

**DEPARTMENT OF AGRICULTURE**

**Agricultural Marketing Service**

**Document Number AMS-TM-22-0022**

**Competition and the Intellectual Property System: Seeds and Other Agricultural Inputs**

**AGENCY:** Agricultural Marketing Service, USDA.

**ACTION:** Notice; request for public comments.

**SUMMARY:** On July 9, 2021, President Biden issued an Executive Order titled “Promoting Competition in the American Economy” which creates a White House Competition Council and directs Federal agency actions to enhance fairness and competition across America’s economy. Among other things, the Executive Order directs the Secretary of Agriculture (the Secretary) to prepare a report on concerns and strategies for ensuring that the intellectual property (IP) system, while incentivizing innovation, does not also unnecessarily reduce competition in seed and other input markets. This notice requests comments and information from the public to assist the U.S. Department of Agriculture (USDA or the Department) in preparing the report required by the Executive Order and advancing policy steps on seeds and other inputs identified in and developed by the report.

**DATES:** Comments must be received by [INSERT DATE 60 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

**ADDRESSES:** All written comments in response to this notice should be posted online at [www.regulations.gov](http://www.regulations.gov). Comments received will be posted without change, including any personal information provided. All comments should reference the docket number

AMS-TM-22-0022, the date of submission, and the page number of this issue of the **Federal Register**. Comments may also be sent to Jaina Nian, Agricultural Marketing Service, USDA, Room 2055-S, STOP 0201, 1400 Independence Avenue, SW., Washington, D.C. 20250-0201. Comments will be made available for public inspection at the above address during regular business hours or via the Internet at [www.regulations.gov](http://www.regulations.gov).

**FOR FURTHER INFORMATION CONTACT:** Jaina Nian, Agricultural Marketing Service, at (202) 378-2541; or by email at [jaina.nian@usda.gov](mailto:jaina.nian@usda.gov).

**SUPPLEMENTARY INFORMATION:**

**I. Background**

On July 9, 2021, President Biden issued Executive Order 14036, “Promoting Competition in the American Economy” (86 FR 36987) (E.O. 14036). E.O. 14036 focuses on the need for robust and open competition in the American economy to secure broad and sustained economic prosperity, promote the welfare of workers, farmers, small businesses, startups, and consumers, and prevent the threat that excessive market concentration poses to basic economic liberties and democratic accountability. With respect to agriculture, E.O. 14036 states:

Consolidation in the agricultural industry is making it too hard for small family farms to survive. Farmers are squeezed between concentrated market power in the agricultural input industries — seed, fertilizer, feed, and equipment suppliers — and concentrated market power in the channels for selling agricultural products. As a result, farmers’ share of the value of their agricultural products has

decreased, and poultry farmers, hog farmers, cattle ranchers, and other agricultural workers struggle to retain autonomy and to make sustainable returns.

In relevant part, E.O. 14036 directs, *inter alia*, that the Secretary—

to help ensure that the intellectual property system, while incentivizing innovation, does not also unnecessarily reduce competition in seed and other input markets beyond that reasonably contemplated by the Patent Act (see 35 U.S.C. 100 et seq. and 7 U.S.C. 2321 et seq.), in consultation with the Under Secretary of Commerce for Intellectual Property and Director of the United States Patent and Trademark Office, submit a report to the Chair of the White House Competition Council, enumerating and describing any relevant concerns of the Department of Agriculture and strategies for addressing those concerns across intellectual property, antitrust, and other relevant laws.

