Testimony of William F. Tracy Ph.D., Madison, WI
on "Examining the Impacts of Relocating USDA Research
Agencies on Agriculture Research."
before the House Agriculture Committee Subcommittee
on Biotechnology, Horticulture, and Research.
5 June 2019
Washington, DC

Good morning Chairwoman Plaskett, Ranking Member Dunn, and Members of the subcommittee. Thank you for holding this hearing and for giving me the opportunity to provide my perspective on the impacts of relocating and reorganizing two U.S. Department of Agriculture research agencies, the Economic Research Service (ERS) and the National Institute of Food and Agriculture (NIFA). In my role here today, I am not speaking for the University of Wisconsin-Madison, but my views do reflect the thoughts of many of my colleagues around the country.

I am Bill Tracy and I have been a faculty member in the Department of Agronomy at the University of Wisconsin-Madison since 1984. I served as Chair of the Department of Agronomy for 14 years from 2004 to 2018, and as interim dean of the College of Agricultural and Life Sciences. Prior to that I worked for private sector seed companies. At Madison, I teach a course in principles of crop production and a graduate level course in agroecology. My research area is plant breeding, genetics, and genomics of sweet corn, and I have developed varieties grown commercially on every continent. Over my career, I have frequently referred to publications and information distributed by ERS and have used their work in publications and classrooms. As an active agricultural researcher, I have also had numerous interactions with NIFA over the years and have received multiple NIFA grants.

We all recognize that US agriculture and farmers are under severe stress right now. In Wisconsin, we stand in disbelief as our friends and neighbors, good farmers, are losing their dairy farms - 25% in the last five years, 638 farms in 2018, and already 302 this year. The extreme weather events this year have been particularly devastating, as have commodity prices. But these problems are not due simply to extreme weather or trade policies. The world of agriculture and America's place in it are changing rapidly.

When I started teaching my course in 1985, I would say with pride that the US produced more than 50% of the world's corn and soybeans. Today we produce about 34%. This reduction is not because we are producing less, in fact, we are producing more than ever. The reduction is because our competitors are producing much, much more. We can't

produce our way out of this dilemma, and so in order to save our family farms and improve our environment we need more publicly-funded agricultural research. Not just production research, but economic research, utilization research, agroecological research, and more. I believe that the proposed relocation of the National Institute of Food and Agriculture and the relocation and reorganization of the Economic Research Service will diminish our agricultural research capacity at one of the most critical times in US agriculture in recent history.

Specific areas of concern.

1. **The continued reduction in American food and agriculture public research capacity.** As reported in 2017, China has overtaken the United States as the top government funder of agriculture research. I have visited China a number of times over the last 15 years. The investments in agricultural research infrastructure and people is astonishing. They have created an agricultural research juggernaut. Simultaneously, the two USDA Budget proposals released during Secretary Perdue's tenure (FY2019 Budget and FY2020 Budget) proposed significant reductions to the USDA Research, Education, and Extension budget. ERS was hit particularly hard in the Administrations FY2020 Budget, with a proposed 30% cut to the overall ERS budget and a 52% cut to ERS staff years. Further, the USDA's science agencies have been chronically underfunded for many years. For example, in 2016 the Agriculture and Food Research Initiative (AFRI) only awarded 24% of the grant applications it received. A 2013 grant panel on which I served as panel manager could fund only 7 out more than 90 submitted proposals. Despite this, the scientists and staff continue to provide great service to the American people. It is entirely unclear how a relocation that will cost both time and money will improve the ERS or NIFA, particularly when resources for both are already stretched so thin. Indeed, the reason I agreed to come here is that I believe, as do many of my colleagues, that moving NIFA and ERS would harm US agricultural research and reduce the vital services that they provide to US farmers and eaters.

2. **The reduction in service and information exchange with other agencies, constituents, and farmers.**

   Communication with other agencies: As mentioned above, in my role as a public plant breeder and agricultural researcher, I have interacted frequently with NIFA staff. I have received funding through various programs, including the Agriculture and Food Research Initiative (AFRI), the Specialty Crops Research

Initiative (SCRI), and the Organic Research and Extension Initiative (OREI). I have also received grants from the National Science Foundation (NSF) and many of my agricultural colleagues receive grants from the National Institute of Health (NIH), the Environmental Protection Agency (EPA), and the Department of Energy (DOE). All of these agencies and departments have specific mandates and responsibilities, but they often work on overlapping issues, in a synergistic way, producing novel solutions to challenges that farmers face on a daily basis. All of this collaboration contributes to publicly-funded agriculture research being at the forefront of solutions to modern challenges. Yet it is easy to see that if NIFA was moved out of the National Capital Region this collaboration could be severely limited. For example, NIFA could not as easily participate in White House or interagency meetings related to science and agriculture. This would result in NIFA – and consequently millions of farmers, research, and eaters - losing their place at the table.

