ESC-9 Field trail and evaluation – maintenance plan.

Demonstration plantings:

This plan is to outline the maintenance of plantings in good faith over the life of the demonstration planting. To identify the people involved and what is necessary to a sustained and viable demonstration.

1. The intent is to ensure maintenance of the demonstration plot long-term.
2. Plot labels kept upright and readable.
3. Items like fabric loose or torn to be replaced or repaired in a timely manner.
4. Weeds will be controlled.
5. Plots will be clipped annually with seed heads removed to reduce contamination of neighboring plots and to maintain plant health and vigor.
6. Livestock and vehicles will be excluded from the plot, allowing access to foot traffic.
7. Species that do not persist or establish will be reseeded to ensure no vacant plots or strips.

As these demonstration plots are a collaborative effort concurrence to the maintenance plan is required. Signatures as applicable:

Cooperator:_____ Date:_____

Conservation District:_____ Date:_____

NRCS Field office:_____ Date:_____

NRCS PMS:_____ Date:_____

ASTCFO:_____ Date:_____

Other:_____ Date:_____

APPENDIX E

United States Department of Agriculture
Natural Resources Conservation Service

10/03

EVALUATION OF HERBACEOUS PLANTINGS

COOPERATOR:_____ PURPOSE:_____

FIELD OFFICE:_____ AREA:_____ PLANTING NUMBER:_____

GENUS:_____ SPECIES:_____ BOTANICAL VARIETY:_____

COMMON NAME:_____ CULTIVAR:_____

COMPUTER CODE:_____ ACCESSION NO(S):_____

Instructions: Check appropriate box or write in data requested. Additional observations or comments should be written in the space provided for notes for each accession or variety.

EVALUATION DATE	(235)	_____(MONTH/DAY/YEAR)
STAND	(240)	☐ FAILURE ☐ EXCELLENT ☐ GOOD ☐ FAIR ☐ POOR ☐ VERY POOR
VIGOR	(250)	☐ EXCELLENT ☐ GOOD ☐ FAIR ☐ POOR ☐ VERY POOR
ABILITY TO SPREAD	(270)	☐ EXCELLENT ☐ GOOD ☐ FAIR ☐ POOR ☐ VERY POOR
EROSION CONTROL	(560)	☐ EXCELLENT ☐ GOOD ☐ FAIR ☐ POOR ☐ VERY POOR
FORAGE PRODUCTION*	(260)	☐ EXCELLENT ☐ GOOD ☐ FAIR ☐ POOR ☐ VERY POOR
PRODUCT YIELDED	(590)	☐ HAY ☐ SILAGE ☐ ANIMAL UNIT MONTHS
AMOUNT YIELDED	(591)	TONS PER ACRE:_____ ANIMAL UNIT MONTHS PER ACRE:_____
UTILIZATION	(586)	☐ LIGHT ☐ MODERATE ☐ SEVERE
WINTER INJURY	(290)	☐ LIGHT ☐ MODERATE ☐ SEVERE
PLANT INJURY	(550)	☐ LIGHT ☐ MODERATE ☐ SEVERE
KIND OF INJURY	(551)	☐ DISEASE ☐ INSECT ☐ RODENT ☐ HAIL ☐ DROUGHT ☐ FLOOD ☐ FIRE ☐ MACHINERY ☐ GRAZING
WEED INFESTATION	(195)	☐ NONE ☐ LIGHT ☐ MEDIUM ☐ SEVERE
WILDLIFE USE	(600)	☐ EXCELLENT ☐ GOOD ☐ FAIR ☐ POOR ☐ VERY POOR
PLANT HEIGHT	(440)	NEAREST INCH:_____
SEED PRODUCTION	(280)	☐ EXCELLENT ☐ GOOD ☐ FAIR ☐ POOR ☐ VERY POOR
DROUGHT TOLERANCE	(390)	☐ EXCELLENT ☐ GOOD ☐ FAIR ☐ POOR ☐ VERY POOR
FLOOD TOLERANCE	(400)	☐ EXCELLENT ☐ GOOD ☐ FAIR ☐ POOR ☐ VERY POOR
SALT TOLERANCE	(410)	☐ EXCELLENT ☐ GOOD ☐ FAIR ☐ POOR ☐ VERY POOR
ACID TOLERANCE	(420)	☐ EXCELLENT ☐ GOOD ☐ FAIR ☐ POOR ☐ VERY POOR
WETLAND TOLERANCE	(430)	☐ EXCELLENT ☐ GOOD ☐ FAIR ☐ POOR ☐ VERY POOR
RAINFALL, ANNUAL	(182)	NEAREST INCH:_____
MANAGEMENT	(570)	☐ EXCELLENT ☐ GOOD ☐ FAIR ☐ POOR ☐ VERY POOR
IRRIGATION	(222)	☐ FULL SEASON ☐ LIMITED SEASON ☐ WATERSPREADING ☐ SUB-IRRIGATED
FERTILIZATION DATE	(534)	_____(MONTH/DAY/YEAR)
FERTILIZATION-NITROGEN	(530)	_____POUNDS OF N PER ACRE RATE
FERTILIZATION-PHOSPHOROUS	(531)	_____POUNDS OF P_2O_5 PER ACRE RATE
FERTILIZATION-POTASSIUM	(532)	_____POUNDS OF K_2O PER ACRE RATE
FERTILIZATION-OTHER	(533)	_____(RATE) KIND_____
COOPERATOR'S EVALUATION	(610)	☐ EXCELLENT ☐ GOOD ☐ FAIR ☐ POOR ☐ VERY POOR

NOTES:_____

*Make ratings if actual yields cannot be determined.

