SOPHIE WESTBROOK

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1107 Throckmorton Plant Sciences Center
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EXPERIENCE

Research Assistant Professor, Kansas State University 2024–present
50% research and 50% teaching
Instructor: Agron 251 (A, ZA), 260, 400, 462, 490/790, 640, 670, 810
Interim Associate Director, Rannells Flint Hills Prairie Preserve (2024–2025)

Graduate Student, Cornell University 2020–2024
Ecology of weeds and agricultural ecosystems

Research Technician, Purdue University 2019–2020
Stomatal mechanics and drought resistance

EDUCATION

PhD Cornell University, Soil and Crop Sciences May 2024
GPA: 4.3/4.3

AB Harvard University, Integrative Biology May 2019
Graduated *summa cum laude*, GPA: 4.0/4.0

TEACHING

Agronomy Seminar (1 credit; co-coordinator) S 2025, F 2025

Cropping Systems (3 credits) F 2025

Field Identification of Range and Pasture Plants (1 credit) F 2025

Range Management Problems (1–3 credits) F 2024, S 2025, F 2025

Range Management (3 credits in-person + online) F 2024, F 2025

Agricultural Biodiversity (3 credits) S 2025

Range Management Planning (3 credits) S 2025

Range Grasses (2 credits) F 2024

Principles and Practices in Certified Organic Agriculture (TA) S 2024

Weed Biology & Management (Co-instructor) F 2023

ADVISING

Undergraduate Advisor (1 student)

Undergraduate Faculty Mentor (4 students)

Graduate Advisor (1 student)

Graduate Committee Member (2 current and 2 former students)

SERVICE

Undergraduate Scholarship Committee 2025–present

Course and Curriculum Committee 2025–present

Kling Anderson Lecture Committee 2024–present

Range Management Faculty Search Committee 2024–2025

Geospatial Science Faculty Search Committee 2023–2024

Agroecology Group (Organizer) 2022–2024

Atkinson Center Sustainable Solar Group (Student Representative) 2022–2024

Graduate Student Association (Treasurer) 2020–2024

Harvard Science Review (President) 2015–2019

HONORS

Outstanding Reviewer Award 2025
Invasive Plant Science and Management journal

Outstanding Teaching Assistant Award 2024
Awarded to one or two students per department at Cornell University

Barbara McClintock Award 2024
Awarded to four students in the School of Integrative Plant Science

Gerald O. Mott Award 2024
Awarded to one student per department by Crop Science Society of America

MacDonald-Musgrave Outstanding Graduate Student Award 2023
Awarded to one student in Soil and Crop Sciences at Cornell University

Robert D. Sweet Outstanding MS Student 2023
Awarded to one student in Northeastern Weed Science Society

Sophia Freund Prize 2019
Awarded to the highest-ranking graduating senior(s) at Harvard University

Phi Beta Kappa Senior 48 2019

EXTRAMURAL FUNDING

Competitive Grants, Current ($255,620)

USDA NRCS Kansas Conservation Innovation Grants ($123,545) 2025–2028
- This grant has been neither executed nor officially cancelled
- **Lead PI**, *"Remote-operated Robotic Mowers (RRMs) for Invasive Weed Control: Novel Application of an Emerging Technology to Promote Sustainable Rangeland Management"*

USDA NRCS Kansas Conservation Innovation Grants ($83,261) 2025–2027
- This grant has been neither executed nor officially cancelled
- Co-PI, *"Evaluating the Effectiveness of Drones for Seeding Cover Crops"*

Weed Science Society of America Innovative Grants Program ($23,814) 2025–2026
- **Lead PI**, *"Integrating Research and Education to Understand Adaptation at Multiple Spatiotemporal Scales in Water-Limited Rangeland Weeds"*

Carbon A List ($25,000) 2025–2025
- Co-PI, "*Developing a Land Use Change Database for Kansas State Using High-Resolution Imagery and Open Data Sources*"

Competitive Grants, Pending ($1,269,579)

USDA NIFA AFRI Foundational & Applied Science ($749,988) 2026–2031
- **Lead PI**, *"Harnessing Agronomy, Ecology, and Technology to Increase Manageability and Efficacy of Pollinator Plantings in Grain Cropping Systems"*

