

Phosphorus Forum 2017

Welcome!

May 19, 2017
FHI 360 Conference Center
1825 Connecticut Ave. NW, 8th Floor
Washington, DC
phosphorusalliance.org
#PhosForum17

Made possible by the National
Science Foundation and by the
support of our current members:



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INTERNATIONAL



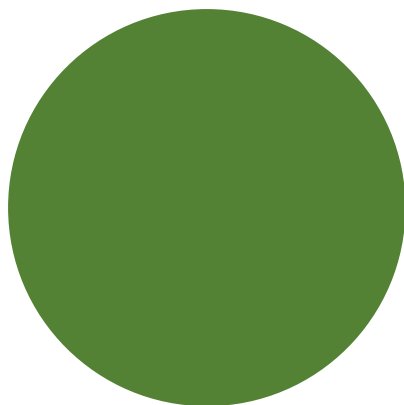
NACWA



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An interesting expression

“to square the circle”: to find a good solution to a problem when that seems impossible, especially because the people involved have very different needs or opinions about it



Headlines we've been seeing unfortunately.

Giant Sinkhole At Florida Plant Leaks Polluted Water Into State Aquifer

September 29, 2016 · 4:22 PM ET

MERRIT KENNEDY



Water continues to flow into a large sinkhole on the Mosaic Co. property shown in this aerial photo on Thursday in Mulberry, Fla.

Chris O'Meara/AP

- Giant sinkholes



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Headlines we've been seeing unfortunately.



U.S.

Reeking, Oozing Algae Closes South Florida Beaches

By LES NEUHAUS JULY 1, 2016



A green and blue algae bloom has overtaken a small neighborhood marina and other parts of the St. Lucie River in Stuart, Fla.
Greg Lovett/Palm Beach Post, via Associated Press

- Giant sinkholes
- Reeking, oozing algae



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Headlines we've been seeing unfortunately.



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FRIDAY, MAY 5, 2017

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UPDATED: Study Shows N.C. Hog Farms Spray Hog Poop on Neighbors' Homes; Cooper Vetoes HB 467

Posted by [Ken Fine](#) and [Erica Hellerstein](#) on Fri, May 5, 2017 at 10:16 AM

During a debate last month over House Bill 467—a failed proposal to shield hog farms owned by a subsidiary of Smithfield Foods from twenty-six federal nuisance lawsuits brought by their neighbors—state representative and bill sponsor Jimmy Dixon, R-Duplin and Wayne, called claims that hog waste was ending up on people's homes preposterous. What's more, he continued, the people making those claims were lying.

"These allegations are at best exaggerations and at worst outright lies," said Dixon, [a retired farmer who has received more than \\$115,000 in campaign contributions from Big Pork](#). "When you talk about spraying fluid on people's houses and peoples' cars, that does not exist."

New evidence filed in federal court today, however, suggests that's exactly what happens.

- Giant sinkholes
- Reeking, oozing algae
- Airborne hog manure



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Headlines we've been seeing.

**Bloomberg
BNA**

BLOOMBERG LAW TAX & ACCOUNTING EHS HR & PAYROLL MARKETING SERVICES

May 5, 2017

As Factory Farms Spread, So Do Toxic Tort Cases

By *Steven M. Sellers*

Large factory farms increasingly occupy rural landscapes once dotted with small family farms, and their concentrated waste has produced a wave of toxic tort litigation.

Known as Concentrated Animal Feeding Operations, the facilities confine and raise large populations of livestock. Environmentalists say these operations supply food to such industry giants as Tyson Foods Inc. and JBS USA.

Common allegations in CAFO cases—stench from waste lagoons, sinking property values, tainted groundwater and swarms of flies—have propelled citizen suits asserting nuisance and other torts in Arizona, California, Illinois, Iowa, North Carolina, Wisconsin and other farming states.



