



Interseeding Small-seeded Forages into Sod with Conventional Corn/Soybean Planters

Since the advent of the 15th Conservation Reserve Program (CRP) sign-up that ended in May 1997 and the 16th CRP sign-up that ended in November 1997, farmers have been looking for ways to interseed legumes and native grasses into established CRP sod. Approximately 523,000 and 341,000 acres, respectively, were accepted in the 15th and 16th CRP sign-ups in Iowa.

Corn/Soybean Planters Are an Option

Small-seeded legumes and several of the small-seeded grasses can be interseeded through the insecticide boxes of most corn/soybean planters. Just like granular insecticides, many of the small-seeded forages can be accurately metered directly infurrow or banded just in front of the press wheel. Setting the double disk openers about 1/2" to 3/4" deep and running the seed infurrow will give the best seed-to-soil contact and probably the best chance of success.

One advantage of placing the seed infurrow and closing with the press wheels is that herbicides can be sprayed over the row for sod suppression at the same time the seed is planted. Roundup Ultra (Monsanto), Touchdown (Zeneca), and Gramoxone Extra (Zeneca) are burndown herbicides that can be used this way. For switchgrass and some of the other warm-season grasses, Atrazine can be combined with the burndown herbicides or sprayed alone over the row with the planter.

Setting the Insecticide Boxes

Calibrating an insecticide box to apply a given rate of small seed per acre is similar to calibrating it for a rootworm insecticide. The rootworm insecticide charts that you use to set your planter now were developed by using electric motors that turned the drive shaft of the planter. Speed and rate per acre charts can be made for the different planters by running them in a stationary position for a given period of time. The gauge setting determines the flow rate and the rotor wheels act to agitate the material to keep the flow constant.

Table 1. Ounces to pounds per acre calibration conversion for a time period equal to 3 and 4 mph.

—400 ft of row length equals—		
	Acres	Each oz collected equals lb/acre
15" row width =	0.011	5.44
20" row width =	0.015	4.08
30" row width =	0.023	2.72
36" row width =	0.028	2.26
38" row width =	0.029	2.15
40" row width =	0.030	2.04

3 mph = 91 seconds per 400 ft

4 mph = 68 seconds per 400 ft



An electric calibration motor attaches onto the drive shaft of a planter with conventional 3/8" drive sockets.

Planter Charts

The planter charts in table 2 were made by using an Ag Products Inc. electric rootworm insecticide calibration unit. There are two models of this unit that can be purchased. The unit with an automatic timer is approximately \$618 and the unit without the timer is approximately \$567. Freight to Iowa would run around \$20 to \$25. These units are made in Davis Junction, Illinois (815-962-1244).

After attaching the electric calibration unit to the planter's drive shaft, the drive chains that are attached to the planter wheels must be removed before running the insecticide units for a given unit of time. Experience with using this method of insecticide calibration has shown that it can be

very accurate but it is not foolproof. Changes in humidity, bounce of the planter, variable seed size, and the individual rotor wear per unit also can affect the application rate. The seeding charts in table 2 should be considered as a guide only. Further refinement done in the field for the correct application rate may be needed. The planters used to make these charts were working, "on-farm" planters in good repair. The forage seeds along with the actual seed size used for these calibrations were:

Alfalfa	210,000 seeds/lb
Alsike clover	533,000 seeds/lb
Birdsfoot trefoil	328,000 seeds/lb
Medium red clover	256,000 seeds/lb
Switchgrass	271,255 seeds/lb
Yellow sweetclover	212,000 seeds/lb

Table 2. Insecticide unit application setting charts for the selected forage seeds. To be used as a guideline only.

Note: #s/acre 36" rows = #s/acre 30" rows × 0.833
 #s/acre 38" rows = #s/acre 30" rows × 0.789

A. Actual planter calibrated: 1991 Case IH 900, 6-row, 30"

Representative of: 800 and 900 series planters (gate/dial meter gauge)

Seed type	#s/acre on 30" rows box setting at 3 mph						#s/acre on 30" rows box setting at 4 mph					
	1/0	1/5	2/0	2/5	3/0	3/5	1/0	1/5	2/0	2/5	3/0	3/5
Alfalfa	0.6	4.3	8.4	11.5	14.3	—	0.4	3.2	6.3	8.6	10.7	—
Alsike clover	0.3	7.9	13.0	16.5	20.9	—	0.2	5.9	9.7	12.3	15.6	—
Birdsfoot trefoil	1.0	6.0	11.8	17.6	23.8	—	0.7	4.5	8.8	13.2	17.8	—
Medium red clover	0.8	4.4	10.9	14.6	17.5	—	0.6	3.3	8.2	10.9	13.1	—
Switchgrass	0.2	1.7	5.8	7.7	8.7	11.1	0.2	1.3	4.3	5.8	6.5	8.3
Sweetclover	0.5	4.2	8.1	11.1	14.6	—	0.4	3.2	6.0	8.3	10.9	—