As part of executing our responsibilities under the E.O. 14036 for this report on seeds and other inputs, the Department takes note of wide-ranging concerns from agricultural producers regarding concentrated market power in the agricultural input industries and their connections to the intellectual property system. Four companies account for 85 and 76 percent of corn and soybean seed markets, controlling key sources for a farmer's planting.<sup>1</sup> Four companies account for 90 percent of the global grain trading and processing market, controlling, among other grain-related markets, a farmer's

---

<sup>1</sup> In 2015, the largest four sellers of corn and soybean seed accounted for 85 and 76 percent of U.S. corn and soybean seed sales, respectively, up from 60 and 51 percent in 2000. F. Ciliberto, G. Moshini, and E. Perry, "Valuing product innovation: genetically engineered varieties in US corn and soybeans," *RAND J Econ* 50 (2019): 615-644.

means for obtaining livestock feed.<sup>2</sup> Four companies account for 61 percent of farm machinery markets.<sup>3</sup> Two companies account for more than 90 percent of chicken genetics for chicks sold in poultry markets.<sup>4</sup>

During a series of joint workshops held in 2010 by USDA and the Department of Justice (DOJ), farmers described their experiences relating to agricultural inputs, intellectual property, and market power—many of which are still relevant today.<sup>5</sup> Seed prices have been a central concern: rising more than 700 percent between 2000 and 2015 for genetically modified (GM) seed, and more than 200 percent for non-GM seed for the same period.<sup>6</sup>

---

<sup>2</sup> In 2012, the largest four firms accounted for 86 and 79 percent of wet corn milling and soybean processing markets, respectively. Four firms accounted for 61 percent of the world's farm machinery, up from 46 percent in 1977. J. MacDonald, (2017), "Consolidation, Concentration, and Competition in the Food System," Economic Review, Federal Reserve Bank of Kansas City, Volume 102, Special Issue: "Agricultural Consolidation: Causes and the Path Forward" (September 2017): 85-105, available at <https://www.kansascityfed.org/documents/765/2017-Consolidation,%20Concentration,%20and%20Competition%20in%20the%20Food%20System.pdf>

<sup>3</sup> Sophia Murphy, David Burch, and Jennifer Clapp, "Cereal Secrets: The world's largest grain traders and global agriculture" (Oxford, UK: Oxfam, 2012), available at [https://www-cdn.oxfam.org/s3fs-public/file\\_attachments/rr-cereal-secrets-grain-traders-agriculture-30082012-en\\_4.pdf](https://www-cdn.oxfam.org/s3fs-public/file_attachments/rr-cereal-secrets-grain-traders-agriculture-30082012-en_4.pdf).

<sup>4</sup> Two companies, one acquired in 1985 by one of the world's largest meat processing firms, control 90 percent of the chicken breeding market. Dale Weihoff, "How the Chicken of Tomorrow became the Chicken of the World" (Institute for Agriculture and Trade Policy, 2013), available at <https://www.iatp.org/blog/201303/how-the-chicken-of-tomorrow-became-the-chicken-of-the-world>; Glenn E. Bugos, "Intellectual Property Protection in the American Chicken-Breeding Industry," Business History Review 66 (1992): 127-168, available at <https://www.jstor.org/stable/3117055>.

<sup>5</sup> One farmer described being once "free to choose from about a hundred different varieties of non-GMO soybeans...[and now] "forced as a farmer to go to the seed companies, these few seed companies that are left, to purchase my seed." Farmers described how firms with market power raised technology fees mid-contract for continued use of seed or product, selectively favored large farmers through pricing schemes; and for at least one farmer increased the cost of seed and chemical weed control by 153 percent during his 25 years of farming. Describing the IP system, one farmer stated, "it's a combination of the utility patents and the consolidation of the seed industry which has entrapped me as a farmer..."

U.S. Department of Justice. (2010). *Farmer Presentation of Issues* [Video], available at [https://youtu.be/YZOij\\_CZnoU?t=2605](https://youtu.be/YZOij_CZnoU?t=2605); U.S. Department of Justice. (2010), *Public Workshops Exploring Competition Issues in Agriculture* [Workshop transcript], available at <https://www.justice.gov/sites/default/files/atr/legacy/2010/12/20/iowa-agworkshop-transcript.pdf>.

<sup>6</sup> USDA Crop and Seed Price Index from NASS; Crop-specific seed prices from USDA NASS for 1990-2015 (after which NASS discontinued its seed price series) and extended over 2016-2020 using USDA ERS Cost-of-Production estimates. Note, prices have fallen declined since 2015, with commodity price swings playing a significant factor.