Waste lagoon for a 900-head hog farm in Georgia

Source: USDA

Bloomberg BNA

- Giant sinkholes
- Reeking, oozing algae
- Airborne hog manure
- Toxic tort cases



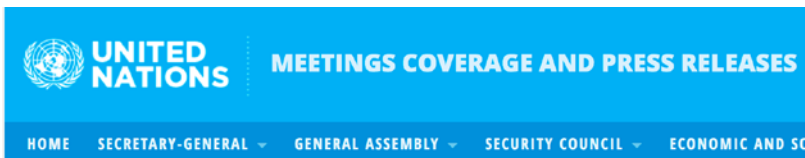
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A headline we don't usually see unfortunately.



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The circle we need to square.



MEETINGS COVERAGE

GENERAL ASSEMBLY > SECOND COMMITTEE

GA/EF/3242
9 OCTOBER 2009

Food Production Must Double by 2050 to Meet Demand from World's Growing Population, Innovative Strategies Needed to Combat Hunger, Experts Tell Second Committee

Sixty-fourth General Assembly

Second Committee

Panel Discussion (AM)

Panel Discussion Addresses 'New Cooperation for Global Food Security'

Food production must double by 2050 to meet the demand of the world's growing population and innovative strategies are needed to help combat hunger, which already affects more than 1 billion people in the world, several experts today told the Second Committee (Economic and Financial) during a panel discussion on "New cooperation for global food security".



Food and Agriculture Organization
of the United Nations

العربية 中文

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Water Scarcity – One of the greatest challenges of our time

"Water is a precious resource, crucial to realizing the Sustainable Development Goals" – Ban Ki-moon



12 Apr 2017

Water is essential for agricultural production and food security. It is the lifeblood of ecosystems, including forests, lakes and wetlands, on which the food and nutritional security of present and future generations depends on. Yet, our freshwater resources are dwindling at an alarming rate. Growing water scarcity is now one of the leading challenges for sustainable development. This challenge will become more pressing as the world's population continues to swell, their living standards increase, diets change and the effects of climate change intensify.

The 'water we eat' daily through the food we consume is much more than what we drink. Did you know depending on the diet, we need 2 000 to 5 000 litres of water to produce the food consumed daily by one person? As the global population is estimated to reach 10 billion people by 2050, demand for food is expected to surge by more than 50 percent. Evidence suggests that two-thirds of the world population could be living in water-stressed countries by 2025 if current consumption patterns continue. In order to achieve a zero hunger world by 2030 we need to take action now. Here are just four areas where we can work to save this precious resource:

