MANHATTAN PLANT MATERIALS CENTER

Plants for the Heartland

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INSIDE THIS ISSUE:

Port Holes Ease Combine Cleaning

Easy Inspection and Clean Out Port Holes for Combines

Keeping equipment clean can greatly increase its lifespan; this is especially true for combines. Crop residue left in the machine contains moisture which leads to corrosion and can attract rodents that cause a variety of problems from disease to chewed hydraulic hoses and frayed electrical wiring. Cleaning combines is important for those interested in harvesting a variety of crops. This may not be as important to a farmer who only harvests wheat and corn, but to those harvesting a variety of small grains, native grasses, or native forbs, it becomes especially important. Leftover crop residue

Port hole installed in combine.

contains a substantial amount of seed material. It is critical that this material be removed to avoid contamination between crops, and is imperative when harvesting foundation seed as well as seed increase, and scientific yield studies. Combines are complex pieces of machinery, with thousands of moving parts and areas for seed and crop residue to lodge. Getting to these areas through the provided access panels is difficult and time consuming. To aid in the cleaning of the combines at the Manhattan Plant Materials Center, biological science technician Jerry Longren developed “port holes” to provide access into hard to reach areas. These port holes can be placed strategically on the combine to aid in the in-

Native Seed Quality Conference

Mid-West Seed Services, Inc., of Brookings, South Dakota announced that it will be sponsoring the 6th Annual Native Seed Quality Conference in Omaha, Nebraska. The conference is set to begin at 7:45 A.M. on Tuesday, February 21st at the Crown Plaza Hotel. The day and a half conference will feature discussions on topics as varied as: Restoration of grasses on semiarid rangelands, development of native legumes, prairie cordgrass production and storage, and tetrazolium testing of native shrubs. A complete agenda and registration forms can be downloaded from the Mid-West Seed Services website at http://www.mwseed.com. Registration for the conference by February 1st will result in a reduced registration fee. Looking forward to seeing you in Omaha!

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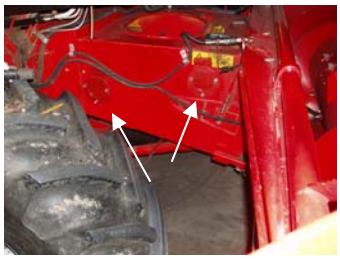
Figure 1. Port hole side view.

spection and cleaning, before and after harvest. This increases efficiency by decreasing the amount of down time for cleaning in between harvests, and allows for a more thorough cleaning, thus decreasing cross contamination between crops. Many species of native plants mature at roughly the same time creating a short window of opportunity for harvest. A faster turn- around time between harvests; will increase yields by decreasing the amount of crop losses from shattering and by avoiding unfavorable environmental conditions that inhibit harvest.

A list of materials and instructions is provided below for constructing the port holes. These port holes can be scaled up or down in size depending on the location on the combine.



Port Holes strategically located in combine feeder house.

"Combines are complex pieces of machinery, with thousands of moving parts"

Port Hole Construction How To

Procedure:

Note: figures are of a completed port hole with text boxes marking the desired steps.

1. Cut a 3 inch wide slot in one washer with a torch or chop saw. Grind to smooth the edges of the cut and to make certain that a 3 inch piece of flat steel can slide in the gap created by making the cut. This will be the inner port hole, Figure 1.
2. Drill 3 holes in a triangular pattern in the washer with the 3 inch cut, and another washer that has not been cut. The washer that has been cut will be the "inner" portion of the port hole, and the uncut washer will be the "outer" portion of the port hole. You will want to offset the holes for the outer and inner washers ¼ inch so they form a slight lip for the plate steel to rest. When making multiple port holes, you can place all the inner washers in a stack, clamp them together and use a drill press to drill all the holes at once. The same holds true for the outer washers. Once an initial hole has been made in the stack, they can be bolted together to help hold them in proper position as you drill, Figure 2.
3. Once you have the outer and inner washers drilled, bolt a pair together and spot weld on the outside circumference in 3 places, Figure 2.
4. Make the sliding door for the port hole by taking a piece of flat steel and drawing a 180° arc on one end. This can be done by using the inside washer as a template. Cut the radius off with a torch and grind the edges smooth. Weld a 3 inch piece of ¾ x ¾ inch angle iron on the opposite end of the arc to be used as a handle to slide the door in and out. See Figure 3.
5. Attach to combine with 3 bolts and drill the center out with a 2 ¾ inch hole saw. If the metal on combine is thick enough, they may also be welded directly to the combine.

