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From Precision Agriculture to Market Manipulation: A New Frontier in the Legal Community

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Note

From Precision Agriculture to Market Manipulation: a New Frontier in the Legal Community

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The evolution of food production and management over the past century[1] has occurred, in part, due to the rapid growth of the world's population and an increase in the amount of food consumed per person.[2] Advances in technology have been the fuel to this evolution and have allowed farmers and other producers to increase their output while reducing overall costs.[3] These advances range from how crops are planned and planted to how they are harvested and processed.[4] As the world's populations continue to grow, both agriculture and technology

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1. *See* CAROLYN DIMITRI ET AL., U.S. DEP'T OF AGRIC., ECON. RES. SERV., ECON. INFO. BULL. NO. 3, THE 20TH CENTURY TRANSFORMATION OF U.S. AGRICULTURE AND FARM POLICY 2 (2005), http://www.ers.usda.gov/publications/eib-economic-information-bulletin/eib3.aspx (providing an overview of the factors that have caused changes in the agriculture industry and farm policy over past one hundred years).

2. *See H. Charles J. Godfray et al., The Future of the Global Food System*, 365 PHIL. TRANSACTIONS ROYAL SOC'Y B 2769, 2769–70 (2010), http://rstb.royalsocietypublishing.org/content/royptb/365/1554/2769.full.pdf.

3. *See* DIMITRI ET AL., *supra* note 1, at 2; *see also* WILLIAM C. MOTES, GLOBAL HARVEST INITIATIVE, MODERN AGRICULTURE AND ITS BENEFITS—TRENDS, IMPLICATIONS AND OUTLOOK 20 (2010), http://globalharvestinitiative.org/Documents/Motes%20-%20Modern%20Agriculture%20and%20Its%20Benefits.pdf (describing advances in modern agriculture that have improved productivity).

4. DIMITRI ET AL., *supra* note 1, at 6.

are being pushed to the limit in order to create the most crop production possible. In order to meet the ever-rising demand, farmers are beginning to rely on the next major advance in agricultural technology, better known as precision agriculture.

As precision agriculture has grown into what it is currently understood as today, it can be argued that this technology has given farmers many advantages they could have never imagined. This technology is becoming a necessary tool in order to keep agricultural production high and the costs associated with such production low. However, with all of the advantages that precision agriculture can offer, many problems are beginning to emerge. As with most technological advances, the issues that precision agriculture creates and the solutions to these issues are beginning to surface far after its implementation. As the agricultural industry begins to address these issues, while continuing to increase production and reduce costs, certain goals need to be kept in mind.

This Note seeks to explain the legalities of using data produced by precision agriculture in the commodities futures market. Part I will explain, in a brief overview, (1) what precision agriculture is; (2) the issues precision agriculture creates; and (3) the commodities market. Part II explores why and how farmers should own the agricultural data they produce and determines that agricultural data can be legally used in the commodities markets. This Note concludes that although farmers could allow traders to use their data, it is currently not in their best interest to do so.

I. UNDERSTANDING PRECISION AGRICULTURE, REASONS FOR CONCERN, AND THE COMMODITIES MARKET

A. PRECISION AGRICULTURE

Precision agriculture, or precision farming, is not necessarily a new technology or concept.[5] What is new,

5. *See* DAN ESS & MARK MORGAN, DEERE & CO., THE PRECISION-FARMING GUIDE FOR AGRICULTURISTS 2 (1997) (describing precision farming technology as it began to emerge in the 1990's); James R. Walter, *A Brand New Harvest: Issues Regarding Precision Agriculture Data Ownership and Control,* 2 DRAKE J. AGRIC. L. 431 (1997); Steven H. Lee, *Texas Farmer Uses Satellites to Help Fertilize Land, Grow More Corn*, DALL. MORNING NEWS, Mar. 2, 1997 (showing that approximately 9,000 to 11,000 farmers were using

however, is the way precision agriculture data (data)[6] is being collected and analyzed.[7] At its simplest level, precision agriculture can include methods such as spot application of pesticides or physically scouting a field.[8] But most consider precision agriculture to include the management of production through the use of "global positioning system (GPS) technology to spatially reference soil, water, yield, and other data for the variable rate application of agricultural inputs within a field."[9] This management allows farmers to better understand what factors are affecting their overall return and provides them with precise information to address and correct issues in the future.[10] By addressing what factors are affecting return, farmers can achieve a more uniform product and better predict what their costs, crop output, and overall profit will be.

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some form of precision agriculture technology in 1997). According to a recent survey conducted by the American Farm Bureau Federation, approximately 40% of the nearly 3,000 participants indicated they used precision agriculture on their farm.

6. *See* John W. Mashni, *Turning Bytes of Data into a Farming Boon*, FOSTER SWIFT AGRIC. NEWS (March 27, 2015), http://www.fosterswift.com/publications-Big-Data-Farming-technology.html ("Agricultural big data is data generated and owned by a farming operation, and then processed, analyzed and leveraged for business insights and advantage."); *see also* Todd Janzen, *Defining "Big Data" in Agriculture*, JANZEN AG LAW BLOG (Feb. 12, 2015), http://www.janzenaglaw.com/2015/02/defining-big-data-in-agriculture.html ("Big data is the ability to aggregate information to discover trends and find patterns.").

7. *See* SUSAN LUND ET AL., MCKINSEY GLOBAL INSTITUTE, GAME CHANGERS: FIVE OPPORTUNITIES FOR U.S. GROWTH AND RENEWAL 73-74 (July 2013), http://www.mckinsey.com/insights/americas/us_game_changers (explaining that by 2020 the wider adoption of big-data analytics could increase annual GDP in retailing and manufacturing by up to $325 billion and save as much as $285 billion in the cost of health care and government services); Jacob Bunge, *Big Data Comes to the Farm, Sowing Mistrust; Seed Makers Barrel into Technology Business*, WALL ST. J. (Feb. 25, 2014, 10:38PM), http://online.wsj.com/articles/SB10001424052702304450904579369283869192124 (discussing how companies are racing to offer prescriptive services to farmers using the data generated from their operations).

8. U.S. DEP'T OF AGRIC., NAT. RES. CONSERVATION SERV., AGRONOMY TECH. NOTE NO. 1, PRECISION AGRICULTURE: NRCS SUPPORT FOR EMERGING TECHNOLOGIES 1 (2007), http://www.nrcs.usda.gov/internet/FSE_DOCUMENTS/stelprdb1043474.pdf.