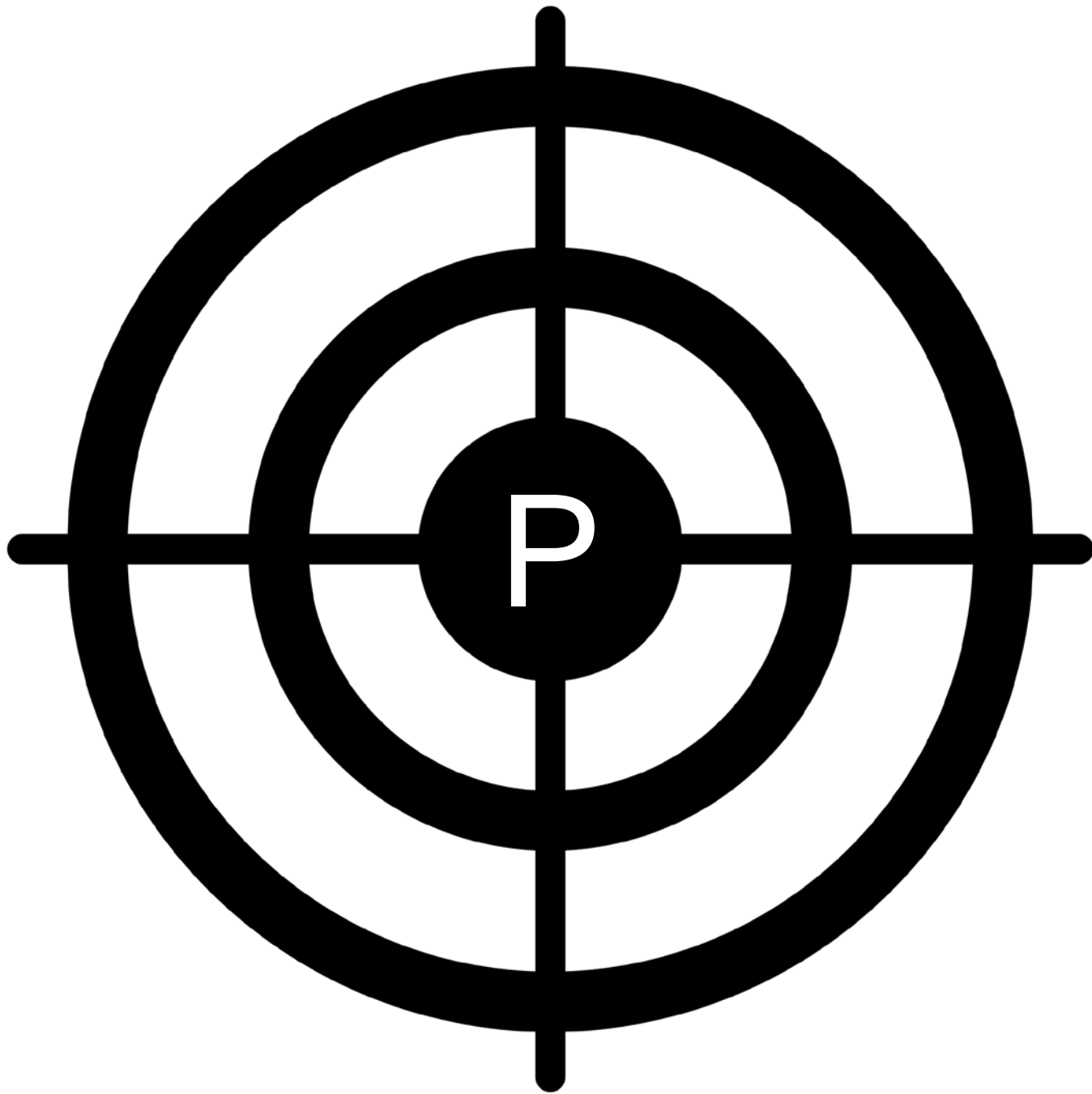
6 CLEAN WATER AND SANITATION



14 LIFE BELOW WATER



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The global phosphorus sustainability movement 2003 - now...



2003



2007



2008



2008



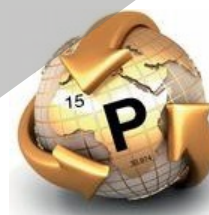
2009



2010



2010



2010



2011



2011

P-RCN 2013



2012



2012

P-REX



2012



2013



Ontario



2013



2014



2013



SPA 2015



GPNM 2015 ? UNEP GPA 2016

Phosphorus Sustainability RCN (P-RCN)



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What is the P-Research Coordination Network?