USDA NIFA AFRI Foundational & Applied Science ($299,749) 2026–2028
- **Lead PI**, *"Harnessing Living Mulches to Maximize Profitability, Soil Health, and Weed Suppression in Grain Cropping Systems"*

Kansas Soybean Commission ($110,001) 2026–2028

- **Lead PI**, *"Optimizing cover crop species and management to minimize pests, disease, weeds, and drought in soybean"*

Corteva via HALO ($99,873) 2026–2028

- **Lead PI**, *"Optimizing Cropping Systems Management to Maximize Fallow Efficiency"*

EPSCoR Track 2 MICRA ($9,968) 2026–2027

- **Lead PI**

Competitive Grants, Completed ($16,851)

Schmittau-Novak Integrative Plant Science Small Grants ($9,621) 2023–2024

- Co-PI, *"Bridging molecular, physiological, ecological, and biogeographical scales to understand how elevated temperature affects Palmer amaranth performance and control"*

Atkinson Center Sustainable Biodiversity Fund ($7,230) 2023

- **Lead PI**, *"Restoring biodiversity and ecosystem services to agricultural landscapes: Are annual flower strips the answer?"*

Competitive Grants, Not Funded ($1,700,083)

[Preproposal] Foundational for Food and Agricultural Research (Est. $450,000) 2026–2030

- **Lead PI**, "*Integrating Livestock, Annual Forages, and Cover Crops into Kansas Grain-Based Cropping Systems*"

USDA NIFA AFRI Foundational & Applied Science ($747,075) 2025–2029

- **Lead PI**, *"Integrating Ecological and Management Perspectives to Assess Indirect Effects of Climate Change on Invasive Rangeland Weeds"*

[Preproposal] NCR Sustainable Agriculture Research and Education (Est. $199,000) 2025–2028

- **Lead PI**, *"Harnessing Multi-Seed Pellet (MSP) Technology for Restoration and Biodiversity Enhancement on Marginal Lands in Kansas"*

USDA NIFA AFRI Foundational & Applied Science ($299,185) 2025–2027

- **Lead PI**, *"Monitoring and Minimizing Water Use by Rangeland Weeds in a Changing Climate"*

EPSCoR Track 2 MICRA ($4,823) 2024–2025

- **Lead PI**

Federal Capacity Funds

Capacity Grant: Hatch 2024–2029

- Co-PI, *"Developing Integrated Weed Management (IWM) strategies for Kansas cropping systems"*

Capacity Grant: Hatch Multistate 2024–2029

- Co-PI, *"Optimizing forage and grazing cattle management"*

PUBLICATIONS

Book Chapters (3)

Westbrook, A. S., Nepal, J., & Ryan, M. R. (accepted). Warm season grass cover crops. In Duiker S. W. & Clark A. (Eds.), *Cover Crops for Sustainable Soil Management*. Burleigh Dodds.

Westbrook, A. S., DiTommaso, A., & Menalled, F. D. (2025). Ecological principles in the study of edible weeds. In F. D. Menalled & R. Ebel (Eds.), *Agroecology of edible weeds and non-crops. Ecological and socio-economic potential of the associated plant biodiversity* (pp. 1–24). Elsevier.

Westbrook, A. S., Nikkel, E., Clements, D. R., & DiTommaso, A. (2022). Modeling and managing invasive weeds in a changing climate. In L. H. Ziska (Ed.), *Invasive species and global climate change* (2nd ed., pp. 281–305). CABI.

Peer-Reviewed Journal Publications (35)

Milbrath, L. R., Morris, S. H., Biazzo, J., **Westbrook, A. S.**, & DiTommaso, A. (accepted). Seedling emergence of two knapweed (*Centaurea*) species from different soil depths. *Invasive Plant Science and Management*.

Xu, S., Özaslan, C., **Westbrook, A. S.**, Kezar, S., & DiTommaso, A. (2025). Effects of soil moisture on competition between a central New York State Johnsongrass (*Sorghum halepense*) biotype and corn. *Weed Science*, 10.1017/wsc.2025.10055.

