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AG Talk Report

UNIVERSITY OF IDAHO, U.S. DEPARTMENT OF AGRICULTURE, AND IDAHO COUNTIES COOPERATING

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Ag Talk Tuesday resumes May 4, 2021

Organizers: Kasia Duellman, Pamela J.S. Hutchinson, Juliet Marshall, University of Idaho

The last session of Ag Talk Tuesday for 2020 held on August 18 provided the usual crop updates across Idaho, followed by informative featured presentations, Ben Eborn provided an insightful market outlook for small grains and potato, and Linda Schott discussed soil health assessment.

These sessions began in 2018, with face-to-face meetings. 2020 forced an on-line-only format, which has allowed the expansion of our audience. 2020 registrants hailed from not just Idaho but also Washington, Oregon, Montana, and North Dakota. In total, 128 people registered for this series in 2020, and attendance of 25 or more was common. When possible, summaries of Featured Topics were submitted to this newsletter, The Ag Talk Report. This and previous issues can be found at https://cropalerts.org/ .

Nothing beats attending these sessions LIVE, where participants can interact with fellow ag professionals, provide additional insight and information regarding current season crop pests, diseases, and other crop issues, and engage with our presenters who go more in depth on ag-related featured topics.

These sessions provide real-time information about crop pests, weeds, diseases, soil health, economics and markets affecting Idaho agriculture, including (but not limited to) potatoes, small grains, sugar beets, forages, livestock waste management and more. Check online for more information at https://webpages.uidaho.edu/extension-seed-potato/

Ag Talk Tuesday Schedule for 2021 - First and Third Tuesdays, May through August	
May 4	July 6
May 18	July 20
June 1	August 3
June 15	August 17

University of Idaho Extension

Solid Dairy Manure and Dairy Manure Compost Nutrient Survey Results

Lide Chen, PhD, Associate Professor, Waste Management Engineer

Introduction:

Idaho has a strong dairy industry and ranks third in the nation for milk production. In 2019, Idaho had roughly 437 dairy operations with about 586.000 milk cows (Idaho Dairymen's Association-2019 Industry Profile) produced 15,631 million pounds of milk, accounting for 8% of U.S. milk production. Dairy cows inevitably generate manure while they produce milk. Based on data from American Society of Agricultural and Biological Engineers, a mature dairy cow weighing 1,400 pounds can generate around 120 pounds of feces and urine each day with an average as-excreted solids content of around 12 percent. As a byproduct of milk production, huge amounts of dairy manure are generated each year in Idaho.

Depending on herd sizes and site set ups (open lot, free stall barn, or combination of both open lots and free stall barns), Idaho dairies use different manure handling methods such as flushing, vacuumed truck, and scraper etc., typically resulting in two different manure streams-liquid and solid manure. This survey targeted solid manure which refers to open lot scrapings, corral scrapings, settling basin solids, inclined screen separated solids, centrifuge separated solids, and lagoon sludge. These solids are typically either composted or stockpiled until they are applied to crop lands in Fall or Spring.

Dairy manure and dairy manure compost contain nutrients and organic components that could benefit soils and crops. It is commonly believed that manure and manure compost used as a soil amendment can improve soil physical, chemical, and biological properties. They can provide essential nutrients such as nitrogen (N), phosphorus (P), and potassium (K), as well as enhance the microbial population necessary to release nutrients from soils.

Regulations and good stewardship require that manure needs to be applied to crop fields in a rate matching crop nutrient needs to realize the maximum advantage of the manure nutrients and to minimize the negative environmental impacts associated with manure applications.

By monitoring and properly utilizing manure nutrients as a valuable resource, dairy and crop producers can realize significant fertilizer cost savings.

Objective:

The objective of this study was to survey solid dairy manure and manure compost nutrients to better understand dairy manure values.