A healthy IP system plays an important role in facilitating that research. the introduction of GM seeds have generally been accompanied by higher productivity.<sup>7</sup> Moreover, R&D spending and new variety introductions by the private seed industry has generally grown in recent decades.<sup>8</sup> Given that global demand for food is expected to double in the next 30 years, while public funding for research and advancements in agriculture, food and nutrition have flatlined or declined over the past decade, it is important to ensure that private sector research continues to support innovations in development of seed genetics, chemical controls, and crop characteristics.<sup>9</sup>

Yet there are also developments in the research landscape that should raise concerns. For example, small and medium-sized enterprises (SMEs), which have historically served as primary sources of innovation, face barriers to entry.<sup>10</sup> Some segments, such as organic seeds, also remain underserved.

---

<sup>7</sup> One study estimated that 44 percent of the value added by enhanced productivity was retained by farmers, with the rest captured by seed companies as a return on their investment in R&D. The result may be similar in effect to the introduction of hybrid corn seed in the 1940s and 1950s. F. Ciliberto, G. Moschini, and E.D. Perry (2019), "Valuing Product Innovation: Genetically Engineered Varieties in U.S. Corn and Soybeans," *RAND Journal of Economics*, 50: 615-644.

<sup>8</sup> Seed-biotech companies have spent, on average, about 10-15 percent of their seed sales on research and development, which appears fairly consistent over time. J. Fernandez-Cornejo, (2004), "The Seed Industry in U.S. Agriculture: An Exploration of Data and Information on Crop Seed Markets, Regulation, Industry Structure, and Research and Development," *Agriculture Information Bulletin*, No. (AIB-786), USDA-ERS; FAO 2019, "Analysis of Sales and Profitability with the Seed Sector," Independent Report by HIS Markit (Phillips McDougall) for the Co-Chairs of the Ad-Hoc Open-Ended Working Group to Enhance the Functioning of the Multilateral System of FAO's International Treaty on Plant Genetic Resources for Food and Agriculture; K. Fuglie, et al. (2011), "Research Investments and Market Structure in the Food Processing, Agricultural Input, and Biofuel Industries Worldwide," Economic Research Report 130, USDA-ERS.

<sup>9</sup> G.L. Mehaffy, (2012), "Challenge and change," *Educause Review*, 47(5), 25-42.

<sup>10</sup> It is not yet clear whether the recent growth in venture capital financing in food and agriculture will yield new innovations and new competitors, or whether incumbent firms will establish "kill zones" similar to what has occurred in the technology sector—acquisitions of start-ups that threaten the dominant players. On similar practices in other sectors, see M. Jarsulic, "[Antitrust Enforcement for the 21st Century](https://journals.sagepub.com/doi/full/10.1177/0003603X19877008)," (2019), *The Antitrust Bulletin*, Vol. 64 Issue 4, available at <https://journals.sagepub.com/doi/full/10.1177/0003603X19877008>.

Seeds and their corollary pesticide products are not the only agricultural inputs where control over intellectual property may intersect with concerns around concentration and competition. The IP system is relevant to control over animal genetics in livestock and poultry, farm machinery and precision technology and data, and more.

USDA is interested in all relevant comments on the topics noted above. We are particularly interested in what effects various forms of IP, such as patents, have on small to mid-sized seed businesses and plant breeding programs. Other important input markets include those for equipment; fertilizer; feed; pest control; chemical management agents; animal breeding and genetics; storage and transportation; hatcheries; or pre-farm markets, including farm input derivatives, processing, trading, and financing.

We are further interested in comments addressing the role of fair and competitive markets in promoting local and regional food systems, creating new market opportunities (including for value-added agriculture and value-added products), advancing efforts to transform the food system, meeting the needs of the agricultural workforce, supporting and promoting consumers' nutrition security, particularly for low-income populations, and supporting the needs of underserved and small to mid-sized producers and processors.