Stup, R. S., **Westbrook, A. S.**, & DiTommaso, A. (2025). Friend or foe? Conservation and management of common milkweed (*Asclepias syriaca*). *Weed Technology*, 10.1017/wet.2025.10037.

Kochendoerfer, N., **Westbrook, A. S.,** McMillan, C. E., Lapierre, P. A., Zaman, M. A., Morris, S. H., DiTommaso, A., & Grodsky, S. M. (2024). Co-location of

sheep grazing and solar energy production yields agrotechnological synergies. *Agricultural Systems*, 229, 104403.

Yang, S., Chen, C., Yang, Y., Teng, L., Liu, J., Gui, W., Zhu, J., Zhou, W., **Westbrook, A. S.,** & DiTommaso, A. (2024). Differential responses of weeds and rice to shading stress from oilseed rape straw mulch. *Crop Protection*, 189, 107038.

Westbrook, A. S., Wilcox, N.-R., Stup, R., Djuric, N., Xu, S., Coffey, R., Özaslan, C., Xia, R., Urmaza, S., Sher, M., & DiTommaso, A. (2024). What we still don't know about weed diversity: a scoping review. *Weed Research*, 64, 418-433.

Pratt, M. K., **Westbrook, A. S.,** & DiTommaso, A. (2024). Reproductive strategy, management, and medicinal uses of field horsetail (*Equisetum arvense*). *Weed Technology*, 38, e47.

Hameed, O., Ugine, T., **Westbrook, A. S.**, & Losey, J. (2024). Consumption of nectar-like sugar solutions promotes longevity and fecundity in coccinellids *Harmonia axyridis* and *Hippodamia convergens*. *Arthropod-Plant Interactions*, 18, 763–770.

Westbrook, A. S., Stup, R., Morris, S., Ugine, T., & DiTommaso, A. (2024). Establishing flower strips near agricultural fields with minimal weed management. *Agriculture, Ecosystems & Environment*, 374, 109157.

Stup, R., **Westbrook, A. S.**, & DiTommaso, A. (2024). Impact of burial depth and root segment length on vegetative propagation of common milkweed (*Asclepias syriaca*). *Weed Science*, 72, 562–566.

Marschner, C. A., Colucci, I., Stup, R. S., **Westbrook, A. S.**, Brunharo, C. A., DiTommaso, A., & Mesgaran, M. B. (2024) Modeling weed seedling emergence for time-specific weed management: a systematic review. *Weed Science*, 72, 313-329.

Westbrook, A. S., Morris, S., Stup, R., Xia, R., Coffey, R., & DiTommaso, A. (2024). Annual flower strips increase biodiversity even if planting is delayed. *Annals of Applied Biology*, 185, 81-90.

Shen, H., Dong, S., DiTommaso, A., **Westbrook, A. S.**, Li, S., Zheng, H., Zhi, Y., Zuo, H., Wang, Q., Liu, J. (2024). Physiological factors contribute to increased competitiveness of grass relative to sedge, forb and legume species under different N application levels. *Science of the Total Environment*, 906, 167466.

Westbrook, A. S., & DiTommaso, A. (2023). Hybridization in agricultural weeds: a review from ecological, evolutionary, and management perspectives. *American Journal of Botany*, 110, e16258.

Esposito, M., **Westbrook, A. S**., Maggio, A., Cirillo, V., & DiTommaso, A. (2023). Neutral weed communities: the intersection between crop productivity, biodiversity, and weed ecosystem services. *Weed Science*, 71, 301-311.

Westbrook, A. S., Milbrath, L. R., Weinberg, J., & DiTommaso, A. (2023). Biology of Invasive Plants 3. *Vincetoxicum nigrum* (L.) Moench and *V. rossicum* (Kleopow) Barbarich. *Invasive Plant Science and Management*, 16, 3-26.

Westbrook, A. S., Amirkhani, M., Taylor, A. G., Loos, M. T., Losey, J. E., & DiTommaso, A. (2023). Multi-Seed *Zea* Pellets (MSZP) for increasing agroecosystem biodiversity. *Weed Science*, 2, 160-171.

Kordbacheh, F., Mohler, C. L., Taylor, A. G., **Westbrook, A. S.**, Rahimian-Mashhadi, H., Alizadeh, H. M., & DiTommaso, A. (2023). Optimising cutting method and timing for the control of *Abutilon theophrasti* seed production. *Weed Research*, 63(1), 34-44.