Materials and Methods:

We went to 14 commercial dairies ranging from a couple hundred cows to over 8 thousand cows located in southern Idaho on different dates from May 14 to June 6, 2018 to collect either manure compost or stockpiled manure samples. At each dairy site, at least three samples were collected from compost piles or manure stockpiles. Each sample was a mixture of compost or stockpiled manure collected from three different locations of the compost pile or manure stockpile. The collected samples were immediately sent to a commercial laboratory, where properties of these samples were analyzed as shown in Tables 1 and 2.

Results:

Table 1. Summary of properties of 33 dairy manure compost samples from 11 dairies.

Characteristic	Median	Minimum	Maximum
Total N	13.64	7.24	30.40
Total C	137.24	79.78	292.32
C:N ratio	10.30	6.60	14.70
Nitrate-N	0.62	0.01	3.65
P_2O_5	13.25	6.93	29.91
K_2O	22.44	8.67	51.50
Calcium	34.12	10.13	63.94
Magnesium	12.09	5.90	20.49
Sulfur	4.26	2.64	8.00
Zinc	0.11	0.05	0.40
Iron	12.63	3.33	18.23
Manganese	0.15	0.05	0.22
Copper	0.04	0.00	0.15
Boron	0.01	0.00	0.07
Sodium	4.34	1.38	10.71
pH	9.30	7.60	9.90
Salts as EC, mmhos/cm	6.50	2.10	13.40
Dry Matter	1436.00	628.00	1716.00

Note: reported lb./Ton on As Received Basis.

Table 2. Summary of properties of 18 stockpiled dairy manure samples from six dairies.

Characteristic	Median	Minimum	Maximum
Total N	11.20	8.80	25.78
Total C	170.25	109.57	323.74
C: N ratio	13.35	8.30	19.40
Nitrate-N	0.01	0.00	0.25
P2O5	6.71	4.74	16.55
K2O	17.42	9.02	41.33
Calcium	13.99	8.79	39.15
Magnesium	4.33	3.42	11.82
Sulfur	2.17	1.41	6.20
Zinc	0.04	0.00	0.25
Iron	3.23	0.87	6.12
Manganese	0.04	0.00	0.11
Copper	0.01	0.00	0.02
Boron	0.02	0.00	0.04
Sodium	2.93	1.02	7.69
pH	8.80	7.80	9.70
Salts as EC, mmhos/cm	10.25	7.40	15.10
Dry Matter	575.00	370.00	1190.00