9. *Id.*

10. *Id.*

1. The Technology Involved in Precision Agriculture

Precision agriculture can be used in almost all aspects of crop production.[11] It begins with using a GPS to guide agricultural equipment in the field. A GPS can be used to enable the equipment to be driven without guidance from the grower, which results in a more accurate and efficient operation.[12] Developments in technology now allow the grower to control and vary tillage depth based on the exact location of their equipment within the field. This variation can help improve soil compaction and allows for the reduction of moisture loss in critical portions of the field.[13] In addition, technology is being developed that would allow growers to plant specific seeds that are best suited for the soil type and condition, at various depths and spaces. These exact planting locations would all be determined by using a GPS.[14] Precision technology also allows application of certain fertilizers or pesticides in specific areas of concern based on soil conditions and seed variation.[15] This precision application allows farmers to save both time and money by using the exact amount of fertilizer or pesticide needed, rather than resorting to blanket coverage of an entire field.[16] Application can occur by using unmanned automated systems or drones instead of more costly manned aircraft.[17] As the benefits from using drones in agriculture become more apparent, it is expected that 80% of the commercial market for drones will be in the agricultural

11. *See* ESS & MORGAN, *supra* note 5, at 5–7.

12. *See id.* at 29.

13. *Id.* at 4.

14. Quentin Hardy, *Why Big Ag Likes Big Data*, N.Y. TIMES: BITS (Oct. 2, 2013), http://bits.blogs.nytimes.com/2013/10/02/why-big-ag-likes-big-data/?_php=true&_type=blogs&_ (explaining what Precision Planting, the company Monsanto purchased, allows a farmer to do).

15. *See* ESS & MORGAN, *supra* note 5, at 4.

16. *See* PEDRO ANDRADE-SANCHEZ & JOHN T. HEUN, THE UNIV. OF ARIZ. COOP. EXTENSION, THINGS TO KNOW ABOUT APPLYING PRECISION AGRICULTURE TECHNOLOGIES IN ARIZONA 5–7 (2010), http://extension.arizona.edu/sites/extension.arizona.edu/files/pubs/az1535.pdf (explaining the common uses and benefits of precision agriculture).

17. Rakesh Sharma, *Growing the Use of Drones in Agriculture*, FORBES (Nov. 26, 2013), http://www.forbes.com/sites/rakeshsharma/2013/11/26/growing-the-use-of-drones-in-agriculture (describing how drones can be used to apply pesticides in a most efficient manner).

industry.[18] The other potential uses and the legalities of drones are beyond the scope of this note, but are ripe for discussion.

Yield monitors are often the most widely used technology and are a stepping-stone for those entering the world of precision agriculture technology.[19] Yield monitors allow farmers to view real time yield data as they harvest the crop. The grain is monitored as it enters the combine[20] and a GPS receiver supplies the exact spatial coordinates of the harvested grain allowing the farmer to see a yield map displayed in the combine.[21] As they harvest, they can see real time differences in yield within the field. This technology allows the farmer to detect areas of concern, plan for future management, and evaluate the effectiveness of different crop varieties, among many other applications.[22]

David Friedberg of The Climate Corporation,[23] a company recently purchased by Monsanto Company,[24] stated that "[d]ata

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18. *See* MICHAEL TOSCANO, ASS'N FOR UNMANNED VEHICLE SYS. INT'L, CONNECTING THE UNMANNED SYSTEMS COMMUNITY ACROSS THE GLOBE 4 (2013), https://www.aiaa.org/uploadedFiles/About-AIAA/Press-Room/Key_Speeches-Reports-and-Presentations/2013_Key_Speeches /CA_Aerospace_Week_2013/Toscano-CAUAV2013.pdf.

19. *See* ESS & MORGAN, *supra* note 5, at 9; Jess Lowenberg-DeBoer, *Is the US Falling Behind in Yield Monitor Adoption?*, PURDUE AGRICULTURE EXTENSION (Aug. 2003), https://www.agriculture.purdue.edu/ssmc /FRames/Aug03How%20many%20yield%20monitors_gregedits1.htm.

20. A "combine" is "a harvesting machine that heads, threshes, and cleans grain while moving over a field." *Combine*, MERRIAM-WEBSTER, http://www.merriam-webster.com/dictionary/combine (last visited Nov. 20, 2014).

21. *See* U.S. DEP'T OF AGRIC., *supra* note 8, at 3; ESS & MORGAN, *supra* note 5, at 4.

22. *See* ANDRADE-SANCHEZ & HEUN, *supra* note 16, at 5.

23. The Climate Corporation website explains, "[t]he company's proprietary Climate Technology Platform combines hyper-local weather monitoring, agronomic modeling, and high-resolution weather simulations to deliver Climate FieldView products, mobile SaaS solutions that help farmers improve profitability by making better informed operating and financing decisions." *About Us*, THE CLIMATE CORP., http://www.climate.com/company/ (last visited Sep. 21, 2015).

24. The Monsanto Company website explains,

> Monsanto is a sustainable agriculture company. We deliver agricultural products that support farmers all around the world. We are focused on empowering farmers—large and small—to produce more from their land while conserving more of our world's natural resources such as water and energy. We do this with our leading seed brands in crops like corn, cotton, oilseeds and fruits and vegetables. We also produce leading in-the-seed trait technologies for farmers,

itself is going to be nearly worthless - you have to sell insights from the data and suggestions of what to do."[25] "The challenge is not understanding that [data] exists, it's determining how to use [data] to help make smart business decisions."[26] These statements offer insights as to where precision agriculture is headed and how farmers are going to be able to improve the data they collect. Big agricultural companies or Agriculture Technology Providers (ATPs) are beginning to offer "prescriptions" to farmers that allow them to better utilize their data and increase their output, for a fee.[27] Currently, prescriptions for planting are a major draw and are gaining traction within agricultural companies.[28] In order to create these prescriptions, the ATPs need to collect the data generated by the farmer and put it in a form that allows the farmer to adjust his or her planting based on area weather patterns, past crop performance, or soil conditions.[29] All of this information will come to the farmer in a packaged product or prescription and they will just have to follow the recommendations. Some have said that the ability to manage and analyze data could be as important to agriculture as the development of tractors in the early 20th century and the development of genetically

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> which are aimed at protecting their yield, supporting their on-farm efficiency and reducing their on-farm costs.