B. Actual planter calibrated: 1991 Deutz-Allis Quadra Disk, 6-row, 30"

Representative of: Deutz/Allis 385 series 1986–1993

Seed type	#s/acre on 30" rows box setting at 3 mph						#s/acre on 30" rows box setting at 4 mph					
	5	10	15	20	25	40	5	10	15	20	25	40
Alfalfa	1.2	2.7	5.8	10.2	12.2	—	0.9	2.0	4.4	7.6	9.1	—
Alsike clover	2.2	5.3	10.8	14.1	16.5	—	1.6	4.0	8.1	10.6	12.3	—
Birdsfoot trefoil	1.3	4.5	11.6	15.2	18.1	—	1.0	3.4	8.7	11.4	13.5	—
Medium red clover	1.4	3.9	7.6	14.6	17.6	—	1.1	2.9	5.7	10.9	13.2	—
Switchgrass	0	1.2	1.8	4.4	7.0	14.1	0	0.9	1.3	3.3	5.2	10.6
Sweetclover	0.6	2.9	5.8	8.9	11.7	—	0.4	2.2	4.4	6.6	8.7	—

C. Actual planter calibrated: John Deere 7000, 4-row, 38", odd insecticide boxes
 Representative of: John Deere 7000 and 7100 MaxEmerge odd (0-5-15-25-35-45)

Seed type	#s/acre on 30" rows box setting at 3 mph					#s/acre on 30" rows box setting at 4 mph				
	7	10	15	20	25	7	10	15	20	25
Alfalfa	2.5	5.2	9.3	15.7	23.9	1.9	3.9	7.0	11.8	17.9
Alsike clover	4.4	8.7	15.9	25.9	—	3.3	6.5	11.9	19.4	—
Birdsfoot trefoil	4.7	9.5	16.0	26.8	—	3.5	7.1	12.0	20.0	—
Medium red clover	3.6	7.4	13.8	23.3	—	2.5	5.6	10.4	17.4	—
Switchgrass	0.6	2.3	4.4	9.0	17.6	1.2	1.7	3.3	6.8	13.2
Sweetclover	2.0	4.8	8.7	16.5	24.8	1.5	3.6	6.5	12.3	18.5

D. Actual planter calibrated: John Deere 7000, 4-row, 38", even insecticide boxes
 Representative of: John Deere 7000 and 7100 MaxEmerge even (0-10-20-30-40)

Seed type	#s/acre on 30" rows box setting at 3 mph					#s/acre on 30" rows box setting at 4 mph						
	5	10	15	20	25	35	5	10	15	20	25	35
Alfalfa	0.9	3.5	5.8	8.3	9.8	20.2	0.7	2.6	4.3	6.2	7.3	15.1
Alsike clover	1.9	5.7	8.7	11.6	15.2	—	1.4	4.3	6.5	8.7	11.4	—
birdsfoot trefoil	1.5	6.3	10.5	13.7	16.6	—	1.1	4.7	7.8	10.2	12.4	—
Medium red clover	1.1	4.8	8.5	11.7	13.5	—	0.8	3.6	6.4	8.7	10.1	—
Switchgrass	0	2.6	3.6	5.1	6.1	16.3	0	1.9	2.7	3.8	4.6	12.2
Sweetclover	0.9	3.8	6.0	7.9	9.8	25.8	0.7	2.8	4.5	5.9	7.3	19.3

E. Actual planter calibrated: John Deere 7200, 6-row, 30"
 Representative of: John Deere 7200 and 7300 MaxEmerge 2

Seed type	#s/acre on 30" rows box setting at 3 mph					#s/acre on 30" rows box setting at 4 mph						
	5	10	15	20	25	30	5	10	15	20	25	30
Alfalfa	0.2	1.4	2.8	6.0	9.1	—	0.1	1.0	2.1	4.5	6.8	—
Alsike clover	0.6	2.7	5.5	9.8	13.5	—	0.4	2.0	4.1	7.3	10.1	—
Birdsfoot trefoil	0.2	2.7	6.0	9.9	13.8	—	0.2	2.1	4.5	7.4	10.4	—
Medium red clover	0.5	2.1	4.3	8.0	10.6	—	0.4	1.6	3.2	5.9	8.0	—
Switchgrass	0.2	1.2	2.4	3.6	5.8	7.8	0.1	0.9	1.8	2.7	4.4	5.8
Sweetclover	0.2	1.5	2.9	5.5	10.1	—	0.2	1.1	2.2	4.1	7.6	—

F. Actual planter calibrated: 1987 Kinze, 6-row, 30"
Representative of: Kinze planters

Seed type	#s/acre on 30" rows box setting at 3 mph						#s/acre on 30" rows box setting at 4 mph					
	5	10	15	20	25	30	5	10	15	20	25	30
Alfalfa	2.1	6.2	10.3	14.4	—	—	1.6	4.6	7.7	10.8	—	—
Alsike clover	3.1	8.9	12.7	19.5	—	—	2.3	6.7	9.5	14.6	—	—
Birdsfoot trefoil	4.4	10.9	16.7	23.4	—	—	3.3	8.2	12.5	17.5	—	—
Medium red clover	2.9	7.6	11.5	16.3	—	—	2.2	5.7	8.6	12.2	—	—
Switchgrass	1.7	3.9	5.1	6.6	10.2	15.6	1.25	2.9	3.8	4.9	7.6	11.7
Sweetclover	2.6	6.7	10.5	14.1	—	—	2.0	5.0	7.8	10.6	—	—