Note: reported lb./Ton on As Received Basis

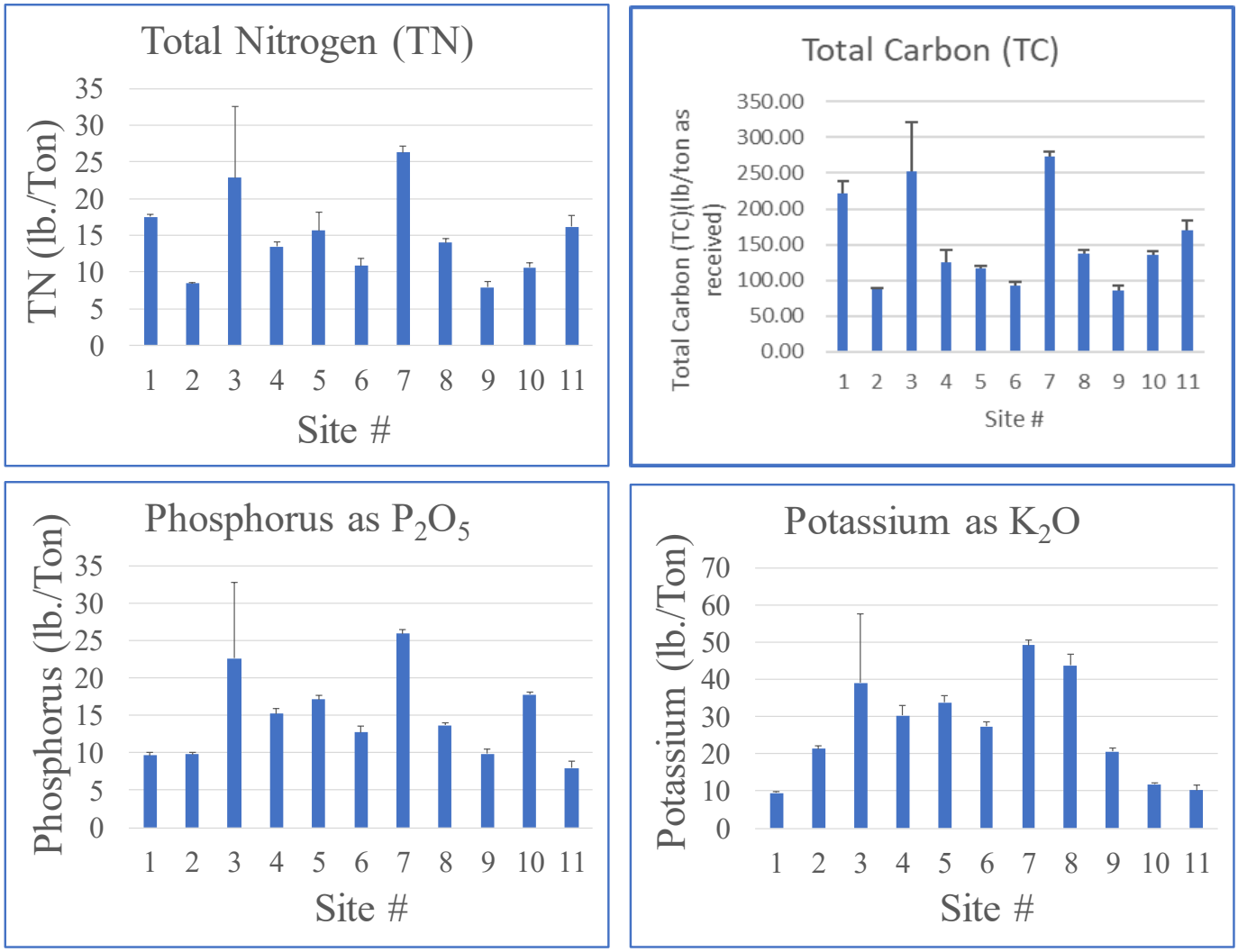

Figure 1. Value of total nitrogen, phosphorus, and potassium in dairy manure compost samples.