Monsanto at a Glance, MONSANTO, http://www.monsanto.com/whoweare/pages/default.aspx (last visited Jan. 28, 2015).

25. Hardy, *supra* note 14.

26. Mashni, *supra* note 6.

27. *See* Bunge, *supra* note 7.

28. *See generally* Lyndsey Gilpin, *How Big Data is Going to Help Feed Nine Billion People by 2050*, TECHREPUBLIC, http://www.techrepublic.com/article/how-big-data-is-going-to-help-feed-9-billion-people-by-2050/ (last visited Oct. 30, 2014) (discussing the move toward prescriptive planting); Lisa Heacox, *2012 State of Precision Ag: Data Masters*, CROPLIFE (June 1, 2012), http://www.croplife.com/equipment/precision-ag/2012-state-of-precision-ag-data-masters (describing how companies are developing ways to utilize grower data in precision agriculture); Bunge, *supra* note 7 (describing agricultural companies developing "prescriptive planting" technology).

29. *See* ANDRADE-SANCHEZ & HEUN, *supra* note 16, at 6; Carolyn Orr, *Use of 'Big Data' in Agriculture Yields Potentially Big Benefits for Producers, but Privacy Concerns as Well*, COUNCIL OF STATE GOV'TS KNOWLEDGE CTR. (Aug. 22, 2014), http://knowledgecenter.csg.org/kc/content/use-'big-data'-agriculture-yields-potentially-big-benefits-producers-privacy-concerns-well.

modified seeds.[30] Monsanto claims that the technology could help increase average corn harvested from 160 bushels an acre to more than 200 bushels an acre.[31] Monsanto currently says that farmers using their prescriptions have seen yields increase from between five to ten bushels an acre.[32]

To accelerate and strengthen their position in the market, ATPs have been acquiring companies that have the ability to round out their prescription services.[33] Monsanto Company paid $930 million to acquire The Climate Corporation, a company that provides "hyper-local weather monitoring, agronomic data modeling, and high resolution weather simulations to deliver a complete suite of full-season monitoring, analytics and risk-management products."[34] Monsanto Company also acquired Precision Planting, a company providing technology that allows for seed planting at various spaces and depths at exact locations, for $250 million.[35] It is not just Monsanto that is purchasing or partnering with companies that have advanced technology. Land O'Lakes, Inc.[36]

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30. *See* Bunge, *supra* note 7 (arguing that the ability to streamline, accelerate, and combine data produced by farmers into a product that can immediately be sent back to them, could change the industry forever).

31. *Id.*

32. *Id.* For a brief discussion on the potential of precision agriculture technologies, see generally Matthew Erickson, *Big Data: Agriculture's 'Moneyball'*, AM. FARM BUREAU FED'N (Oct. 22, 2014), http://www.fb.org/newsroom/focus/175/ (discussing results from a survey conducted by American Farm Bureau Federation regarding data privacy and how farmers indicated crop yields have increased by 13% while input costs have decreased by 15%).

33. *See* Bunge, *supra* note 7 (listing various purchases and collaborations throughout the agricultural market); Zacks Equity Research, *DuPont Collaborates with DTN*, YAHOO! FINANCE (Feb. 5, 2014), http://finance.yahoo.com/news/dupont-collaborates-dtn-221010081.html (describing the collaboration of the two businesses that will "provide innovative knowledge in agriculture to the growers."); *Monsanto to Acquire the Climate Corporation, Combination to Provide Farmers with Broad Suite of Tools Offering Greater On-Farm Insights*, MONSANTO (Oct. 2, 2013), http://news.monsanto.com/press-release/corporate/monsanto-acquire-climate-corporation-combination-provide-farmers-broad-suite [hereinafter *Monsanto*] (describing the purchase of Climate Corporation).

34. *Monsanto*, *supra* note 33.

35. *See* Ian Berry, *Monsanto to Buy Planting Technology Company*, WALL ST. J. (May 23. 2010, 4:09 PM), http://www.wsj.com/articles/SB10001424052702304707604577422162132896528.

36. Land O'Lakes' website explains, "Land O'Lakes, Inc. is one of America's premiere member-owned cooperatives. We offer local cooperatives

purchased GEOSYS,[37] a satellite-imaging and mapping company, DuPont[38] partnered with a weather and market analysis firm, DTN/The Progressive Farmer,[39] and Deere & Company[40] agreed to allow DuPont and Dow Chemical[41] to use data collected from its machines for planting recommendations.[42]

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and agricultural producers across the nation an extensive line of agricultural supplies, as well as state-of-the-art production and business services." *Company*, LAND O'LAKES, INC., http://www.landolakesinc.com/company/default.aspx (last visited Jan. 28, 2015).

37. GEOSYS's website explains,

> GEOSYS is the only digital agriculture partner founded by agronomists and acting on a global scale. Our dual expertise – in agriculture and the high-tech world – is at the core of our identity and our commitment to our clients. It has given us a clear vision of the high stakes and rapidly changing landscape of the entire agriculture industry.

Company, GEOSYS, http://www.geosys.com/company (last visited Sept. 23, 2015).

38. DuPont explains, "DuPont is a science company dedicated to solving challenging global problems, while creating measurable and meaningful value for its customers, employees and shareholders." *Our Company*, DUPONT, http://www.dupont.com/corporate-functions/our-company.html (last visited Sept. 23, 2015).

39. DTN/The Progressive Farmer website explains, "[a]t DTN/The Progressive Farmer, we are revolutionizing the industry with our game-changing agricultural information solutions and market intelligence, which enable our customers to actively and effectively manage their businesses." *Products*, DTN/THE PROGRESSIVE FARMER, http://www.dtn.com/ag/ (last visited Jan. 28, 2015).

40. John Deere explains,

> John Deere is committed to your success. This commitment extends globally with a focus on six key areas – the United States and Canada, Europe, Brazil, Russia, India, and China . . . And because of our past, our passion, and our purpose for helping you become more profitable and productive, John Deere is uniquely positioned to be the equipment supplier of choice.

About Us, JOHN DEERE, https://www.deere.com/en_US/corporate/our_company/about_us/about_us.page (last visited Jan. 28, 2015).