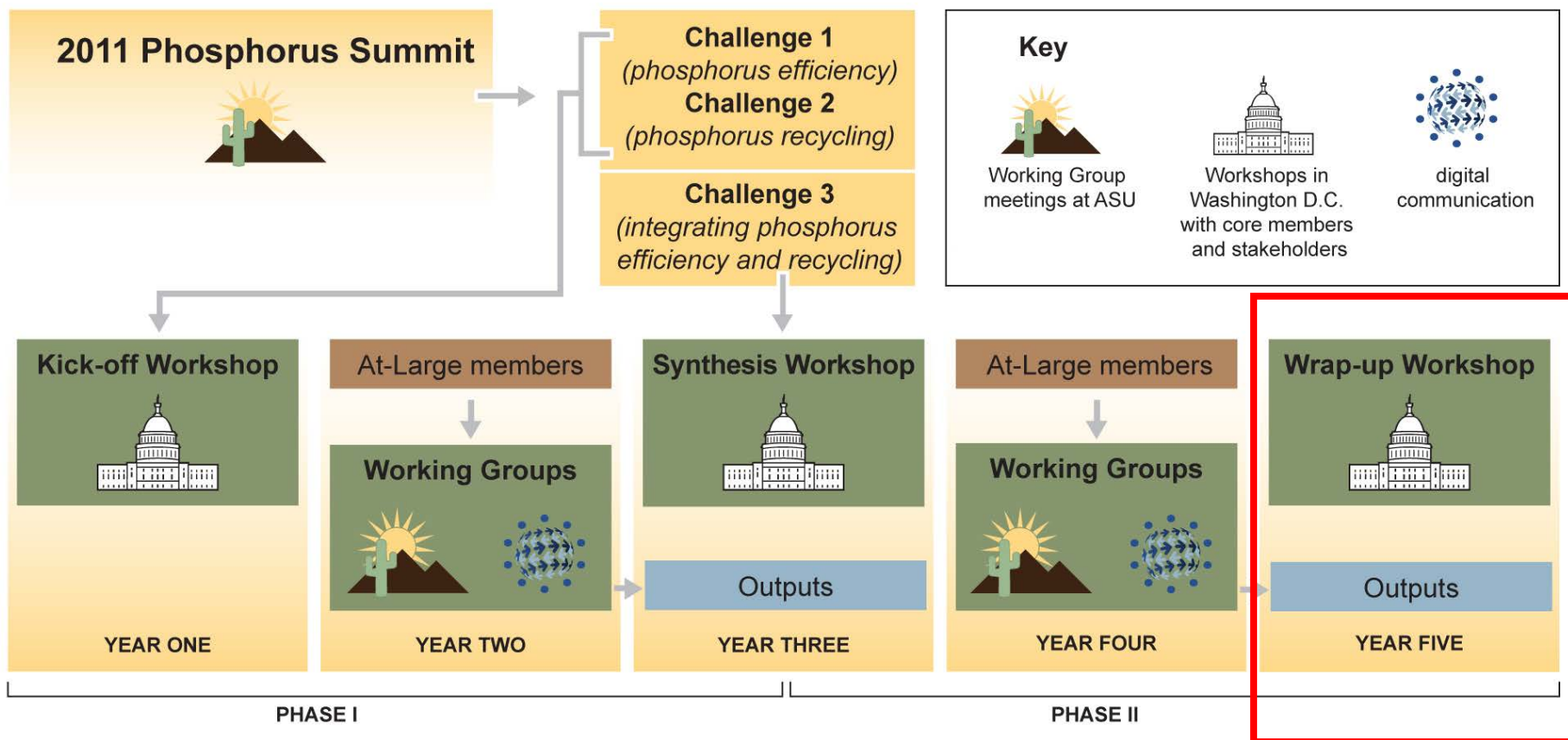


A National Science Foundation funded Research Coordination Network.

- **Goal:** Support the development of a closed human phosphorus cycle and a more sustainable food system by engaging scientists, farmers, government agencies, and policy makers to envision, assess, and communicate pathways to improve phosphorus efficiency and generate robust phosphorus recycling pathways.
- **Output:** ~ 50 academic journal articles, book chapters, and conference proceedings and similar number of public talks and workshops around the world (Asia, Australia, EU, N. America).



What has the RCN been doing?



We are here!



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RCN Highlights

Long-term accumulation and transport of anthropogenic phosphorus in three river basins.

Powers, S.M., T.W. Bruulsema, T.P. Burt, N. Chan, J.J. Elser, et al. 2016. *Nature Geoscience* 9: 353–356.