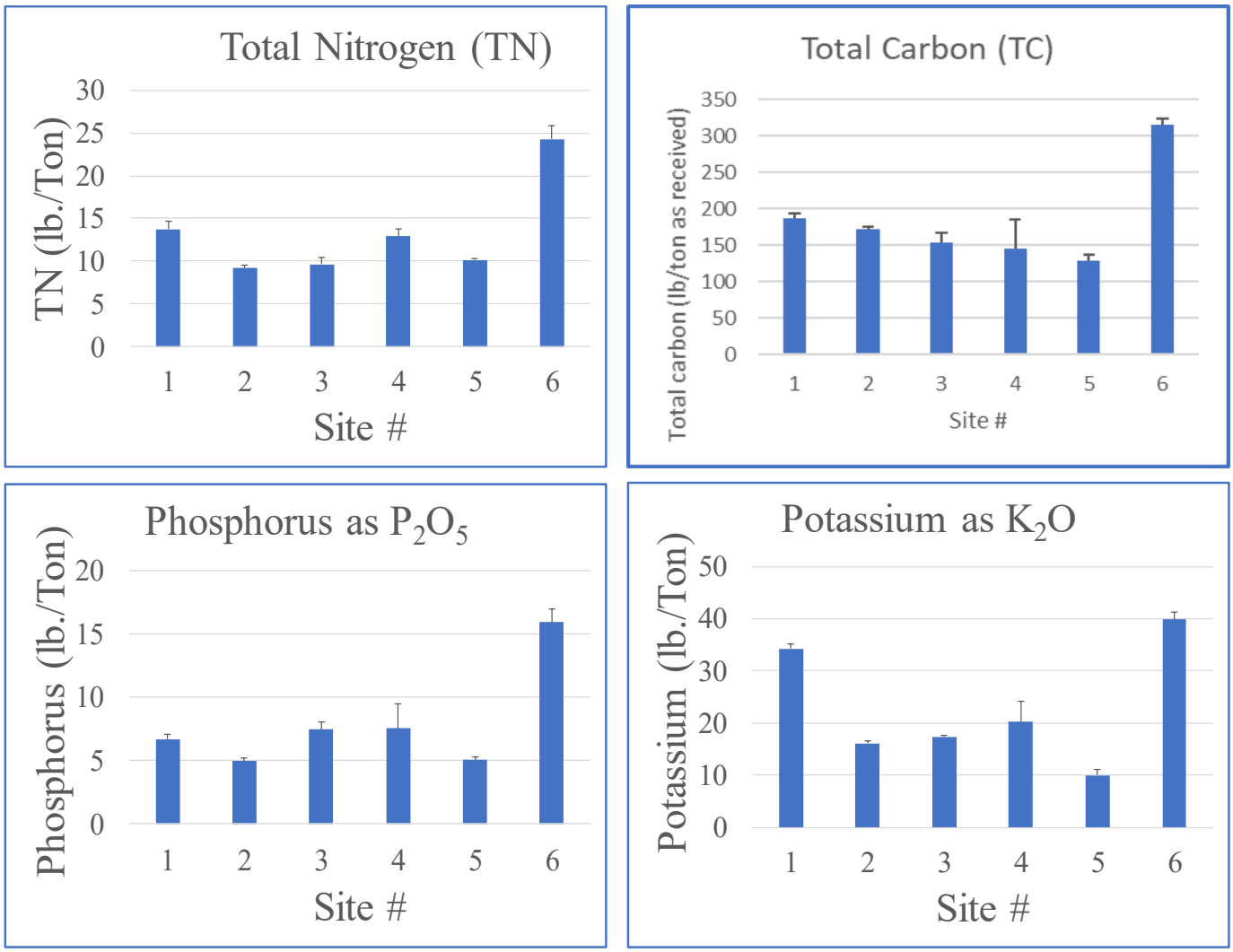

Figure 2. Value of total nitrogen, phosphorus, and potassium in stockpiled manure samples.

Summary:

Due to variations in animal diet and manure handling and storage practices, nutrients in both the dairy manure compost and stockpiled dairy manure differ among dairies. Manure sampling and nutrient analysis before its land application is important to make better uses of manure nutrients. Also, getting representative samples is critical, especially for stockpiled dairy manure due to its non-uniform nutrient composition. Dairy manure compost has higher nitrate-N, which can be directly taken up by plants, than that in stockpiled manure. Compost process reduces manure moisture and volume, resulting in concentrated nutrients and other benefits such as fewer weed seeds remaining viable in properly composted manure, composting kills pathogens. Both stockpiled dairy manure and manure compost are good carbon sources for our soils.

Assessing Soil Health in Idaho

Linda Schott, Assistant Professor, Nutrient and Waste Management Extension Specialist

Soil health can be defined several ways. Our first definition comes from the FAO, who defines soil health as the continued capacity of soil to function as a vital living system, within ecosystem and land-use boundaries, to sustain biological productivity, promote the quality of air and water environments, and maintain plant, animal, and human health. For cropland, this definition can be interpreted as the *continued capacity* of soil to function as a vital living system to sustain healthy crop production. Another similar but different definition is to define soil health based on ecosystem services. Healthy soil provides anchors for plant roots, provides air, water and nutrient for plants to grow, serves as a suitable habitat for soil fauna, acts as a living water filter, and supports buildings, roads, and other structures. Under this definition, the intended function of soil is also important; crop land would not need to support a road to be considered healthy but should be anchoring plant roots and providing habitat for soil fauna. The final 'definition' of soil health is a flowchart and solely focuses on soil's ability to grow crops (Figure 1).