41. Dow explained that,

> Dow (NYSE:DOW) combines the power of science and technology to passionately innovate what is essential to human progress. The Company is driving innovations that extract value from the intersection of chemical, physical and biological sciences to help address many of the world's most challenging problems such as the need for clean water, clean energy generation and conservation, and increasing agricultural productivity.

Our Company, DOW, http://www.dow.com/en-us/about-dow/our-company (last visited Sep. 25, 2015).

42. *See* Bunge, *supra* note 7.

2. Why Precision Agriculture and the Data it Produces are Important

"Information produced on the farm truly represents power."[43] This power represents a broad array of areas in different markets. First, it is the ability to increase yields as we strive to feed a growing population that is expected to exceed nine billion by 2050.[44] It is expected that food production will have to increase by 70% to be able to sustain a population that big.[45] Increased yields are achieved by being more efficient in the use of resources. As resources begin to decrease, farmers will be expected to produce greater yields with fewer resources.[46] The world will soon become even more dependent on farmers and the companies that help farmers be more efficient, thus allowing them to have more control over how our foods are produced.

Second, information will allow for both the farmer and the ATPs collecting this data to increase their profits, making this data very valuable.[47] If ATPs can continue to deliver increased yields from their prescriptions, they will soon become a need,

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43. *Power & Politics of Information*, 29 FARM INDUS. NEWS (SPECIAL ISSUE), no. 3, 1996, at 14.

44. Food & Agric. Org. [FAO], How to Feed the World in 2050 (2009), http://www.fao.org/fileadmin/templates/wsfs/docs/expert_paper/How_to_Feed_the_World_in_2050.pdf (explaining that food production must increase by 70% to be able to feed the 9.1 billion people expected by 2050); Mark van Rijmenam, *John Deere Is Revolutionizing Farming with Big Data*, DATAFLOQ, https://datafloq.com/read/john-deere-revolutionizing-farming-big-data/511 (last visited Oct. 12, 2014).

45. Food & Agric. Org. [FAO], *supra* at 44.

46. *See Young Farmers from Across the Globe Gather to Discuss Global Food Issue*, RABOBANK (June 2, 2014), http://rabobanktheriseoftheruralentrepreneur.pr.co/78289-young-farmers-from-across-the-globe-gather-to-discuss-global-food-issue.

47. *See* Statement by Bob Stallman, President, AM. FARM BUREAU FED'N, *Regarding the Relationship Between Farmers and Agribusiness About Big Data* (Jan. 31, 2014), http://www.fb.org/newsroom/news_article/82/; Christopher Doering, *Big Data Means Big Profits, Risks for Farmers*, USA TODAY (May 11, 2014, 1:40 PM) http://www.usatoday.com/story/money/business/2014/05/11/gannett-big-data-means-big-profits-for-farmers-but-trust-concerns-loom/8970299/ ("Monsanto has estimated the market for providing farm data analysis could be worth about $20 billion annually."); Karl Plume, *Despite Concessions to U.S. Farmers, Big Data Giants Still in Control*, REUTERS (June 23, 2014, 7:00 AM), http://www.reuters.com/article/2014/06/23/farming-data-contract-idUSL2N0P018T20140623 (explaining that agricultural producer information could be worth billions of dollars).

not a want. Farmers will need prescriptions in order to stay profitable while competing against other farmers who are already using technologies that produce increased performance at lower costs.[48] The reality is that as input costs, such as seed and fertilizers, continue to grow, farmers may have no choice but to adapt or die.[49] This 'adapt or die' mentality is a major cause for concern among many farmers. The information created by farmers will allow the ATPs to control every aspect of production, including input costs that are associated with agriculture, due to the farmers' reliance on them.[50] This must be considered as a leading motivation for companies entering the precision agriculture industry.[51]

Third, information has the potential to provide protection to farmers and others within the industry.[52] Because the farmer's actions are recorded and precisely known, if an issue arises relating to environmental harm, they can use the data to clear their name of any wrongdoing.[53] However, the same data that could be used to protect the farmer's operations could also be used against them to find fault in situations where previously it would have been impossible to prove guilt.[54]

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48. *See generally* Rod Swoboda, *Big Data: Managing Your Most Elusive Farm Asset*, FARM PROGRESS (July 25, 2014), http://farmprogress.com/story-big-data-managing-elusive-farm-asset-9-115534-spx_0 ("Did you know that over two-thirds of every dollar spent in agriculture is spent on decisions focused on seed selection, fertility and land access?").

49. *See* Heacox, *supra* note 28. Heacox also explains that, "[f]armers are getting tired of paying for the technology and not using it," referring to the fact that the farmers have no choice but to purchase equipment with the technology so they are almost forced to pay agricultural companies to analyze their data and benefit from the technology. *Id.*; *see also* Carmelo Ruiz-Marreo, *Toward the Agro-Police State*, COUNTERPUNCH (Sept. 26, 2014), http://www.counterpunch.org/2014/09/26/toward-the-agro-police-state/ ("Some critics fear that precision farming will become a risk to environmental sustainability and rural communities by forcing farmers into new forms of dependence and debt.").

50. *See Proprietary Information Generated From Precision Agriculture Technologies*, S.D. FARM BUREAU FED'N (May 2013), http://www.sdfbf.org/f/692e23fc-ade0-4d88-9c37-7299a35fea23/issue-backgrounder-proprietary-info-from-precision-ag; Plume, *supra* note 47.

51. *See* Ruiz-Marreo, *supra* note 49.

52. *See* Walter, *supra* note 5, at 439.

53. Michelle Eauclaire-Kopier, *Big Data: What Is It, Really?*, OEM OFF-HIGHWAY (July 8, 2014), http://www.oemoffhighway.com/article/11564554/big-data-what-is-it-really (explaining that John Deere collects millions of records per month off of its machines).

54. *See* Gilpin, *supra* note 28.

B. THE LEGAL ISSUES CREATED BY PRECISION AGRICULTURE

Even though the benefits created by precision agriculture are great assets, there should be concern about the issues it creates, as well. Currently, privacy issues are at the forefront of these concerns.[55] Many farmers are worried that environmental groups,[56] commodity traders,[57] rival farmers,[58] or even the companies collecting the data[59] could use their information against them. With data breaches becoming a normal occurrence, it is not a question of *if* but *when* this data will be leaked.[60] Some farmers also argue that they should be paid for their data since it is used in the aggregate as a marketing tool to demonstrate how the company's products improve production.[61] The solution to a lot of these issues is based on the answer to who actually owns the data produced. This is the biggest question on many farmers' minds as they enter the new age of prescription agriculture.[62]

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55. *See* Jack Kaskey, *Monsanto Data Security Breached at Precision Planting*, BLOOMBERG (May 29, 2014, 11:01 PM), http://www.bloomberg.com/news/2014-05-29/monsanto-data-security-breached-at-precision-planting.html; *see also* Stallman, *supra* note 47.