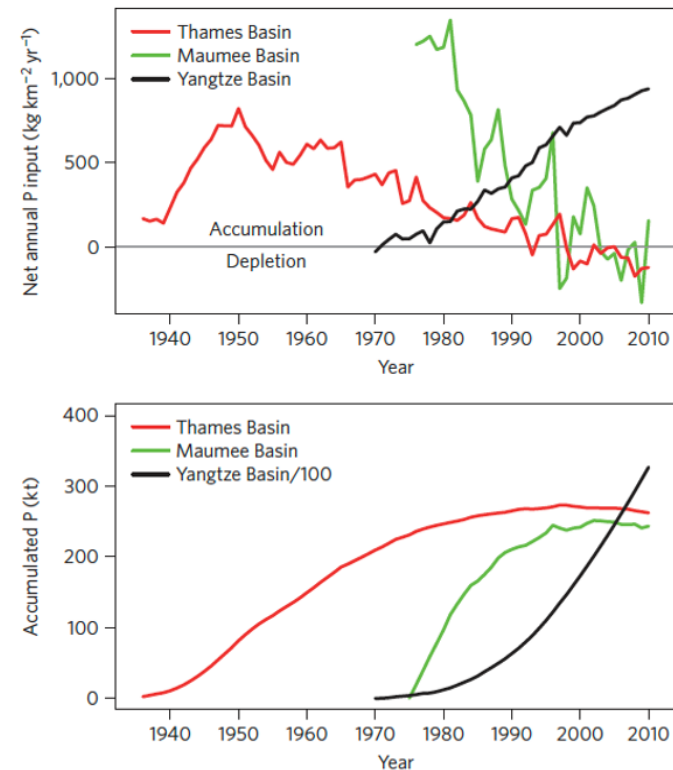


Figure 3 | Net annual P input and accumulation curves for landscape P pools (soils plus aquatic systems) of three river basins (Maumee River, USA; Thames River, UK; Yangtze River, China). Accumulated P is the cumulative sum of net annual P input over time.



RCN Highlights

Total Value of Phosphorus Recovery

Mayer, B, L.A. Baker, T.H. Boyer, P. Drechsel, M. Gifford, M.A. Hanjra, P. Parameswaran, J. Stoltzfus, P. Westerhoff, and B. E. Rittmann. 2016. *Environmental Science & Technology* 50 (13): 6606-6620.