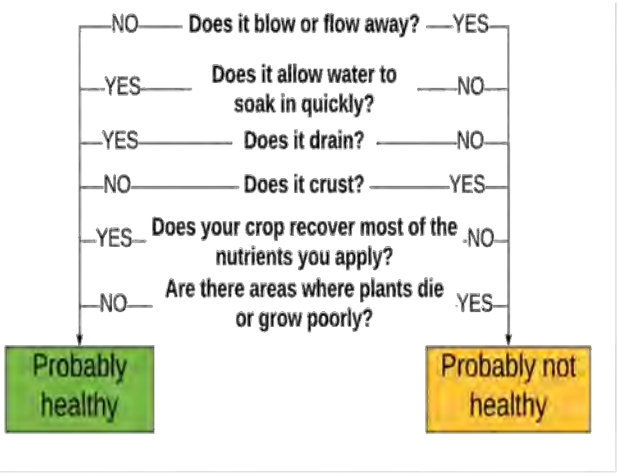

Figure 1. Flowchart definition of soil health for cropland.

The first question a land manager should ask when assessing soil health is: *what is the goal for improving soil health*? Without a goal in mind, assessments will not be useful, and producers will bound to be disappointed in the results. Some examples of goals include: reduction of fertilizer usage; ensure the continued usage of the soil for future generations; improvement of infiltration or water use efficiency; or providing extra forage for livestock. There are many other goals though. Land managers should personalize their goals for their operation and even on an individual field level to address barriers to better crop production. Land managers may have multiple goals, but it is best to prioritize them in order to measure progress toward those goals.

Finally, after before and after appropriate practices are implemented, soil health can be assessed. There are a wide variety of ways that soil health can be assessed. NRCS has some guidelines for conducting assessments of some soil health indicators (https://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/assessment/). It is critical keep in mind your soil health goals while choosing which soil health indicators to monitor. For example, if the goal is to reduce fertilizer inputs, one of the indicators should probably be soil chemical analyses at different times of the growing season and perhaps petiole or plant samples. If the goal is to increase infiltration or water use efficiency, chemical samples, while still important for nutrient management, will not tell you much about whether infiltration has increased due to practice implementation. Instead, infiltration tests and perhaps an assessment of soil crusting or compaction would be better.

Other critical components for assessing soil health are that assessments should be conducted at the same time of year and methods should stay the same. Assessments should be done at the same time of year in order to track progress. For example, soil samples taken for chemical analyses before fertilizer application one year and after application in another are not really that comparable. Similarly, soil infiltration tests taken before harvest one year and after harvest in another may not be that comparable due to compaction from machinery or soil disturbance. Assessments should also use the same methods. If soil chemical or biological analyses are conducted, samples should be sent to the same commercial labs every year to reduce inter-lab variability.

Improving soil health should be incremental, and it's important to keep in mind that change takes time. Managers should be constantly re-assessing and adapting their management practices. If tillage hasn't fixed your soil problems yet, it probably won't start anytime soon.

Managing Starlings in Idaho Dairies

Jason Thomas, Extension Educator, Minidoka County

Starlings are an invasive species which have colonized across the United states. They cause damage to dairy operations by feeding on high quality protein enriched feeds. This type of feeding can increase feed costs for dairies and may contribute to the spread of some diseases in dairy cows. Managing starlings is a challenge and cannot be accomplished by a single step. The most important thing to do is to make your dairy operation an undesirable location for starlings to feed and congregate. Combining the methods below can help dairies manage the issues caused by starlings feeding on dairy operations.

The most effective, though likely the most difficult solution is to exclude birds from entering important feeding areas. This can be accomplished by moving feeding inside, putting up barriers like nets and porcupine wire or using rubber strips in doorways to reduce the movement of birds while still allowing movement of animals and machinery. Any hole that is 1 inch in diameter will allow access to starlings. Another modification that can be made to dairies is filling water troughs full enough that starlings can't land in them, but shallow enough that they cannot perch on the end to get a drink. Feeding by starlings can also be reduced by feeding cows in the afternoon or in the evening, two times when starlings are not as actively feeding. Early mornings are when starlings do most of their feeding. Scaring the birds can help discourage feeding, but tactics need to be varied in intensity and timing otherwise starlings will learn that the sounds do not indicate a threat.