56. *See* Phillip Brasher, *Farm Groups Sue to Stop Data Disclosure*, ROLL CALL (Jan. 24, 2014, 5:18 PM), http://www.rollcall.com/news/farm_groups_sue_to_stop_data_disclosure-230371-1.html; Jennifer G. Hickey, *Farmers Say EPA Data Dumps to Green Groups Endanger Their Privacy*, NEWSMAX (Feb. 21, 2014, 11:05 AM), http://www.newsmax.com/US/epa-farmers-privacy-violation/2014/02/21/id/554019/ (discussing EPA releasing information on concentrated animal feeding operations to environmental groups based on the Freedom of Information Act).

57. *See* Bunge, *supra* note 7; Dan Charles, *Should Farmers Give John Deere and Monsanto Their Data?*, NPR: THE SALT (Jan. 22, 2014. 4:54 PM), http://www.npr.org/blogs/thesalt/2014/01/21/264577744/should-farmers-give-john-deere-and-monsanto-their-data; John Dillard, *Legal Ease: Big Data and Your Privacy*, AG WEB (July 25, 2014, 9:44PM), http://www.agweb.com/article/legal_ease_big_data_and_your_privacy_NAA_John_Dillard/.

58. *See* Dillard, *supra* note 57.

59. *See AFBF Data Privacy Survey Final Results*, AM. FARM BUREAU FED'N (Sept. 2014), http://www.fb.org/tmp/uploads/AFBF_Final_Big_Data_Survey_Highlights_9-8-2014.pdf .

60. *See* Kaskey, *supra* note 55.

61. *See Agricultural Big Data Overview*, HALE GROUP, 14 (Dec. 2013), http://www.halegroup.com/wp-content/uploads/2013/12/Agriculture-Big-Data-Overview2013.pdf.

62. *Id.*; Charles, *supra* note 57.

1. Current Understanding of Data Ownership

The waters of data ownership are murky, but are beginning to clear as the industry progresses.[63] Most companies are stating that farmers own the data they produce and are free to do with it as they please.[64] However, this does not paint the whole picture. Once data is aggregated with other farmers' data, it then becomes the property of the company and is often not retrievable.[65] Currently, limitations on what the companies can do with the data or data ownership rights can be waived by service agreements, which are many times not even read by the farmers signing them.[66] While many companies consider farmers to be the owners of their data, that is not always the case and it has yet to be determined who legally owns the data.[67]

C. THE COMMODITY MARKET

With an understanding of precision agriculture and the data it produces, it is important to explain where and how this data could potentially be used before diving into if it can legally be used. In order to explain this, it is helpful to give a brief explanation of commodity trading and the current regulatory scheme.

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63. *See Data Privacy*, AM. FARM BUREAU FED'N (Oct. 2014), http://www.fb.org/issues/docs/dataprivacy14.pdf; Plume, *supra* note 47; Karl Plume, *High-Tech U.S. Farm Machines Harvest Big Data, Reap Privacy Worries*, REUTERS (Apr. 9, 2014, 7:52 PM), http://www.reuters.com/article/2014/04/09/us-usa-farming-data-idUSBREA3826220140409.

64. *See* Shannon Ferrell, Okla. State Univ., Presentation at the PrecisionAg Big Data Workshop: Big Data and the Farm: Who Owns the Data? (Aug. 25, 2014) (on file with author); Plume, *supra* note 47; *Ponder These Nine . . . Before You Sign: Data Privacy Expectation Guide*, AM. FARM BUREAU FED'N, http://www.kfb.org/Assets/uploads/images/DataPrivacy.pdf (last visited Oct. 28, 2014) [hereinafter *Ponder Nine*]; *The Climate Corporation Makes Landmark Data Access and Privacy Commitments to Farmers*, THE CLIMATE CORP. (Jan. 31, 2014), http://news.monsanto.com/press-release/corporate/climate-corporation-makes-landmark-data-access-and-privacy-commitments-farme.

65. *See* Ferrell, *supra* note 64.

66. *See* AM. FARM BUREAU FED'N, *supra* note 63; HALE GROUP, *supra* note 61.

67. *See* Ferrell, *supra* note 64 (discussing how data should legally be classified).

1. What is Commodities Futures Trading?

A commodity futures contract is an agreement between two parties to sell or purchase a commodity that will be delivered in the future.[68] "The seller (short) promises to deliver a particular commodity during a specified future month; the buyer (long) promises to accept the commodity and to pay the price the parties agree upon when they enter into the contract."[69] The Commodity Futures Trading Commission (CFTC) is the federal agency that regulates futures trading and designates contract markets at which futures contracts can be traded.[70]

The terms of every contract are standardized with the price being the only term open for negotiation.[71] Because the contracts are standardized they do not have to be settled through delivery of the commodity and nearly every contract is not delivered.[72] In order to not deliver on the contract, each party will enter into a second contract where they take the opposite position taken in the first.[73] Thus the seller in the first contract will agree to buy the same commodity in a new contract, and the buyer will agree to sell the commodity under a new contract.[74] If the price of the commodity decreases from when the seller enters into the first contract and the second contract, the seller profits.[75] If the price of the commodity increases, the buyer profits.[76] However, no trader can unilaterally get out of a contractual obligation.[77] Therefore, if a buyer demands delivery of the commodity—and will not sell

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68. *See Commodities Market Speculation: The Risk to Food Security and Agriculture*, INST. FOR AGRIC. & TRADE POL'Y 5 (Nov. 2008), http://www.iatp.org/files/451_2_104414.pdf.

69. Nina Swift Goodman, *Trading in Commodity Futures Using Nonpublic Information*, 73 GEO. L.J. 127, 128 (1984).

70. *Id.*

71. Jerry W. Markham, *"Front-Running"-Insider Trading Under the Commodity Exchange Act*, 38 CATH. U. L. REV. 69 (1988).

72. 1 PHILIP MCBRIDE JOHNSON & THOMAS LEE HAZEN, COMMODITIES REGULATION § 1.03 (2d ed. 1989). Fewer than 3% of all futures contracts result in delivery. *Id.*

73. *See* Markham, *supra* note 71.