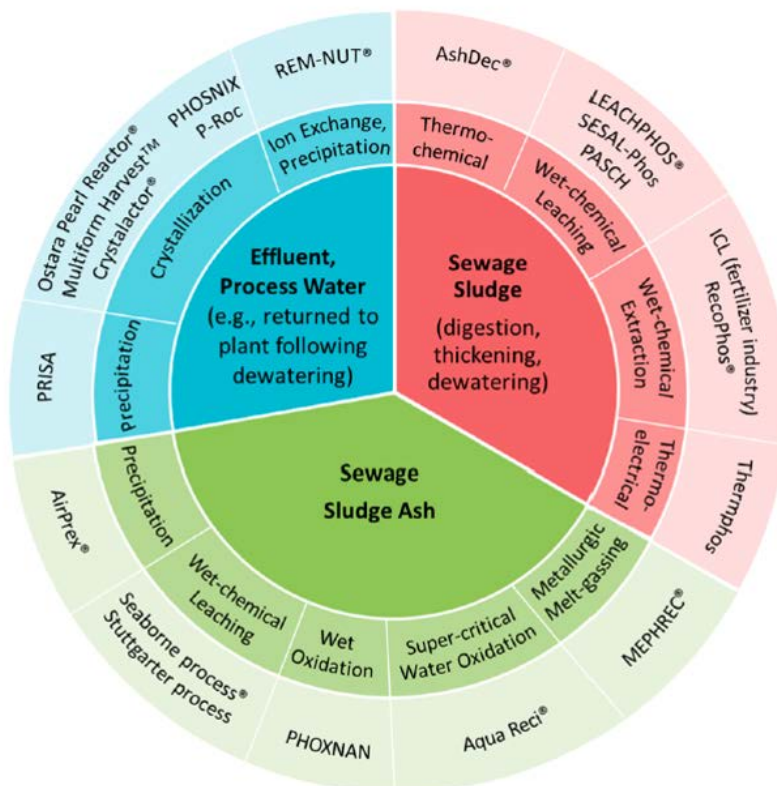


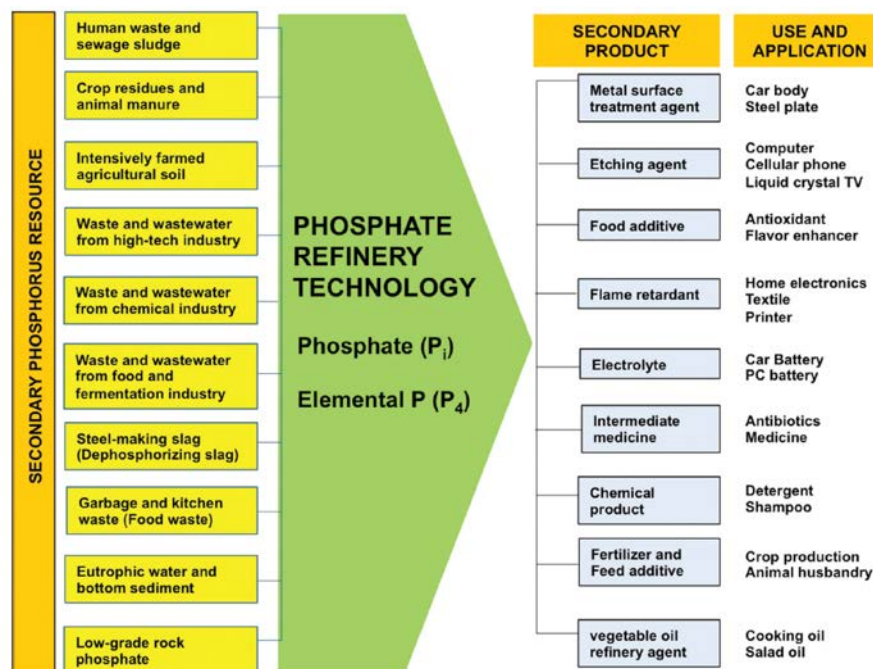
Figure 2. Examples of established wastewater P recovery technologies, identified by Egle et al. (2014).¹⁴⁰