In Idaho, Avitrol and Starlicide are pesticides that can be used to assist with starling management. Avitrol includes a small percentage of bait with poison. The poison reacts slowly and causes birds to act sporadically and sound the alarm to other birds. This can scare birds away as they communicate through alarm calls. Starlicide, in Idaho, must be applied by USDA-Wildlife Services, but can be an effective means to kill a lot of birds. In order to be successful pre baiting is essential. A good pre-bait is putting out hundreds of pounds of French fries. Starlings are particularly attracted to food like French fries because they are coated in liquid fat. After pre-baiting has occurred and large amounts congregate to the food, USDA-Wildlife Services can apply the pesticides onto the bait. Calling them a week or two beforehand to get approval and setup a visit is important. Baits must kept away from animals and used according to the label and protocols of Wildlife Services. For more details on the usage of Starlicide you can contact USDA Wildlife Services of Idaho at 208-373-1630. For any pesticides used always read and follow the label instructions.

Starling Picture By Tim Felce (Airwolfhound) / CC BY-SA (https://creativecommons.org/licenses/by-sa/2.0)

Cereals Update

Juliet Marshall, Professor/Extension Cereals Agronomist and Plant Pathologist

Winter wheat and barley harvests are continuing, with yields at average to above average with good to excellent quality. Harvest of spring grain is finishing in the upper elevations, with just the higher elevations left to finish drying. Diseases and insects were low overall, with the largest impact on yield coming from environmental conditions associated with early and mid-season high winds and frost. Grasshoppers were plentiful, and may be in high enough populations to damage emerging winter crops this fall. Incidences of low Falling Number (FN) have been very limited so far.

Aphid monitoring Update — Multiple peak flights occurred in 2020

Kasia Duellman, Seed Potato Specialist

Winged aphids are monitored in various locations across southeast Idaho, encompassing both commercial and seed potato growing areas. This work, conducted by the University of Idaho in cooperation with the Idaho Crop Improvement Association depends on the participation of various agronomists, fieldmen and growers in the region. One goal is to determine when aphid flights are occurring in Idaho, since aphids that are on the move (and generally non-potato-colonizing) are considered to be important in the in-season movement of Potato virus Y (PVY). PVY can seriously impact the eligibility of seed potato being increased for re-certification. Such information may inform seed potato growers when to apply mineral oils in efforts to minimize in-season movement of PVY, or when to implement an early vine kill strategy. Such monitoring is expected to continue through August for most locations, and through September and later for select locations.

Figure 1. A 2.5-gallon yellow bucket trap, filled with water treated with 5-6 crystals of copper sulfate and a drop of dish soap. Buckets are placed along field edges, where weeds are managed and where the bucket remains visible to flying insects.

The table on the next page indicates the number of aphids captured in yellow bucket traps (Figure 1) or suction traps (Figure 2) placed adjacent to potato fields in southeast Idaho on a weekly basis through August 24. Most suction traps are approximately six feet tall, like the one shown in Figure 2, but the suction trap at Tetonia REC is much taller — approximately 12 meters in height — and as such it is designed to capture aphids from a wider region compared to the shorter suction and bucket traps.

The chart (Figure 3) shows the number of sites monitored that had more aphids captured compared to the previous week. In 2020, most locations had a spike in aphid captures during the weeks of 6/22-7/6, 7/13-7/20 and 8/17-8/24 (Figure 3) and total aphid numbers across all sites have exceeded 250 for five weeks (beginning 7/13) (see Table, next page).

If you are interested in participating in this aphid monitoring network, please contact the UofI Extension Seed Potato team at kduellman@uidaho.edu to receive a protocol. Drop off sites for collected aphids are available at select locations. In return, you will be provided with the number of aphids captured for your location at no charge. For a small fee, the UofI Parma Plant Diagnostic Lab offers molecular analysis of contents to determine whether PVY is present, and after counting aphids, we can submit samples on your behalf for such tests if requested.