G. Actual planter calibrated: 1994 Landoll 4400, 6-row, 30" (insecticide boxes never used)
Representative of: Landoll 1994 or newer

Seed type	#s/acre on 30" rows box setting at 3 mph						#s/acre on 30" rows box setting at 4 mph					
	5	10	15	20	25	40	5	10	15	20	25	40
Alfalfa	0.5	2.7	5.8	7.3	10.9	15.4	0.4	2.0	4.4	5.5	8.2	11.5
Alsike clover	2.6	7.6	10.6	12.2	14.6	—	1.9	5.7	7.9	9.2	10.9	—
Birdsfoot trefoil	2.3	6.8	11.4	14.4	16.5	—	1.7	5.1	8.5	10.8	12.3	—
Medium red clover	1.8	4.4	8.7	11.2	13.7	—	1.3	3.3	6.5	8.4	10.2	—
Switchgrass	0.6	1.7	2.9	4.7	7.8	14.6	0.4	1.3	2.2	3.5	5.8	10.9
Sweetclover	1.5	3.0	6.0	8.3	11.1	17.3	1.1	2.2	4.5	6.2	8.3	13.0

H. Actual planter calibrated: 1994 White 6100, 6-row, 30"
Representative of: White 5100 & 6100

Seed type	#s/acre on 30" rows box setting at 3 mph						#s/acre on 30" rows box setting at 4 mph					
	5	10	15	20	25	30	5	10	15	20	25	30
Alfalfa	1.4	3.2	6.0	13.1	19.4	—	1.0	2.4	4.5	9.8	14.5	—
Alsike clover	2.8	6.0	10.0	16.2	21.9	—	2.1	4.5	7.5	12.1	16.4	—
Birdsfoot trefoil	2.7	6.8	10.8	18.2	26.9	—	2.0	5.1	8.1	13.6	20.1	—
Medium red clover	1.9	4.4	7.8	15.1	21.0	—	1.4	3.3	5.8	11.3	15.7	—
Switchgrass	0.9	2.3	4.2	6.7	12.0	20.4	0.7	1.7	3.2	5.0	9.0	15.3
Sweetclover	1.5	3.7	6.3	11.4	16.9	—	1.1	2.8	4.7	8.5	12.6	—

Table 3. Seed counts used by the American Association of Official Seed Analysts to approximate the number of seeds for each species prior to testing.*

Seed	Approximate # seeds/lb	Seed	Approximate # seeds/lb
Alfalfa	227,000	Little bluestem	238,000
Alsike clover	680,000	Medium red clover	272,000
Birdsfoot trefoil	370,000	Redtop	4,851,000
Crownvetch	138,000	Reed canary grass	538,000
Kentucky bluegrass	1,390,000	Switchgrass	259,000
Korean lespedeza	238,000	Timothy	1,163,000
Ladino clover	776,000	Yellow sweetclover	259,000

*Rounded to the nearest 1,000 seeds per lb at 12–13 percent moisture. Data can be used as a guide to help calibrate planters for CRP interseeding.

Ag Dealers Can Help

Contact your fertilizer and chemical dealers for help in calibrating your planter. If they do not have an electric calibration unit to lend, they may be able to borrow a calibration unit from a rootworm insecticide manufacturer representative. Insecticide calibration vials provided by the manufacturer can be used to catch the seed. These vials can be precalibrated by weighing with seed in them on a postage scale or by using a grain grading scale at a grain elevator.

Experience has shown that it is not uncommon for individual planter units to vary in application rates.

By using an electric calibration unit to calibrate for seed metering, you will find that variability in application rates can be compensated for very quickly. Remember—the numbers in the charts in table 2 are to be used only as a guide. Further refinements will probably be needed in the field.

Safety Awareness

Most likely, the insecticide boxes you calibrate for seed may still have a rootworm insecticide residue in them. Goggles, waterproof gloves, an apron, and a dust mask should be worn when preparing the insecticide boxes for seed calibration and use.

An electric motor is attached to a planter. Note the insecticide tube with the seed-catching vial attached to it. These insecticide calibration vials can easily be calibrated to measure ounces of seed vs. ounces of insecticide.



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File: Agronomy 3

This bulletin is part of a series to help CRP contract holders assess the land-use options available to them when the contracts expire. Additional information and other bulletins in the series are available at county ISU Extension offices.

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Issued in furtherance of Cooperative Extension work, Acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture. Jack M. Payne, director, Cooperative Extension Service, Iowa State University of Science and Technology, Ames, Iowa.