Furthermore, the data generated by NIFA and ERS, especially ERS, is critical to the work of other government agencies, to Congress, researchers, industry, and to farming organizations. Scientists rely on this data for understanding problems, and predicting needs and trends that inform our priorities. There is substantial concern that this relocation will dramatically decrease staff capacity to carry out this important work.

In summary, coordination and collaboration with other agencies and departments, including statistical agencies, is essential to NIFA and ERS's work. These collaborations will be difficult and expensive to accomplish if these agencies are relocated outside the National Capital Region.

Communication with constituents and farmers: NIFA and ERS work with other agencies as mentioned above, but also with non-federal researchers, NGOs, advocacy groups, farm groups, and basically anyone who wants to contact them.

Over the years I have been involved in the NIFA granting process, as have many colleagues. Often, to inform USDA agencies or groups of key agricultural priorities, groups will organize conferences in Washington, DC to discuss critical research needs. When I have been involved in such conferences, we have invited farmers and other non-researchers from throughout the country, so that their voices could be heard. We also invite researchers and managers from relevant federal agencies as well as Members of Congress so that everyone who wishes to participate can be at the table.

These meetings are very valuable in that diverse perspectives are shared and important contacts are made. Most organizations, businesses, and universities don't have the resources to fly to various parts of the country to meet with different federal governmental staff, especially if they wish to fund farmer trips. Relocation would make it difficult for agricultural organizations and businesses to efficiently meet with multiple agency staff and decision makers in the National Capital Region, thus limiting communications and in many cases cutting off a critical feedback loop.

3. **Perceived Regional Biases and Politicization of ERS:** Having had the honor of serving as an AFRI grant panel manager (the person who choses other panelists and assigns proposals for review), I know first hand how hard the national program leaders work to make sure that is no hint of bias or favoritism. This is not just toward research proposals from colleagues of panelists, but making sure there is no hint of bias regarding national regions, states, ethnic diversity, and other factors. This is very important and I admire the effort to keep things as fair as possible.

   There are marked differences in agricultural production across the U.S. By moving the agencies outside Washington some types of agriculture may be favored over others when it comes to research and funding. Even favoritism is untrue it is likely that some will see bias. Keeping the agencies in Washington helps ensure prioritization of all types of agricultural research and maintains trust in the fairness of the granting process.

   Furthermore, while this hearing is primarily focused on the physical relocation of ERS and NIFA – it is important to note the politicization of agriculture research that could result from moving ERS to the Office of the Chief Economist (OCE). Moving ERS into the OCE within the Office of the Secretary would have lasting and negative impacts on scientific and statistical integrity and runs contrary to the 1994 USDA Reorganization Act.

4. **The loss of institutional knowledge and highly qualified staff at NIFA and ERS**. The scientists and staff I know are professional, hard-working, and committed to the missions of ERS and NIFA. They have tremendous institutional knowledge and an understanding of how to provide the best service they can to

the farmers, citizens, and constituents. It is my understanding that the reorganization proposal has already caused staff to leave USDA in significant numbers. While I don't know any one personally who has left, I do know many people are under a great deal of stress due to the unknown and due to the fact that they are working in low-staffing conditions and with low staff morale. I think it is very unfortunate that dedicated public servants have to undergo these conditions when, to my knowledge no one has provided data on how these agencies and their farmers would benefit from this move.

To summarize: I see serious downsides of the proposal to move NIFA and ERS out of the National Capital Region. I am very concerned about the diminishment of the voice of the agricultural research community in the National agenda, and I am very concerned about the potential for regional biases hurting the NIFA's standing in the community. At that same time, I have heard no compelling justification or benefit by following through on this plan. Thank you for your attention, and I look forward to answering your questions.