74. *See* Goodman, *supra* note 69.

75. *Id.* at 128.

76. *Id.* at 128.

77. Craig Pirrong, *Commodity Market Manipulation Law: A (Very) Critical Analysis and a Proposed Alternative*, 51 WASH. & LEE L. REV. 945, 949 (1994).

their contracts, sellers who sold to this particular buyer must deliver.[78]

The key players in the commodity futures market are either hedgers or speculators.[79] "Hedgers are traders who have an interest in the cash market for the underlying commodity or in profit earned by producing or processing the underlying commodity. Hedgers trade in commodity futures in order to transfer risks inherent in their cash market activities."[80] They transfer this risk by taking opposite positions in the futures market and cash market. For example, a farmer can enter into a futures contract to sell the wheat he is going to harvest. If the prices fall, his gain in the futures market will offset his loss in the cash market.[81] On the opposite side, a company that requires large volumes of oil can enter into a futures contract as a buyer. If the price increases, its futures contract is more valuable and would offset any losses in the cash market.[82] Hedging is profitable because the initial investment to enter into a futures contract is a small percentage of the overall actual value of that contract.[83]

Speculators enter the market not expecting delivery but hoping to profit from price changes.[84] They are essential to the market as they take the opposite position of hedgers and provide liquidity to the market.[85] Speculators also protect futures prices from falling too far from prices for the recently delivered physical commodities.[86]

Data can potentially play a role in the commodities futures market because the United State Department of Agriculture

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78. *Id.*

79. *See* Richard D. Friedman, *Stalking the Squeeze: Understanding Commodities Market Manipulation*, 89 MICH. L. REV. 30 (1990) (explaining how the commodity futures markets function); Goodman, *supra* note 69.

80. Goodman, *supra* note 69, at 128 (footnote omitted).

81. *Id* at 129.

82. *See id.* (providing an example of a flour miller purchasing wheat from a farmer).

83. *Id.* ("This initial investment, which must be made by both buyer and seller, represents a security deposit designed to guard against the risk of default by either party . . . . If the market price of a contract changes, the party who is disadvantaged by the change . . . usually will have to make additional margin payments.").

84. *See* Friedman, *supra* note 79, at 33; Goodman, *supra* note 69, at 130–31.

85. *See* Friedman, *supra* note 79; Goodman, *supra* note 69, at 130–31.

86. *See* Friedman, *supra* note 79.

(USDA) publishes crop supply and demand estimates (Reports) on a monthly basis based on acres to be harvested and expected yield per acre.[87] These Reports are used to define the condition of the commodity markets and influence decisions made by farmers, businesses, and the government.[88] The Reports are protected with the upmost secrecy due to their potential influence on market conditions.[89] By utilizing hundreds of farmers' real time yield data produced during harvest and collected by agricultural companies, a trader would be able to make accurate estimates on their own, ahead of the USDA Reports, and profit on the commodities market.[90] The use of USDA Reports to obtain an informational advantage was seen very early in the agricultural futures markets. In 1905, a USDA employee adjusted the blinds in the room where the Reports were prepared to signal the Reports contents, before public release, to cotton speculators outside.[91] These speculators then used this information ahead of the public release to manipulate the cotton markets.[92]

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87. FREDERIC A. VOGEL & GERALD A. BANGE, U.S. DEP'T OF AGRIC., UNDERSTANDING USDA CROP FORECASTS 3 (1999), http://www.nass.usda.gov/Education_and_Outreach/Understanding_Statistics/pub1554.pdf.

88. *Id.*

89. *See* Robert Plummer, *Darkness Falls on USDA Lockup Room*, HIGH PLAINS MIDWEST AGRIC. J. (Jan. 1, 2000, 12:00 AM), http://www.hpj.com/archives/article_97c4ced4-4a75-11e4-ae9d-10604b9f1ff4.html (explaining the high security surrounding the report up until the minute it is released and providing an example of a trader receiving the report just a few minutes early and profiting on the rise in market price caused by the report).

90. *See* Russ Banham, *Who Owns Farmers' Big Data?*, FORBES (July 8, 2014, 2:00 PM), http://www.forbes.com/sites/emc/2014/07/08/who-owns-farmers-big-data/ ("If investors get an idea of how many acres of a particular grain that farmers are planting or if the yields are looking lower or higher than expected, they can go out and buy options, which in turn can have a harmful effect on pricing . . . Prices could adjust downward, causing farms to lose profitability." (quoting Mark Faust)); Dillard, *supra* note 57 ("On a macro level, this aggregated information could be used to make early bets on the futures market, squeezing profits farmers could otherwise secure through contracts.").

91. U.S. COMMODITY FUTURES TRADING COMM'N, A STUDY OF THE NATURE, EXTENT AND EFFECTS OF FUTURES TRADING BY PERSONS POSSESSING MATERIAL NONPUBLIC INFORMATION 39 (Sept. 1984).

92. *See* Plummer, *supra* note 89.

2. Current State of Regulation

The Commodity Futures Trading Commission Act of 1974 established the CFTC and granted the CFTC authority to regulate the futures market and the contracts that are produced in said markets.[93] CFTC describes its mission as to "protect market users and the public from fraud, manipulation, and abusive practices related to the sale of commodity and financial futures and options, and to foster open, competitive, and financially sound futures and option markets."[94] Prior to the financial crisis of 2008, the CFTC had very little power to enforce its mission.[95] The commodities futures market was very similar to the market portrayed in the 1983 film *Trading Places* in which the characters make a fortune by obtaining a report prior to its official release date,[96] and the CFTC had little power to punish the offenders.[97]

The CFTC gained the ability to protect against this type of insider information use with the introduction of the Dodd-Frank Wall Street Reform and Consumer Protection Act.[98] Section 746 of the Act makes it unlawful for a federal employee to use or disseminate information that has not been made public, which could affect the price of a commodity.[99] It also makes it unlawful for any person to steal this non-public information from the Federal Government.[100] Section 753 provides the CFTC the ability to combat manipulation of the

93. *See* 7 U.S.C. § 2(a)(2) (2012).