Figure 2. A suction trap, approximately six feet tall, located at the edge of a potato field. It is powered by a battery and solar panel. Suction from a fan forces insects into a 50% PEG-filled glass jar, where they are trapped.

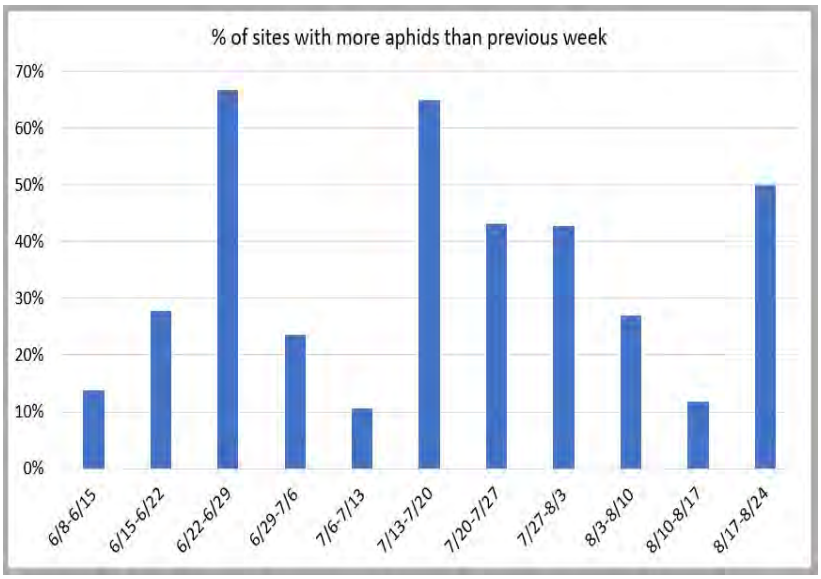

Figure 3. Percent of sites monitored that showed an increase in aphids compared to the previous week.

Table. Aphid captures in 2020 through August 17. *Suction type trap; all other traps are yellow 2.5-gallon bucket traps filled with water treated with copper sulfate (5-6 crystals) and a drop of dish soap.