## **II. Written Comments**

USDA encourages commenters, when addressing the elements below, to clearly indicate the question their comments are responding to by repeating the text of the question before their response. This would assist USDA in more easily reviewing and summarizing the comments received in response to these specific comment areas. In addition, USDA welcomes commenters to refer to, with appropriate explanation, any

views set forth in recently or previously submitted comments, such as those to E.O. 14017 “America’s Supply Chains” (No. AMS-TM-21-0034) (86 FR 20652).

For its report on competition in the intellectual property system, including for seeds and other inputs, USDA is particularly interested in comments and information directed to how to achieve the policy goals listed in E.O. 14036 of ensuring that the intellectual property system, while incentivizing innovation, does not also unnecessarily reduce competition in seed and other input markets beyond that reasonably contemplated by the Patent Act (see 35 U.S.C. 100 *et seq.* and 7 U.S.C. 2321 *et seq.*) and the Plant Variety Protection Act (PVPA) (7 U.S.C. 2321 *et seq.*), and of otherwise supporting the policy objectives of fair and competitive markets for agricultural and food products.

Our request for comment includes but is not limited to the following elements. The questions below are meant to stimulate comments and are not intended to represent particular views of USDA or any other government agency. Commenters should feel free to respond to those they feel most relevant to them, or as their time and interests permit. Comments may overlap or be organized as the commenter feels most appropriate. Please offer descriptive or quantitative information, as available and relevant.

#### *Concentration and Market Power in Agricultural Inputs*

1) Please describe challenges, concerns, and any other views (including relating to any benefits) with market concentration and market power in the agricultural input industries, including, as applicable, effects on farmers, competitors and related markets; pricing; availability; transportation and delivery; quality; research and innovation; economic growth, labor markets, and inequality issues; supply chain resiliency; and any other factors.

2) Please share your views on access, availability, pricing, quality, and related matters relating to seeds. In particular, are seed companies offering an adequate variety of types of seeds and traits that meet your needs as a grower? Are seed companies regularly providing new and improved varieties for growers? Have gains in yield or net returns resulting from use of new varieties been adequate to compensate farmers for the cost of seeds? Are regional needs, tribal and underserved communities, climate concerns, and product-specific needs, such as organic seeds, being appropriately served by the seed marketplace?

3) For agricultural inputs other than seeds, please share similar responses to those solicited for seeds in Question 2, above, relating to access, availability, pricing, quality and related matters. Please respond as to whether companies are offering adequate product varieties to meet producer needs, whether there are new and improved varieties or products, and whether there are gains in yield or other producer benefits, including net returns. Are regional needs, tribal and underserved communities, climate concerns, and product-specific needs, being appropriately served by the marketplace?

#### *Intellectual Property*

4) Please share your views on whether, and if so how, the existing IP system—including plant patents, utility patents, and plant variety protection certificates—appropriately balances the need to incentivize innovation with the goal of ensuring public access to new and improved products at reasonable cost. Please explain why or why not, and discuss in context of seeds or the particular agricultural input of concern. If you have concerns, please explain the concerns and provide suggestions on how the IP system can be improved to address those concerns.



5) For seeds in particular, is the patent side of the plant-related IP system appropriately reserving its grant of statutory patent monopolies to inventions that are of significant utility, novelty and non-obviousness? Do you have concerns about patent quality in the area of plant-related IP or plant-related technologies? If you have concerns, please explain.

6) Does the existing IP system, as relating to seeds and other agricultural inputs, effectively meet the statutory goal of rewarding invention through protection from competition for a fixed term? Does it fairly and effectively promote competition and innovation, or does it inappropriately suppress competition and innovation? Please explain. If you believe the IP system inappropriately suppresses competition or insufficiently rewards innovation, please explain and provide concrete examples where possible.

7) Do farmers, ranchers, and other stakeholders have sufficient access to off-protection and generic options? If not, are regulatory tools, systems, or practices being utilized to inhibit access? For example, do you believe there is evidence of inappropriate strategies to extend the life of patents? Please explain and provide examples.

8) Please share your views on whether and how the different forms of IP protection for new plant varieties appropriately promote access to germplasm for the development of new varieties. Please share specifics where possible and provide suggested improvements to ensure farmers' and breeders' access to germplasm for variety development.