Losey, J., Allee, L., Gill, H., Morris, S., Smyth, R., Wolleman, D., **Westbrook, A. S.**, & DiTommaso, A. (2023) Predicting plant attractiveness to coccinellids with plant trait profiling, citizen science, and common garden surveys. *Biological Control*, 176, 105063.

Westbrook, A. S., & McAdam, S. A. (2022). The poisoned chalice of evolution in water: physiological novelty versus morphological simplification in Marsileaceae. *American Fern Journal*, 112(4), 320-335.

Averill, K. M., Morris, S. H., **Westbrook, A. S.**, Hunter, M. C., & DiTommaso, A. (2022). Ivyleaf morningglory (*Ipomoea hederacea* Jacq.) competition is not intensified by drought in silage corn in central New York State, USA. *Canadian Journal of Plant Science*, 102(5), 957-963.

DiTommaso, A., Mohler, C. L., & **Westbrook, A. S.** (2022). Response of hairy galinsoga *(Galinsoga quadriradiata*) to nitrogen, phosphorus, and competition from lettuce. *Weed Science*, 70(5), 579-586.

Averill, K. M., **Westbrook, A. S**., Pineda-Bermudez, L., O'Briant, R. P., DiTommaso, A., & Ryan, M. R. (2022). Effects of Tertill® weeding robot on weed abundance and diversity. *Agronomy*, 12(8), 1754.

Wolff, A., **Westbrook, A. S.**, & DiTommaso, A. (2022). In the ruins: the neglected link between archaeology and weed science. *Weed Science*, 70(2), 135-143.

Magidow, L. C., DiTommaso, A., **Westbrook, A. S.**, Kwok, M. J., Ketterings, Q. M., & Milbrath, L. R. (2022). Soil characteristics of North American sites colonized by the non-native, invasive vines black swallow-wort and pale swallow-wort. *Northeastern Naturalist*, 29(1), 108-132.

Averill, K., **Westbrook, A.S.**, Morris, S., Kubinski, E., & DiTommaso, A. (2022). Silage corn yield is reduced by burcucumber competition and drought in New York State. *Weed Technology*, 36(1), 86-92.

Westbrook, A. S., Bhaskar, V., & DiTommaso, A. (2022). Weed control and community composition in living mulch systems. *Weed Research*, 62(1), 12-23.

DiTommaso, A., Averill, K. M., Qin, Z., Ho, M., **Westbrook, A. S.**, & Mohler, C. L. (2021). Biomass allocation of *Vincetoxicum rossicum* and *V. nigrum* in contrasting competitive environments. *American Journal of Botany*, 108(9), 1646–1661.

Bhaskar, V., Bellinder, R. R., Reiners, S., **Westbrook, A. S.**, & DiTommaso, A. (2021). Significance of herbicide order in sequential applications to target weeds in a sunn hemp living mulch. *Weed Technology*, 35(4), 565-573.

Westbrook, A. S., Han, R., Zhu, J., Cordeau, S., & DiTommaso, A. (2021). Drought and competition with ivyleaf morningglory (*Ipomoea hederacea*) inhibit corn and soybean growth. *Frontiers in Agronomy*, 3, 720287.

Bhaskar, V., **Westbrook, A. S.**, Bellinder, R. R., & DiTommaso, A. (2021). Integrated management of living mulches for weed control: a review. *Weed Technology*, 35(5), 856-868.

Little, N. G., DiTommaso, A., **Westbrook, A. S.**, Ketterings, Q. M., & Mohler, C. L. (2021). Effects of fertility amendments on weed growth and weed-crop competition: a review. *Weed Science*, 69(2), 132-146.

DiTommaso, A., Milbrath, L. R., Marschner, C. A., Morris, S. H., & **Westbrook, A. S.** (2021). Seed germination ecology of meadow knapweed (*Centaurea* × *moncktonii*) populations in New York State, USA. *Weed Science*, 69(1), 111-118.

Westbrook, A. S., & McAdam, S. A. (2021). Stomatal density and mechanics are critical for high productivity: insights from amphibious ferns. *New Phytologist*, 229(2), 877-889.