CURRICULUM VITAE

WILLIAM F. TRACY

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Education:

Ph.D.	Cornell University, Major: Plant Breeding. Minors: Genetics, Agronomy.	May 1982.
M.S.	University of Massachusetts, Amherst, Major: Plant and Soil Sciences. Minor: Botany.	May 1979.
B.S.	University of Massachusetts, Amherst, Major: Plant and Soil Sciences, Magna Cum Laude.	May 1976.
	Boston College, 1972-1974. Major: Biology.	

Professional Experience

Rank	Place	Date
Professor	Department of Agronomy--UW-Madison	7/1996 – Present
Department Chair	Department of Agronomy--UW-Madison	6/2004 – 2018
Lignan Chair	Foshan University	7/2018 – present
Clif Bar and Organic Valley Endowed Chair		7/2016 – present
Interim Dean	College of Agricultural and Life Sciences	1/2011 – 3/2012
Friday Endowed Chair		7/2009 – 6/2016
Associate Professor	Department of Agronomy--UW-Madison	7/1990 – 6/1996
Assistant Professor	Department of Agronomy--UW-Madison	9/1984 – 6/1990
Senior Corn Breeder	Cargill Incorporated	7/1983 – 8/1984
Research Scientist	International Plant Research Institute	1/1982 – 6/1983

Awards

- Fellow, Crop Science Society of America, 2018
- Clif Bar and Organic Valley Chair 7/2016 – present
- 2014 National Public Plant Breeding Award. National Council of Commercial Plant Breeders.
- WALSAA 40 in 40 Award. 2012. Wisconsin Agricultural and Life Sciences Alumni Association.
- Friday Chair of vegetable research 6/2009 – 6/2016
- Honored Instructor 2012, 2014, 2015 University Housing
- Jung Outstanding Teaching Award 2004, College of Agricultural and Life Sciences University of Wisconsin-Madison
- Outstanding Teaching Award, 1997, Wisconsin Teacher Enhancement in Biology Program, University of Wisconsin-Madison

Research Interests: Sweet corn breeding for quality, productivity, and pest resistance. Genetics, biochemistry, and modification of endosperm starch biosynthesis, and the genetics of pest resistance. Research on breeding under conventional and organic systems. Bill's group has developed sweet corn varieties that are grown commercially on every arable continent.

Teaching Interests: Undergraduate instruction and advising in agronomy; Agronomy 100-"Principles and Practices of Crop Production; Agron 701 Introductory Agroecology. Undergraduate advising in Biology. Graduate instruction and advising in plant breeding and plant genetics.

Students advised	Graduated			Current		
	Ph.D.	M.S.	B.S.	Ph.D.	M.S.	B.S.
	24	23	~400	5	1	~20

Professional Societies

American Association for the Advancement of Science
American Society for Horticultural Science
Crop Science Society of America
International Sweet Corn Development Association

Germplasm Releases

- **Hybrids** 'Sweet Success', 'Natural Sweet 9000', 'Radiance'.
- **Cultivars developed under certified organic conditions:** 'Who Gets Kissed?', 'Bling', 'My Fair Lady', 'Sweet Magnolia', Honey Crunch'.
- **Inbreds** (over 100)
- **Populations** 'New Spanish Gold', 'Country Gentleman *sh2*' 'Golden Early Market *sh2*'
- 'Wisconsin Early Sugary Enhancer Synthetic', 'sh2Lancaster', 'sh2SSS', Mexican Dent sh2 (rust), Caribbean Flint sh2 (NCLB), Hawaiian temperate bt2 (rust), Red su1 (rust),
- **Genetic Stocks** Wvg1 Wvg2, Wvg3, Wvg4, Wvg5, WVg7; W822GSe and W822Gse

Publications (2015-2019)

Refereed Journals

Gage, J.L., B. Vaillancourt, J.P. Hamilton, N. C. Manrique-Carpintero, T.J. Gustafson, K. Barry, A. Lipzen, W.F. Tracy, M.A. Mikel, S.M. Kaeppler*, C. R. Buell, and N. de Leon. (2019) Multiple maize reference genomes impact the identification of variants by GWAS in a diverse inbred panel. The Plant Genome (accepted).