9) Please comment on IP enforcement. Do you believe farmers, breeders and small and medium sized enterprises face challenges concerning enforcement of their plant related IP rights? If so, please provide concrete examples. Do you believe farmers, breeders and small and medium sized enterprises face challenges from other companies asserting their IP rights against them? If so, please provide specific examples. Please also offer recommended solutions for mitigating those challenges.

10) Are there other ways in which the IP system, including copyrights and trademarks, may positively or adversely affect choice, quality, and other aspects of competition in seeds or other agricultural inputs? For example, what role does IP play, if any, in farmers' and ranchers' ability to repair and maintain equipment?<sup>11</sup> Please provide examples.

*Business Practices and Other Competition Matters*

11) What role do contractual or sales practices in seed and other agricultural input markets play with regard to a farmer's or business's autonomy, innovation, or ability to compete? How have contractual or sales practices changed over time? Do some firms' contracts require farmers to buy inputs from or sell exclusively to one or a few firms? What impacts do these contractual requirements have on competition?

12) Is there evidence of contracting or sales practices locking a farmer into a mode of production and inhibiting them from entering other farm enterprises? To what extent do requirements or inducements to buy a main product (e.g., seed) with a second

---

<sup>11</sup> See Fed. Trade Comm'n, *Nixing the Fix: An FTC Report to Congress on Repair Restrictions* (May 2021), available at <https://www.ftc.gov/reports/nixing-fix-ftc-report-congress-repair-restrictions>.

product (e.g., pest management chemical), bundle, stacked trait, or service impact the farmer or other agricultural input competitors? For instance, does such a practice lock a farmer into or out of certain product choices? Please offer specific recommendations for reforms.

13) What role do marketing and labeling practices have on competition in seeds or other agricultural inputs? Do labeling and naming practices provide sufficient notice that the seed or other agricultural input in question is protected by IP or not protected? Please explain.

14) Please comment on implications, negative or positive, of mergers in the seed industry and in industries that sell other agricultural inputs. Have certain mergers changed contracting or sales practices? Have certain mergers allowed the acquisition of rivals or technologies or companies that competitor firms rely on? Have mergers delivered efficiencies? Please offer recommendations for specific actions where appropriate.

15) Please comment on the presence of, and any concerns around, licensing restrictions in seeds or other agricultural inputs. Please comment on cross-licensing practices, including restrictions or exclusive cross-licensing permissions, and any related concerns. Do fees on the same type of license vary and if so under what circumstances? Do licensees have access to information on comparable licenses? Are some companies or

organizations denied reasonable access to licenses and on what basis? What further guidance, if any, on appropriate licensing practices would be helpful?<sup>12</sup>

16) Please comment on any other concerns relating to competition matters. For example, do you have concerns relating to manufacturer restrictions on aftermarket competition, preferential pricing schemes that may favor one farmer or competitor over another, or contractual arrangements such as tying or exclusivity arrangements? Do you believe there is evidence of attempts to fix prices, allocate markets, or to restrict from where a farmer buys inputs and sells product? Do you believe there is evidence of agricultural input firms using their market power to price below cost and run losses to undercut and eliminate competitor or potentially competing firms? Is monopsony—where sellers are harmed from market power abuses by buyers—relevant in these industries and supply chains, and if so how? What role, if any, does financing or financial markets play in any of the issues addressed above? Please provide examples for concerns raised.

### *Information Resources*

17) Do you believe farmers, breeders and other stakeholders have appropriate access to information, education, and support services around seeds and other agricultural inputs, including information on IP protection and IP-related risks covering seeds they buy and the varietal identity of those seeds? If not, what are the most effective means for improving access to such information? What about other agricultural inputs?

---

<sup>12</sup> See Dep't Justice & Federal Trade Comm'n, Antitrust Guidelines for the Licensing of Intellectual Property (Jan. 2017), available at <https://www.justice.gov/atr/IPguidelines/download>.

18) Do farmers, breeders, and other stakeholders have access to adequate information on new applications for plant IP, prior to the award of plant patents, plant variety protection certificates or utility patents to the applicants? Are there improvements that could be made to information accessibility for applications prior to the granting of IP protection? What about for other agricultural inputs?