94. *Mission & Responsibilities*, U.S. COMMODITY FUTURES TRADING COMM'N., http://www.cftc.gov/About/MissionResponsibilities/index.htm (last visited Oct. 31, 2014).

95. *See generally* Rosa M. Abrantes-Metz et al., *Revolution in Manipulation Law: The New CFTC Rules and the Urgent Need for Economic and Empirical Analyses*, 15 U. PA. J. BUS. L. 357, 378 (2013); Jerry W. Markham, *Manipulation of Commodity Futures Prices—The Unprosecutable Crime*, 8 YALE J. ON REG. 281, 283 (1991) ("[U]nder present law the crime of manipulation is virtually unprosecutable, and remedies for those injured by price manipulation are difficult to obtain.").

96. *See* Laura Northrup, *Yes, Commodities Trading Used to Be Exactly Like "Trading Places"*, CONSUMERIST (July 17, 2013), http://consumerist.com/2013/07/17/yes-commodities-trading-used-to-be-exactly-like-trading-places/.

97. *See* Markham, *supra* note 95, at 376.

98. 7 U.S.C. § 6(c) (2012).

99. *Id.*

100. *Id.*

markets and even the attempt to use fraud in the market.[101] This new ability has made charging entities with manipulation an easier task.[102] However, these regulations do not prohibit the use of non-public information in the commodity futures market, absent a pre-existing duty to disclose.[103] In addition, material non-public information obtained through fraud or deception may not be used unless disclosed.[104] "This brings an insider trading rule akin to the securities regime's misappropriation theory to commodities and swaps."[105] Although the rules are tighter, the use of material non-public information, such as precision agriculture data, is not altogether prohibited.

II. ANALYSIS

A. FARMERS SHOULD OWN THEIR DATA

Before it can be decided who *owns* the data, it must be determined what it even means to *own* something.[106] As Professor Ferrell points out, does it mean the "right to possess, right to use, right to enjoy . . . [or the] right to consume or destroy[?]"[107] There is no correct answer for this question as all rights have some likely benefits to farmers and they would not likely be willing to give up one right for another. Because there can be no right answer to what it actually means to *own* something, Professor Ferrell believes the better approach could be to define the rights and responsibilities of the parties as to the data.[108] As the industry begins to define the rights and

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101. 7 U.S.C. § 9 (2012); *see also* Abrantes-Metz et al., *supra* note 95, at 392.

102. *See* John Kemp, *CFTC Shows U.S. Commodity Manipulation Laws Have Teeth*, REUTERS (Aug. 7, 2014), http://www.reuters.com/article/2014/08/05/usa-cftc-arcadia-idUSL6N0QB4CY20140805 (describing a $13 million penalty and restrictions placed on future oil trading by Arcadia).

103. *See* 17 C.F.R. § 180 (2011); U.S. COMMODITY FUTURES TRADING COMM'N, OFFICE OF PUBLIC AFFAIRS, *Q&A— Anti-Manipulation and Anti-Fraud Final Rules*, http://www.cftc.gov/ucm/groups/public/@newsroom/documents/file/amaf_qa_final.pdf (last visited Nov. 1, 2014); Goodman, *supra* note 69, at 133.

104. *Id.*

105. Abrantes-Metz et al., *supra* note 95, at 393–94.

106. Ferrell, *supra* note 64.

107. *Id.*

108. *Id.*

responsibilities of the parties, they must find a balance between protections for individuals and benefits to the industry.[109] If no balance is found, there are two possible results. First, if individuals cannot be protected they will be less likely to provide data excess to companies.[110] Second, if too much protection is provided, it will make the entire process prohibitively expensive for the companies and ultimately the farmers.[111] Both results have the potential to "throw a wrench" in the entire system. These two possible results reflect that the relationship between the two parties is not mutually exclusive, and in order for both sides to benefit, compromises will have to be made.

If it is up to the industry to define the rights and responsibilities of the parties, data ownership has the potential to be a hot bed for litigation. This is due in part to the lack of laws or case precedent discussing who should own the data.[112] Because of the lack of direction, this issue has been left for the industry to decide. In the beginning, the companies were free to build their relationships with farmers through contracts. The terms of these contracts were often unclear and left many farmers exposed to being harmed without knowing the potential risks.[113] While summarizing the confusion, Mark Nelson, Director of Commodities at the Kansas Farm Bureau, stated, "[w]e're signing up for things without knowing what we're giving up."[114] The industry has begun to fight back, however, and has determined what they believe should be included in every contract.[115] The policies are laid out in an

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109. *See* NAT'L RESEARCH COUNCIL, PRECISION AGRICULTURE IN THE 21ST CENTURY: GEOSPATIAL AND INFORMATION TECHNOLOGIES IN CROP MANAGEMENT 109 (1997).

110. *Id.*; *see also* Lina Khan, *Monsanto's Scary New Scheme: Why Does It Really Want All This Data?*, SALON (Dec. 29, 2013, 7:00 PM), http://www.salon.com/2013/12/29/monsantos_scary_new_scheme_why_does_it_really_want_all_this_data/ (explaining that many agricultural companies have stated that farmers own their data and some, such as John Deere, even allow farmers to opt-out of the companies' cloud services).

111. NAT'L RESEARCH COUNCIL, supra note 109, at 109.

112. *See generally* AM. FARM BUREAU FED'N, *supra* note 59 (discussing farmers' opinions and concerns about data privacy); Bunge, *supra* note 7; Charles, *supra* note 57.

113. *See Ponder These Nine, supra* note 64.