Location	6/1-6/8	6/8-6/15	6/15-6/22	6/22-6/29	6/29-7/6	7/6-7/13	7/13-7/20	7/20-7/27	7/27-8/3	8/3-8/10	8/10-8/17	8/17-8/24
Aberdeen - 315East	--	--	--	5	7	4	4	11	0	0	0	1
Aberdeen - 315Northwest	--	0	2	6	2	2	5	22	19	16	1	0
Aberdeen - 315South	--	1	1	11	5	1	4	15	48	2	5	0
Arco - East (Sunshine)	0	0	2	--	0	1	3	10	7	2	2	0
Arco - South (Jay's)	0	0	1	4	2	0	1	10	7	1	1	5
Arco - West (TP3)	0	0	0	8	0	1	2	12	8	3	1	0
Arco 17	--	0	0	6	0	0	3	15	6	0	1	6
Arco 26	0	0	0	1	0	0	7	15	13	--	1	1
Arco 4	--	0	0	4	0	0	7	6	8	1	2	0
Ashton 1 - South	0	0	1	9	7	6	9	19	20	27	--	2
Ashton 2 - Central	0	0	0	2	10	2	1	1	9	1	1	3
Ashton 3 - East	0	0	0	1	4	5	--	9	7	41	24	31
Ashton 4 - Northeast	0	0	2	1	1	5	12	36	35	21	2	1
Ashton 5 - West	4	4	0	7	5	1	2	2	13	25	21	--
Blackfoot	4	0	5	12	11	0	5	17	7	24	0	4
Dietrich - East Home 11	0	0	0	1	0	0	0	0	1	1	4	3
Dietrich - East JV 24	1	0	--	2	0	0	1	0	1	1	0	0
Dietrich - East Home 3	3	0	0	1	--	0	0	2	1	1	0	0
Dietrich - East HVW3	--	0	--	--	0	--	--	--	--	--	--	--
Driggs 1 - S7*	--	--	0	0	0	1	7	0	7	13	2	--
Driggs 2 - field 17*	--	--	0	0	0	0	10	0	3	0	0	--
Driggs 3 (D7)	--	--	2	5	0	0	85	33	95	17	26	--
Driggs 4 (D2)	--	--	3	11	12	12	16	20	45	47	1	--
Driggs 5 (D13)	--	--	0	6	4	4	16	19	37	21	2	--
Grace 1 - east	0	1	4	7	22	8	5	2	--	1	--	7
Grace 2 - near suction trap	1	1	0	1	6	3	2	3	--	7	--	1
Grace 2 - suction trap*	--	--	0	1	1	0	3	4	--	2	--	0
Hidden Valley*	0	0	0	--	--	0	0	0	0	0	0	0
Holbrook 1 (bucket 1)	--	--	1	5	2	0	1	3	0	0	0	--
Holbrook 2 (suction 1)*	--	--	0	0	0	0	0	1	1	0	0	--
Holbrook 3 (bucket 2)	--	--	0	0	5	0	0	3	0	0	0	--
Holbrook 4 (suction2)*	--	--	0	0	0	0	2	0	1	0	0	--
Idaho Falls	1	3	9	5	15	4	7	9	10	8	0	2
Rexburg	0	1	6	7	10	2	1	2	7	1	5	10
Richfield - North	0	0	0	--	0	--	--	--	--	--	--	--
Richfield R6	--	0	--	0	0	0	0	--	4	10	1	40
Tetonia Back (by spore trap)	0	2	1	1	3	1	0	8	3	16	9	5
Tetonia Front	1	0	2	4	3	2	11	17	5	14	5	6
Tetonia Front (suction trap)*	0	0	0	10	26	27	38	60	56	60	44	104
Total:	15	13	42	144	163	92	270	386	484	384	161	232

AG Talk Report

Our featured speakers for Ag Talk Tuesday August 4 and August 18

Dr. Lide Chen is a Waste Management Engineer in the Department of Soil and Water Systems, based at the Twin Falls Research and Extension Center. Dr. Chen's research and extension programs focus on value-added products from waste, mitigation of environmental impacts caused by waste.

Ben Eborn is an Extension Agricultural Economist at the University of Idaho, based in Bear Lake County. His research and extension interests include farm and ranch management, production economics, and farm succession and estate planning.

Jason Thomas is the Extension Educator for Minidoka County. He delivers pest management and STEM-focused programs to Idaho farmers and youth. Check out his Insect Hunter youtube channel: https://www.youtube.com/insecthunter

Dr. Linda Schott is an assistant professor and the Nutrient Waste Management Extension Specialists housed at the Twin Falls Research and Extension Center. She specializes on aspects related to impacts of nutrient and livestock waste management and other land management practices on soil health and water quality.

Idaho Falls Research & Extension Center 1776 Science Center Drive Idaho Falls, ID 83401 (208) 529-8376
Aberdeen REC 208-397-4181
Kimberly REC 208-423-4691
Parma REC 208-722-6708
Tetonia REC 208-456-2879
Twin Falls REC 208-736-3600
Entomology, Plant Pathology & Nematology 208-885-3776
Plant Sciences 208-885-2122
Soil and Water Systems 208-885-0111

CONTACT US

UNIVERSITY OF IDAHO EXTENSION

Mailing Address:
University of Idaho Extension
875 Perimeter Drive MS 2338
Moscow, ID 83844-2338

Phone: 208-885-5883

Fax: 208-885-6654

Email: extension@uidaho.eduWeb:

Editors

Kasia Duellman kduellman@uidaho.edu (208) 757-5476
Pam Hutchinson phutch@uidaho.edu (208) 397-7000, Ext. 109
Juliet Marshall jmarshall@uidaho.edu (208) 529-8376, Ext. 115