Westbrook, A. S., & McAdam, S. A. (2020). Atavistic stomatal responses to blue light in Marsileaceae. *Plant Physiology*, 184(3), 1378-1388.

Publications in Review or Revision (3)

Westbrook, A. S., Djuric, N., Pelzer, C. J., Ball, M., Caldwell, B. A., DiTommaso, A., Marschner, C. A., & Ryan, A. (in revision). Effects of soil tillage and nutrient management on weed abundance during the transition to organic grain production. *Weed Science*.

Westbrook, A. S., Butler-Jones, A. L., Morris, S. H., Goldman, M. B., Agrawal, A. A., & DiTommaso, A. (in revision). Deer browsing impacts seedbanks and plant communities over 18 years of post-agricultural succession. *PLoS One*.

Snider, G., Schrock, H., & **Westbrook, A. S.** (in review). Impacts of livestock grazing and prescribed fire on rangeland seedbanks: A review

Outreach Publications (2)

Westbrook, A. S. (2023) Research report: annual flower plantings on farms. *New York Certified Organic (NYCO)*.

Westbrook, A. S. (2023). Does drought favor crops or weeds? *Northeastern Weed Science Society* [Tied for first place in student contest].

PRESENTATIONS

Forage, Seedbanks, and Soil at Rannells Ranch
Hatch Multistate Annual Meeting, August 2025

Native Pasture Management
K-State Research and Extension, Shawnee County, July 2025

Functional composition and biodiversity of non-crop plant communities in extensively managed agricultural landscapes
Department of Plant Pathology Seminar, March 2025

Establishing Flower Strips near Agricultural Fields with Minimal Weed Management
Weed Science Society of America, February 2025

Control of Noxious Weeds: Sericea Lespedeza, Johnsongrass, Teasels
Kansas Noxious Weeds Short Course, February 2025

Tips and Tricks for Low(er)-Stress Academic Writing
Agronomy Graduate Student Association, December 2024

AI and Precision Agriculture Technologies for Soil-Water-Energy Nexus
Panel participant, Kansas State AI Symposium, October 2024

How Weed Management Practices Influence Weed Communities
Cornell Cooperative Extension, May 2024

Planting Time Influences Annual Flower Strip Establishment when Weed Abundance is Low
Northeastern Weed Science Society, January 2024

Integrating Ecology and Seed Technology to Improve Establishment of Pollinator Plants
Cornell Seed Conference, November 2023

Vulnerabilities in Weed Biology
Cornell Cooperative Extension, March 2023

Multi-Seed *Zea* Pellets (MSZP) for Increasing Agroecosytem Biodiversity
Northeastern Weed Science Society/Weed Science Society of America, January 2023
Awarded first place in NEWSS graduate student presentation contest

Biology, Ecology, and Management of Invasive Swallow-worts (*Vincetoxicum* spp.)
Upper Midwest Invasive Species Conference, October 2022

Effects of Tertill® Weeding Robot on Weed Abundance and Diversity
Northeastern Weed Science Society, July 2022
Awarded second place in graduate student presentation contest

PEER REVIEW

Associate Editor, *Invasive Plant Science and Management* (2024–present)

Outstanding Paper Committee, *Invasive Plant Science and Management* (2025–present)

(Co-)reviewed articles for *Agronomy*, *Agronomy for Sustainable Development*, *Biological Conservation*, *BMC Ecology*, *Crop Science*, *Environmental Entomology*, *Frontiers in Sustainable Food Systems*, *Invasive Plant Science and Management*, *MDPI Agronomy*, *North American Colleges and Teachers of Agriculture, NeoBiota*, *Pest Management Science*, *Preslia*, *Weed Biology and Management*, *Weed Research*, *Weed Science*, as well as university and national grant applications

PROFESSIONAL AFFILIATIONS

Soil and Water Conservation Society 2025–present
Emerging Leaders Program

Crop Science Society of America 2025–present

Society for Range Management 2025–present

North American Colleges and Teachers of Agriculture 2024–present

Gamma Sigma Delta 2024–present

American Society of Agronomy 2024–present

Weed Science Society of America 2023–present