Figure 2.

Port Hole Materials and Tool List

Figure 3. Sliding door for port hole.

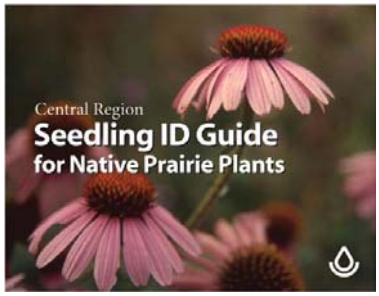
Materials:
2 Flat Washers
5 ½ inch outside diameter,
3 1/8th inch inside diameter,
¼ inch thickness
3 - 3/8ths x 1 inch carriage bolts
3 - 3/8ths inch nuts and lock washers
1 - 6 inch piece of ¼ x 3 inch flat steel
1 - 3 inch piece of ¾ x ¾ inch angle iron
1 can of spray paint to match the color of the combine

Tools:
Welding machine
Grinder
Torch
Chop Saw
Drill, preferably a drill press
3/8 inch bit
2 ¾ inch metal hole saw bit

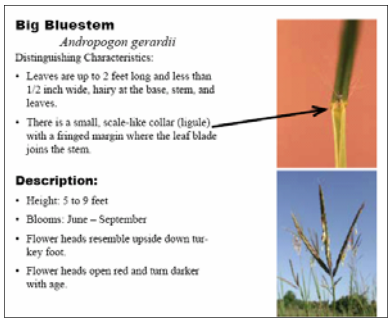
Washers were ordered from Fastenal.
http://www.fastenal.com/web/products/detail.ex?sku=0159675 *

If you need a large quantity of this guide, contact the Elsberry Plant Materials Center, at (573) 898-2012, to be added to a list for a second printing.

New Seedling ID Guide Available



A new Seedling ID Guide has recently been published by the Elsberry, Missouri Plant Materials Center. It is designed to help identify native plants at various stages of growth. Color photos illustrate seed, seedling, juvenile, and flowering stages, in addition to other distinguishing characteristics. Brief text provides additional information. This guide is



Wildflower Planting Guide

The Manhattan Center has just produced a new seed growers guide for five native forbs released for conservation purposes. The guide is a one page sheet that pictures the 5 varieties released by the Center along with information on producing seed of these varieties. The spread sheet design of the publication allows for a lot of information on each variety within a limited amount of space. The varieties described are: 'Kaneb' purple prairieclover; 'Midas' false sunflower; 'Nekan' pitcher sage; 'Sunglow' grayhead prairie coneflower; and 'Eureka' thickspike gayfeather. Some of the information provided on each variety includes: seeds per pound, origin, seeding date, potential germination, planting method, seeding rate, row spacing, potential yield, and potential problems. The guide will be distributed to all the field offices in the Manhattan Centers service area very soon.

'Sunglow' grayhead prairie coneflower

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Natural Resources Conservation Service

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SEEKING VEGETATIVE SOLUTIONS TO CONSERVATION PROBLEMS

The mission of the Plant Materials Program is to develop and transfer state-of-the-art plant science technology to meet customer and resource needs. The primary products produced by the program include the production of improved varieties of plants for commercial use and the development of plant science technology for incorporation into the electronic Field Office Technical Guide (eFOTG).

We're on the Web! Www.plant-materials.nrcs.usda.gov

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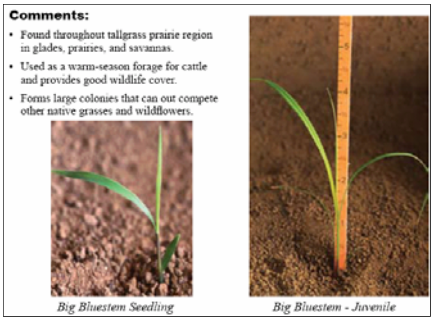
Wildflower Planting Guide

'Eureka' thickspike gayfeather seed production field.

New Seedling ID Guide Available



available on the web at http://Plant-Materials.nrcs.usda.gov Click on the Plant ID Tools and Guides on the right side of the page, then click on the Seedling ID Guide. It can be viewed online or printed. Hard copies of this guide are currently unavailable.

Newsletter Gets New Look

Plants for the Heartland, a new look and format replaces Manhattan Plant Materials Center as the Center's quarterly newsletter.