Allam, M., B. Ordás, A. Djemel, W.F. Tracy, P. Revilla. 2019. Linkage disequilibrium between fitness QTLs and the *sugary1* allele of maize. Mole. Breeding 39:3 https://doi.org/10.1007/s11032-018-0911-1

Lyon, A., E.M. Silva, W.F. Tracy, J. Zystro, M. Colley, M. Mazourek, J. Myers, and P. Culbert. 2019. Adaptability Analysis in a Participatory Variety Trial of Organic Vegetable Crops. Renewable Ag and Food Systems https://doi.org/10.1017/S1742170518000583

Gustin, J. S. Boehlein, J. Shaw, W. Junior, A.M. Settles, A. Webster, W.F. Tracy, and L.C. Hannah. 2018. Ovary abortion is prevalent in diverse maize inbred lines and is under genetic control. Scientific Reports https://doi.org/10.1038/s41598-018-31216-9

Moore V.M. and W.F. Tracy 2018. "Recurrent Full-Sib Family Selection for Husk Extension in Sweet Corn" Journal of American Society of Horticultural Science. (accepted)

Baseggio, M., Murray, M., Magallanes-Lundback, M., Kaczmar, N., Chamness, J., Buckler, E., Smith, M., DellaPenna, D., Tracy, W., and Gore, M. (2018). Genome-wide association and genomic prediction models of tocochromanols in fresh sweet corn kernels. *The Plant Genome.*

Gustafson, T.J, N. de Leon, S.M. Kaeppler, and W. F. Tracy 2018 Genetic Analysis of *Sugarcane mosaic virus* Resistance in the Wisconsin Diversity Panel of Maize Crop Science 58:1853-1865

Dawson, J., V. Moore, and W.F. Tracy 2018. Establishing best practices for germplasm exchange, intellectual property rights, and revenue return to sustain public cultivar development doi: 10.2135/cropsci2017.05.0320; Date posted: December 20, 2017

Shuler, SL., S.K. Boehlien, L.C. Hannah, and W.F. Tracy. 2017. Endosperm Carbohydrates and Debranching Enzyme Activity in Five Native *sugary1* Alleles in Maize. Crop Science 57:3068-3074.

Shelton, A.C. and W.F. Tracy. 2017. Cultivar development in the US public sector. Crop Science. Crop Science 57:1823-1835

Shelton, A.C. and W.F. Tracy. 2016. Participatory plant breeding and organic agriculture: A synergistic model for organic variety development in the United States. Elem Sci Anth. 2016;4:143. DOI:http://doi.org/10.12952/journal.elementa.000143

Bode, A.O., Y. Bian, B. De Vries, W.F. Tracy, R. Wisser, J.B. Holland, and P.J. Balint-Kurti. 2016. The genetics of leaf flecking in maize and its relationship to the defense response and broad-spectrum disease resistance. Plant Physiology 172(3): 1787–1803

Olukolu, B.A., Tracy, W.F., Wisser, R., De Vries, B., and Balint-Kurti, P.J. 2016. A Genome-Wide Association Study for Partial Resistance to Maize Common Rust. Phytopathology 106, 745-751.

Allam, M., Revilla, P., Djemel, A., Tracy, W.F., and Ordas, B. 2016. Identification of QTLs involved in cold tolerance in sweet x field corn. Euphytica 208, 353-365.

De Vries, B.D., S. Shuler and W.F. Tracy. 2016. Endosperm Carbohydrates in Pseudostarchy and Extreme-sugary Maize Inbreds During Kernel Development
Crop Science 56:2448-2456.

Trimble, L., S. Shuler and W.F. Tracy. 2016. Characterization of five naturally occurring alleles at the *sugary1* locus for seed composition, seedling emergence, and isoamylase1 activity. Crop Sci. 56:1927-1939.

De Vries, B.D., T.E. Peters, B.J. Glaza, L.M. Viesselmann, and W.F. Tracy. 2015. Estimating the genetic effects modifying endosperm composition in *sugary1* maize. Crop Science 55: 578-588.

De Vries, B.D. and W.F. Tracy. 2015. Characterization of endosperm carbohydrates in *isa2-339* maize and interactions with *su1-ref.* Crop Science 55:2277-2286.