19) Please comment on any concerns or challenges related to data—e.g., collection, privacy, accessibility, control, market power, or any other aspect—as it affects competition in seeds or other agricultural inputs. To what extent does the expanded application of site-specific crop management using data from sensors, climate readings, or mechanical systems in agriculture impact competition and farmers' access to seeds and other inputs? What mechanisms would safeguard a farmer's control of data and enhance competition and fair access, while appropriately promoting the effective use of new technologies and data analytics? Are there relevant changes to the IP system that would facilitate innovation, competition, and fair access to data? Please comment on any benefits and opportunities for farmers relating to data and consolidation, as appropriate.

*Additional Matters*

20) Please share any information relevant to regional needs, tribal and underserved communities, climate concerns, and product-specific matters, such as organic seeds, in relation to any of the concerns raised above.

21) Please comment on any international policy or risk implications related to any of the above matters. Do one or more of the currently available IP forms of protecting plant-related technologies have particular challenges or benefits in the

international context in terms of ensuring fair competition and providing farmers access to improved varieties, and quality, affordable seeds? What about for other agricultural inputs?

*Policy, Programs, and Solutions*

22) Please comment on the strengths, weaknesses, effectiveness, and gaps in current USDA policies and programs to facilitate access to affordable seeds and other agricultural inputs for farmers, plant breeders, ranchers, and other stakeholders. Are information services, grow out services, and access to seed varieties that are not subject to IP protections sufficiently available? Do farmers, plant breeders, ranchers, and other stakeholders have sufficient voice within relevant agency decision-making, and if not, how could it be improved? How could labeling practices be improved? Please suggest actionable steps that USDA could take to help address any identified concerns.

23) How could the IP system be improved to address any concerns highlighted?

24) How could Federal or state antitrust enforcement better address any concerns highlighted?

25) What other policy changes, tools, investments, or programs could USDA or other agencies deploy to enhance the competitiveness of seeds and other agricultural input markets in relation to any of the concerns highlighted by your responses to the aforementioned questions? **III. Requirements for Written Comments**

The <http://www.regulations.gov> website allows users to provide comments by filling in a “Type Comment” field or by attaching a document using an “Upload File” field. USDA prefers that comments be provided in an attached document. USDA prefers

submissions in Microsoft Word (.doc files) or Adobe Acrobat (.pdf files). If the submission is in an application format other than Microsoft Word or Adobe Acrobat, please indicate the name of the application in the “Type Comment” field. Please do not attach separate cover letters to electronic submissions; rather, include any information that might appear in a cover letter within the comments. Similarly, to the extent possible, please include any exhibits, annexes, or other attachments in the same file, so that the submission consists of one file instead of multiple files. Comments (both public comments and non-confidential versions of comments containing business confidential information) will be placed in the docket and open to public inspection. Comments may be viewed on <http://www.regulations.gov> by entering docket number **AMS-TM-22-0022** in the search field on the home page. All filers should name their files using the name of the person or entity submitting the comments. Anonymous comments are also accepted. Communications from agencies of the United States Government will not be made available for public inspection. Anyone submitting business confidential information should clearly identify the business confidential portion at the time of submission, file a statement justifying nondisclosure and referring to the specific legal authority claimed, and provide a non-confidential version of the submission. The nonconfidential version of the submission will be placed in the public file on <http://www.regulations.gov>. For comments submitted electronically containing business confidential information, the file name of the business confidential version should begin with the characters “BC.” Any page containing business confidential information must be clearly marked “BUSINESS CONFIDENTIAL” on the top of that page. The non-confidential version must be clearly marked “PUBLIC.” The file name of the nonconfidential version should begin with the

character “P.” The “BC” and “P” should be followed by the name of the person or entity submitting the comments or rebuttal comments. If a public hearing is held in support of this supply chain assessment, a separate **Federal Register** notice will be published providing the date and information about the hearing.

Melissa Bailey, Associate Administrator,  
Agricultural Marketing Service.