APPENDIX F

United States Department of Agriculture
Natural Resources Conservation Service

10/03

EVALUATION OF WOODY PLANTINGS

COOPERATOR:_____ PURPOSE:_____
FIELD OFFICE:_____ AREA:_____ PLANTING NUMBER:_____
GENUS:_____ SPECIES:_____ BOTANICAL VARIETY:_____
COMMON NAME:_____ CULTIVAR:_____
COMPUTER CODE:_____ ACCESSION NO(S):_____

Instructions: Check appropriate box or write in data requested. Additional observations or comments should be written in the space provided for notes for each accession or variety.

EVALUATION DATE	(1290)	_____(MONTH/DAY/YEAR)
NUMBER PLANTED	(1180)	_____
NUMBER ALIVE	(1300)	_____
NUMBER REMOVED	(1302)	_____
REASON REMOVED	(1303)	_____
VIGOR	(1305)	☐ EXCELLENT ☐ GOOD ☐ FAIR ☐ POOR ☐ VERY POOR
WINTER INJURY (NUMBER)	(1309)	_____
AVERAGE INJURY (PERCENT)	(1310)	☐ 10 ☐ 20 ☐ 30 ☐ 40 ☐ 50 ☐ 60 ☐ 70 ☐ 80 ☐ 90 ☐ DEAD
DISEASE INJURY (NUMBER)	(1314)	_____
AVERAGE INJURY (PERCENT)	(1315)	☐ 10 ☐ 20 ☐ 30 ☐ 40 ☐ 50 ☐ 60 ☐ 70 ☐ 80 ☐ 90 ☐ DEAD
DISEASE KIND	(1316)	_____
INSECT INJURY (NUMBER)	(1319)	_____
AVERAGE INJURY (PERCENT)	(1320)	☐ 10 ☐ 20 ☐ 30 ☐ 40 ☐ 50 ☐ 60 ☐ 70 ☐ 80 ☐ 90 ☐ DEAD
INSECT KIND	(1321)	_____
INJURY -- OTHER (NUMBER)	(1325)	_____
INJURY -- OTHER (KIND)	(1326)	_____
PESTICIDE INJURY (NUMBER)	(1349)	_____
AVERAGE INJURY (PERCENT)	(1350)	☐ 10 ☐ 20 ☐ 30 ☐ 40 ☐ 50 ☐ 60 ☐ 70 ☐ 80 ☐ 90 ☐ DEAD
PESTICIDE KIND	(1355)	_____
WEED INFESTATION	(1106)	☐ NONE ☐ LIGHT ☐ MEDIUM ☐ SEVERE
WILDLIFE UTILIZATION (BROWSE PERCENT)	(1410)	☐ 10 ☐ 20 ☐ 30 ☐ 40 ☐ 50 ☐ 60 ☐ 70 ☐ 80 ☐ 90 ☐ DEAD
WILDLIFE KIND	(1411)	_____
PLANT HEIGHT (AVERAGE)	(1360)	NEAREST FOOT:_____
CROWN WIDTH (AVERAGE)	(1365)	NEAREST FOOT:_____
DBH (AVERAGE)	(1375)	NEAREST INCH:_____
IRRIGATION	(1071)	□ ADEQUATE □ INADEQUATE
CULTIVATION	(1072)	□ ADEQUATE □ INADEQUATE
FERTILIZATION KIND	(1073)	_____
FERTILIZATION RATE	(1074)	_____POUNDS PER ACRE
DROUGHT TOLERANCE	(1345)	☐ EXCELLENT ☐ GOOD ☐ FAIR ☐ POOR ☐ VERY POOR
SALT TOLERANCE	(1346)	☐ EXCELLENT ☐ GOOD ☐ FAIR ☐ POOR ☐ VERY POOR
FLOOD TOLERANCE	(1347)	☐ EXCELLENT ☐ GOOD ☐ FAIR ☐ POOR ☐ VERY POOR
FRUIT PRODUCTION	(1401)	☐ EXCELLENT ☐ GOOD ☐ FAIR ☐ POOR ☐ VERY POOR
PLANT UNIFORMITY	(1460)	☐ EXCELLENT ☐ GOOD ☐ FAIR ☐ POOR ☐ VERY POOR
FRUIT MATURITY DATE	(1406)	_____(MONTH/DAY/YEAR)
RAINFALL, ANNUAL	(1046)	NEAREST INCH:_____

NOTES:_____