Integrated Pest & Crop Management

Greenhouse Gases and Agricultural Production

By Ray Massey

The issue of greenhouse gas emissions from agriculture continues to ebb and flow. The figure below illustrates the sources of greenhouse gas emissions from agriculture in 2009, the latest year for which data/estimates exist. Agriculture emits an estimated 419.4 million metric tons (MMT) of carbon dioxide equivalent. Approximately half is from soil management (principally nitrogen fertilization), one third from enteric fermentation (principally beef and dairy digestion by-product), 1/6 from manure management (principally liquid manure storage of swine and dairy facilities) and 2% from other sources, such as rice production and field burning.

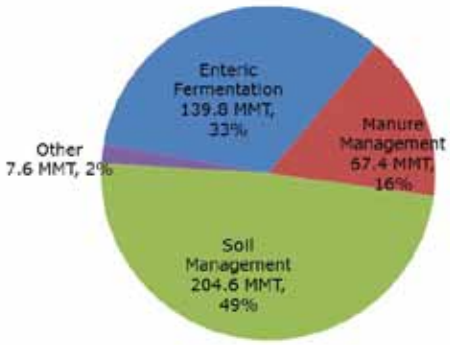
Carbon sequestration from farmland use was estimated to be over 43 MMT of carbon dioxide equivalents in 2009. Forests were estimated to sequester over 860 MMT. On the net, crop and forest production sequester greenhouse gases.

The greenhouse gas emissions debate centers around decreasing emissions from soil management and livestock production. Absent from the recent debate is talk of paying farmers for sequestering carbon.

Until 2010 the Chicago Climate Exchange offered contracts to crop and forest producers to pay for carbon sequestered via various management practices. The price for sequestered carbon dived from a high of about $7/metric ton in 2008 to near $0 in late 2009 when it became clear that no new legislation would pass to limit emissions and create a market for carbon. In 2010 the Chicago Climate Exchange ceased open trading of carbon in the U.S. The European Union continues to trade carbon but its price has fallen from a high of about $45/ton to $6/ton. The economic studies indicate that it would take at least $20/ton to induce farmers to change management in any significant way in order to collect carbon sequestration payments. Those studies were done before corn prices rose to $6/bushel. Supposedly, the carbon payments necessary to attract farmers to carbon sequestration have also risen. The conclusion: carbon sequestration payments to farmers is not likely to happen soon.

The USDA has funded several research and extension projects designed to find ways that farmers could reduce emissions. Nitrogen management is front and center in several of these projects. If successful, these projects should help producers produce more grain with less nitrogen fertilizer escaping into the environment. The good news is that this would lower production costs by reducing the cost of fertilization without reducing yields. Other research and extension projects are hoping to reduce enteric fermentation via improved feed management and reduce methane emissions via capture from manure storages. The anticipated conclusion of these USDA projects will be more efficient crop and livestock production at lower costs.

It appears that greenhouse gas emissions from agriculture are going to be reduced the manner in which they have been for the past several decades, increased productivity decreasing emissions per unit of production.



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In This Issue

Summary of the 2011 Corn Performance Results

By Bill Wiebold

The MU Variety Testing Program has provided Missouri farmers with unbiased corn hybrid comparisons for 74 years. This year, 212 hybrids from 34 brands were entered into our tests. Only six of those hybrids possessed no biotechnology traits. Stacked biotechnology traits have become common. Over 20% of the hybrids possessed resistance to both glyphosate and glufosinate herbicides plus at least one trait for both above ground and below ground insect resistance.

As with Missouri farmers, weather greatly affected our ability to plant locations and our resulting yields. Planting at almost every location was delayed and/or seedling growth was slow because of cool, wet weather in April and May. For example, planting date for Columbia was June 6. Two locations were abandoned. Craig, in the North Region, was flooded by the Missouri River for the second straight year. Truxton, in the Central Region, was first replanted and then abandoned because of unacceptable stands.

For many locations, weather turned dry and warm in June, July, and August. The hardest hit region was Southwest. Many farmers abandoned fields completely or harvested them for silage instead of grain. Location average yields ranged from 225 to 82 bushels/acre. The power of irrigation was illustrated in the Southwest region. The three non-irrigated test locations averaged 94.7 bushels/acre, whereas, the three irrigated locations yield 165.7 bushels/acre. A summary of yield results from all locations are presented in the following table. Full results can be found at http://varietytesting.missouri.edu

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TABLE 1. SUMMARY OF CORN TESTS

Region/Test Location	Number of Entries	Highest Yield	Lowest Yield	Average Yield	CV
		----------bushels/acre----------			%
North/Non-Irrigated Test					
Albany	90	171.3	69.8	144.1	11.5
Mooresville	90	193.8	137.0	167.9	9.7
Novelty	90	152.1	104.2	128.5	10.1
Lagrange	90	215.8	139.9	183.7	8.3
Central/Non-Irrigated Test					
Henrietta	98	237.3	165.7	200.5	7.7
Marshall	98	223.3	159.3	197.4	4.4
Columbia	98	158.6	66.3	113.7	12.1
Annada	98	208.1	135.0	176.3	8.9
Central/Irrigated Test					
Columbia	47	164.3	93.3	129.9	8.8
Laddonia	47	227.5	158.9	203.7	4.8
Southwest/Non-Irrigated Test					
Harrisonville	45	145.2	82.8	109.5	19.0
Urich	45	103.7	44.9	81.8	13.9
Lamar	45	122.9	40.8	92.9	21.1
Southwest/Irrigated Test					
Harrisonville	28	205.9	157.4	186.3	4.7
Adrian	28	179.1	119.1	156.4	10.8
Lamar	28	173.1	114.8	154.3	7.9
Southeast/Irrigated Test					
Oran	103	254.4	158.2	225.2	5.9
Charleston	103	251.1	159.5	218.0	6.4
Portageville Clay	103	200.5	115.5	166.1	10.6
Portageville Loam	103	180.0	102.1	143.5	16.4