Dodson, H.G. and W.F. Tracy. 2015. Endosperm carbohydrate composition and kernel characteristics of *shrunken2-intermediate* (*sh2-i/sh2-i Su1/Su1*), and *shrunken2-intermediate, sugary1* (*sh2-i/sh2-i su1/su1*) in sweet corn (*Zea mays*) Crop Sci. 55:2647-2656

Revilla, P., A. Mohamed, D. Abderrahmane, W.F. Tracy, B. Ordás. 2015. Identification of QTLs involved in the viability of the sugary1 mutant in maize (Zea mays L.). Euphytica DOI 10.1007/s10681-015-1609-7

Shelton, A.C. and W.F. Tracy. 2015. Recurrent selection and participatory plant breeding for improvement of two organic open-pollinated sweet corn (*Zea mays* L.) populations. Sustainability 2015, 7, 5139-5152; doi:10.3390/su7055139

Zhengbin, L, J. Cook, S. Melia-Hancock, K. Guill, C. Bottoms, A. Garcia, O. Oliver, R. Nelson, J. Recker, P. Balint-Kurti, S. Larsson, N. Lepak, E. Buckler, L. Trimble, W. Tracy, M.D. McMullen, S.A. Flint-Garcia. 2015. Expanding maize genetic resources with pre-domestication alleles: maize-teosinte introgression populations. The Plant Genome doi: 10.3835/plantgenome2015.07.0053

Truth in Testimony Disclosure Form

In accordance with Rule XI, clause 2(g)(5)*, of the *Rules of the House of Representatives*, witnesses are asked to disclose the following information. Please complete this form electronically by filling in the provided blanks.

Committee: Agriculture

Subcommittee: Biotechnology, Horticulture, and Research

Hearing Date: June 5, 2019

Hearing Title :

"Examining the Impacts of Relocating USDA Research Agencies on Agriculture Research"

Witness Name: William F. Tracy

Position/Title: Professor of Agronomy

Witness Type: © Governmental © Non-governmental

Are you representing yourself or an organization? ◉ Self © Organization

If you are representing an organization, please list what entity or entities you are representing:

If you are a non-governmental witness, please list any federal grants or contracts (including subgrants or subcontracts) related to the hearing's subject matter that you or the organization(s) you represent at this hearing received in the current calendar year and previous two calendar years. Include the source and amount of each grant or contract. *If necessary, attach additional sheet(s) to provide more information.* **House Rules do NOT require disclosure of federal payments to individuals, such as farm program payments or assistance to agricultural producers.**

see attached

If you are a non-governmental witness, please list any contracts or payments originating with a foreign government and related to the hearing's subject matter that you or the organization(s) you represent at this hearing received in the current year and previous two calendar years. Include the amount and country of origin of each contract or payment. *If necessary, attach additional sheet(s) to provide more information.*

Since 2018 I have had the honorary title of Lignan Professor at Foshun University Foshun China. In this role I offer them advice on sweet corn breeding. I received travel expenses to visit them in 2018.

William F. Tracy

If you are a non-governmental witness, please list any federal grants or contracts (including subgrants or subcontracts) related to the hearing's subject matter that you or the organization(s) you represent at this hearing received in the current calendar year and previous two calendar years. Include the source and amount of each grant or contract. If necessary, attach additional sheet(s) to provide more information. House Rules do NOT require disclosure offederal payments to individuals, such as farm program payments or assistance to agricultural producers.

NAME (List/PD #1 first)	SUPPORTING AGENCY AND AGENCY ACTIVE AWARD/PENDING PROPOSAL NUMBER	TOTAL $ AMOUNT	EFFECTIVE AND EXPIRATION DATES	TITLE OF PROJECT
Tracy W.F.	UW College of Ag and Life Sciences - USDA-Hatch (NIFA)	$142,000	11/17 to 10/21	Genetics and Physiology of Sweet Corn Quality
Myers, J (PD). Dawson, J. Mazourek, M. Colley, M. Tracy W.F.	USDA-NIFA Organic Agriculture Research and Extension Initiative	2,335,725.00 ($153,350 Tracy share)	11/18 to 10/22 third renewal	Northern Organic Vegetable Improvement Cooperative
Myers, A. (PD) Tracy, W.F.	Iowa State University Prime: USDA-NIFA-AFRI	$175,400 (UW's portion)	1/1/17-12/31/19	Plant breeding for sweetcorn improvement by rational design
Lubberstadt T. (PD) Tracy, W.F.	Iowa State University Prime: USDA-Organic Agriculture Research and Extension Initiative	$125,000 (UW's portion)	1/1/17-8/31/19	Organic compliant breeding technologies for field and sweet corn.
Settles, M (PD) Tracy, W Resende, M Mitchell, P Du Toit L.	Univ of Florida USDA-Specialty Crops Research Initiative	$7.2million ($346,366 Tracy share)	1/1/2019-12/31/2023	Sweet corn coordinated agricultural project.