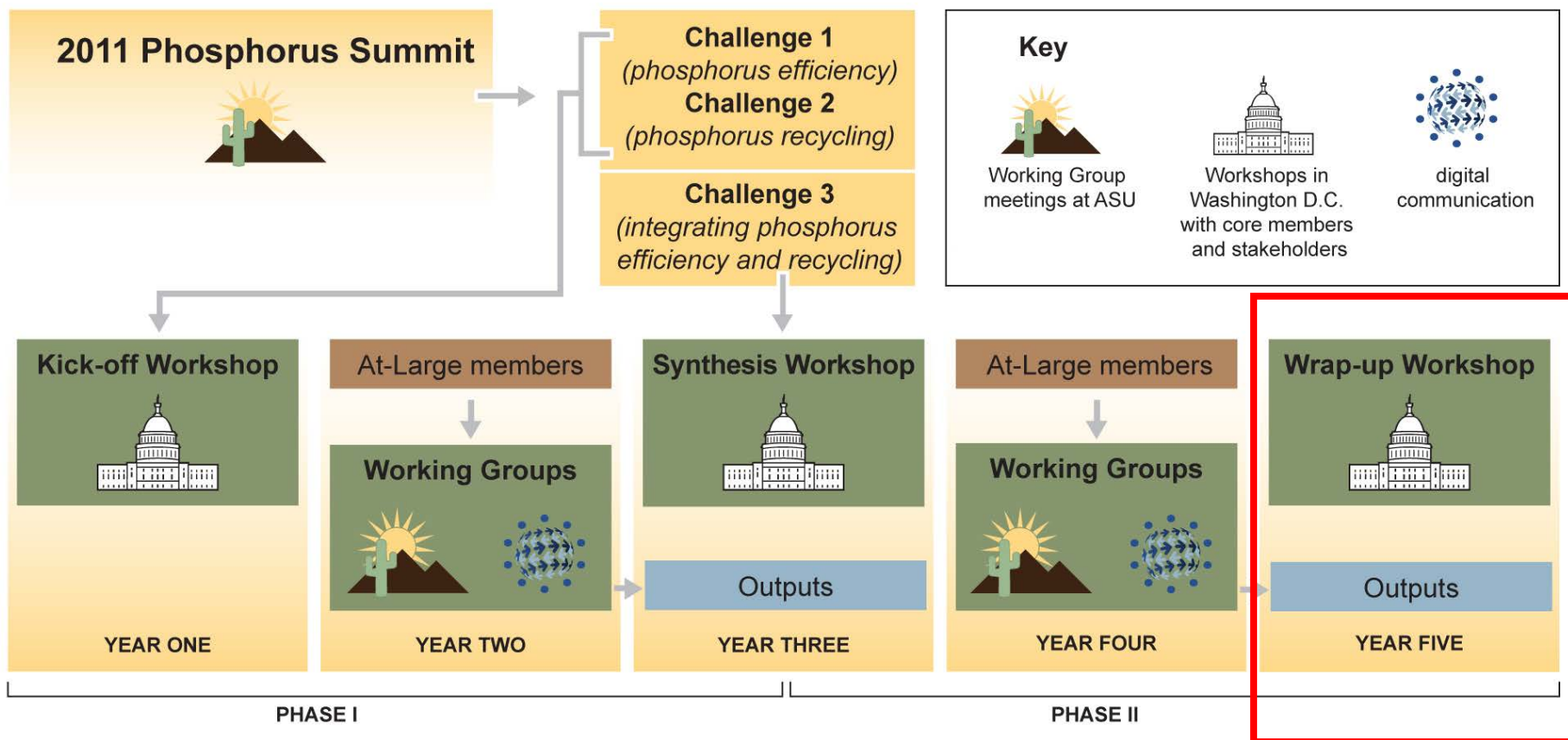
RCN Highlights

Greening the global phosphorus cycle: How green chemistry can help achieve planetary P sustainability.

Withers, P.J.A., Elser, J.J., Hilton, J., Ohtake, H., Schipper, W. and van Dijk, K.C. 2015. Green Chemistry 17: 2087-2099.



What has the RCN been doing?





**Sustainable
Phosphorus
Alliance**

**The next step for the P-RCN:
Facilitate implementation**



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Alliance**

Who We Are

Member-funded, multi-stakeholder nonprofit based at ASU whose mission is to be North America's central forum and advocate for the sustainable use, recovery, and recycling of phosphorus in the food system.

Founding Members and Partners:

NACWA

FEECO
INTERNATIONAL



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What We Do

- **Facilitate networking** among diverse players from across the phosphorus value chain via knowledge sharing events.
 - Annual conference on phosphorus sustainability (Phosphorus Forum)
 - Technical webinar series on current issues in P sustainability
 - Quarterly newsletter, blog, and social media (twitter: @SustainP)
- Orchestrate **working groups**. Project plans being discussed currently with members and advisors—stay tuned!
- Offer a **branding opportunity** to organizations working in the vanguard of phosphorus sustainability.



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Welcome!

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Washington, DC

phosphorusalliance.org
#PhosForum17

**A forum addressing critical issues in
phosphorus sustainability.**

AGENDA

- 8:30 – 8:45** Welcome and Introduction – Jim Elser
8:45 – 9:30 Keynote speaker: Steve Rowe, President
& CEO, Newtrient
9:30 – 10:15 First two P-RCN umbrella group
summaries
10:15 – 10:30 Coffee break and networking
10:30 – 11:15 Second two P-RCN umbrella group
summaries
11:15 – 11:40 A view from the EU – Chris Thornton,
Secretariat, ESPP
11:40 – 12:45 Lunch and networking
12:45 – 1:30 Panel 1: Opportunities to Convert
Waste to Phosphorus Resources
1:30 – 2:15 Panel 2: Making a Resource into the
Right Source
2:15 – 2:30 Closing comments – Jim Elser



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Keynote



Steve Rowe

President and Chief Executive Officer, Newtrient

Committee member of National Milk Producer Federation's (NMPF) Environmental Issues Task Force

Member, NMPF's Government Relations and Public Affairs Group

Past experiences include:

2005 - 2015: General Counsel and Senior Vice President, Corporate Affairs, Northwest Dairy Association (NDA)

Vice Chair of the Northwest Food Processors Association

Sustainability Council for the Innovation Center for U.S. Dairy



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