New Insect Moving This Direction

By Pat Miller

The brown marmorated stink bug (BMSB) has caused milliions of dollars of damage to crops in the northeastern and mid-Atlantic states. One of these insects, which are prone to hitchhiking, was found at a rest stop on I-70, west of Kansas City, KS. They have a confirmed presence in 33 states and are causing severe damage in five states. It was apparently accidentally introduced in eastern Pennsylvania and was first collected there in 1998.

Its wide host range, including fruiting vegetables, fruit, soybeans and corn, along with its tendency to congregate in homes during the winter, make it a formidable problem. In the areas where it has become a pest, producers are spraying insecticides more frequently and still are sustaining damage. Insectides that control our native stink bugs often are not effective against the BMSB. Homeowners may be invaded by thousands of the smelly insects in the fall as they seek overwintering spots.

Researchers are working to find effective pesticide controls as well as long-term biological controls such as natural parasites. They are also developing monitoring traps and charting BMSB's spread across the United States.

The adults are just under ¾ inch long. They differ from our native brown stink bugs in that they have lighter bands on the antennae and darker bands on the membranous, overlapping part at the rear of the front wings. If you

find these insects, please contact your local University of Missouri Extension Center. More information can be found at http://ento.psu.edu/extension/factsheets/brown-marmorated-stink-bug.

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Weather Data for the Week Ending December 19, 2011

By Pat Guinan

Station	County	Weekly Temperature (ºF)						Monthly Precipitation (in.)		Growing Degree Days‡	
		Avg. Max.	Avg. Min.	Extreme High	Extreme Low	Mean	Departure from long term avg.	December 1-19	Departure from long term avg.	Apr. 1 - Oct. 31	Departure from long term avg.
Corning	Atchison	48	30	61	19	38	+11	2.71	+1.98	3913	+488
St. Joseph	Buchanan	48	31	60	20	39	+10	2.44	+1.51	3768	+333
Brunswick	Carroll	49	33	58	23	40	+11	2.33	+1.23	3778	+287
Albany	Gentry	48	30	60	19	38	+11	2.50	+1.63	3611	+261
Auxvasse	Audrain	51	33	59	21	41	+10	2.49	+0.85	3863	+324
Vandalia	Audrain	50	32	59	23	41	+11	2.47	+0.91	3762	+269
Columbia-Bradford Research and Extension Center	Boone	51	31	58	22	41	+10	2.26	+0.78	3801	+142
Columbia-Capen Park	Boone	52	30	60	20	40	+8	2.49	+1.03	3753	-38
Columbia-Jefferson Farm and Gardens	Boone	51	33	59	22	42	+11	2.23	+0.77	3948	+281
Columbia-Sanborn Field	Boone	52	34	59	26	42	+10	2.65	+1.19	4172	+381
Columbia-South Farms	Boone	51	32	59	22	41	+10	2.38	+0.90	3925	+263
Williamsburg	Callaway	51	32	59	23	42	+11	2.60	+0.96	3831	+352
Novelty	Knox	49	32	59	22	40	+1	2.35	+1.03	3534	+120
Linneus	Linn	49	31	59	19	40	+12	2.10	+1.10	3616	+280
Monroe City	Monroe	50	32	58	23	40	+10	3.00	+1.54	3698	+235
Versailles	Morgan	54	33	60	22	43	+10	2.88	+1.40	4162	+398
Green Ridge	Pettis	52	32	59	21	41	+9	2.36	+0.99	3946	+424
Lamar	Barton	53	35	61	25	43	+8	2.41	+0.73	4311	+367
Cook Station	Crawford	53	33	60	19	43	+8	2.54	+0.54	3814	+53
Round Spring	Shannon	53	32	58	18	42	+8	2.30	+0.43	3630	+37
Mountain Grove	Wright	51	33	57	21	42	+8	2.82	+0.54	3855	+283
Delta	Cape Girardeau	52	36	62	27	44	+7	4.8	+2.49	4214	+44
Cardwell	Dunklin	54	37	63	28	46	+7	5.72	+3.12	4639	+83
Clarkton	Dunklin	53	36	62	26	46	+7	5.37	+3.07	4541	+59
Glennonville	Dunklin	53	37	63	28	46	+7	2.25	+3.06	4517	+67
Charleston	Mississippi	53	35	63	26	45	+8	4.90	+2.36	4413	+212
Portageville-Delta Center	Pemiscot	54	39	65	29	47	+8	5.79	+3.20	4755	+235
Portageville-Lee Farm	Pemiscot	54	38	64	29	47	+8	5.94	+3.33	4700	+214
Steele	Pemiscot	55	39	65	29	47	+8	6.10	+3.11	4787	+257

‡Growing degree days are calculated by subtracting a 50 degree (Fahrenheit) base temperature from the average daily temperature. Thus, if the average temperature for the day is 75 degrees, then 25 growing degree days will have been accumulated.

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