114. Khan, *supra* note 110.

115. *See Privacy and Security Principles for Farm Data*, AM. FARM BUREAU FED'N (Nov. 13, 2014), http://www.fb.org/tmp/uploads/Privacy

agreement called the *Privacy and Security Principles for Farm Data*, which was officially released in January of 2015, and includes many major companies and ATPs.[116] This agreement outlines the expectations for handling data and is an effort to make all farmers' contracts with ATPs more uniform.[117] In addition, the agreement creates an ownership principle. It states:

> We believe farmers own information generated on their farming operations. However, it is the responsibility of the farmer to agree upon data use and sharing with the other stakeholders with an economic interest, such as the tenant, landowner, cooperative, owner of the precision agriculture system hardware, and/or ATP etc. The farmer contracting with the ATP is responsible for ensuring that only the data they own or have permission to use is included in the account with the ATP.[118]

As described by Todd Janzen, this principle lays out a three-step process for analyzing data ownership.[119] First, the bottom line is that the farmer owns the data created by his or her operations.[120] Second, when third parties are involved in farm operations, the farmer must reach an agreement with the third-party as to who will own the data.[121] Third, when contracting with ATPs, a farmer has the responsibility to ensure that only data under the farmer's ownership is used.[122] While these three steps are a great principle for data ownership, they are not legally binding and provide little for someone to rely on in court.[123] The farmers must still ensure

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AndSecurityPrinciplesForFarmData.pdf. These principles are a major step for the industry. They provide the basic terms that many companies have agreed to include in the contracts they have with farmers. *Id.* The terms provide: farmers own the data, farmers must give consent for the companies to use the data, how the data will be used must be disclosed, farmers can terminate at any time, companies must get consent before they sell farmers data to third parties. *Id.*

116. *Id.*

117. *Id.*

118. *Id.*

119. Todd Janzen, *A Closer Look at Farm Data Ownership*, LEXISNEXIS LEGAL NEWSROOM—ENVTL. (Feb. 4, 2015, 1:12 PM), http://www.lexisnexis.com/legalnewsroom/environmental/b/environmentalregulation/archive/2015/02/04/a-closer-look-at-farm-data-ownership.aspx.

120. *Id.*

121. *Id.*

122. *Id.*

123. Ashley Newhall, *Big Data: What's the Big Deal?*, MD. RISK MGMT. EDUC. BLOG (Feb. 4, 2016), http://www.aglaw.umd.edu/blog/big-data-whats-the-big-deal.

that the principles are reflected in their contract agreements with ATPs, otherwise they will have little recourse if they give their ownership rights away. While it is the consensus in the industry that farmers should own their data, it is still up in the air how this data should be classified when ownership is not laid out in contracts.[124]

1. How Should Agricultural Data be Protected?

To determine how data should be protected, it needs to first be determined how it should not be protected. Patent law is not a likely means of protection.[125] This is due to the fact that patents only cover the creation or discovery of a process or machine.[126] Data is not invented by the farmers and it is not a new process or machine.[127] These flaws do not allow patent law to be a likely means of protection.[128] Trademark law fails to provide a workable solution, as well.[129] Because the definition of trademark only includes the ability to identify "goods,"[130] data cannot fall within this definition. Lastly, data is not afforded protection under the copyright laws.[131] The definition

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124. Rhonda Brooks, *Who Owns your Farm Data?*, AG WEB (June 12, 2014), http://www.agweb.com/article/who_owns_your_farm_data_NAA_Rhonda_Brooks/ (discussing the lack of legal protections for data ownership and suggesting it is up for debate how it should be classified).

125. 35 U.S.C. § 101 (2012) ("Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.").

126. *Id.*

127. Tiffany Dowell, *Big Data on the Farm (Part II): What Laws Might Protect It?*, *TEX. A&G AGRILIFE EXTENSION* (Sept. 8, 2015), http://agrilife.org/texasaglaw/2015/09/08/big-data-on-the-farm-part-ii-what-laws-might-protect-it/.

128. *Id.*

129. Section 45 of the Lanham Trademark Act defines "trademark" as "any word, name, symbol, or device, or any combination thereof . . . to identify and distinguish his or her goods, including a unique product, from those manufactured or sold by others and to indicate the source of the goods." 15 U.S.C. § 1127 (2012).

130. U.S. PATENT & TRADEMARK OFFICE, PROTECTING YOUR TRADEMARKS—ENHANCING YOUR RIGHTS THROUGH FEDERAL REGISTRATION (2014), http://www.uspto.gov/trademarks/basics/BasicFacts.pdf ("Goods are products, such as bicycles or candles.").

131. 17 U.S.C. § 102 (2012) states,

> [C]opyright protection subsists . . . in original works of authorship fixed in any tangible medium of expression . . . in no case does copyright protection for an original work of authorship extend to any

only allows for "original works of authorship," which data has explicitly been found not to be.[132] However, classifying data as a trade secret is a potential solution.[133] Data falls into the definition of a trade secret,[134] and in order to classify it as a trade secret, one must "maintain its secrecy."[135] The courts have held that the efforts to maintain secrecy must be reasonable under the circumstances and have found that advising employees of the existence of a trade secret or limiting access to it are reasonable efforts.[136] If data can be classified as a trade secret, the farmers can then own it and use contracts and contract law to allow companies to use it.[137]

The contract approach has recently been accepted in the industry and appears to be one of the most practical approaches.[138] By using contract terms, a farmer would be able to control who gets the data produced by his or her machines and what exactly they can do with it. A non-disclosure agreement would provide further protection.[139] These agreements need to clearly identify the data, define who is receiving it, and what they can do with it.[140] The agreement

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> idea, procedure, process, system, method of operation, concept, principle, or discovery, regardless of the form in which it is described, explained, illustrated, or embodied in such work.

132. Fiest Publ'ns, Inc. v. Rural Tel. Serv. Co., 499 U.S. 340, 348 (1991) (holding that individual facts are not protected by copyright).

133. *See* NAT'L RESEARCH COUNCIL, *supra* note 109, 109–10; Ferrell, *supra* note 64, at 23 (discussing how trade secret could be a potential classification for data ownership). Because trade secret is a function of state law, I will use the Uniform Trade Secrets Act (UNIF. L. COMMISSION, 1985).

134. The Uniform Trade Secrets Act § 1(4) (UNIF. L. COMMISSION, 1985) defines a trade secret as,

> [I]nformation, including a formula, pattern, compilation, program, device, method, technique, or process, that: (i) derives independent economic value, actual or potential, from not being generally known to, and not being readily ascertainable by proper means by, other persons who can obtain economic value from its disclosure or use, and (ii) is the subject of efforts that are reasonable under the circumstances to maintain its secrecy.

135. *Id.*

136. *See* The Uniform Trade Secrets Act § 1 cmt. (1985); E. I. Du Pont de Nemours & Co. v. Christopher, 431 F.2d 1012, 1016–17 (1970).

137. *See* Ferrell, *supra* note 64, at 23.

138. *See* AM. FARM BUREAU FED'N, *supra* note 115. (discussing that farmers own the data and have the responsibilities of contracting with companies for the use of the data).

139. *See* Ferrell, *supra* note 64, at 35.

140. *Id.*

also needs to provide what must be done to protect the data and the remedies for a breach.[141] Classifying data as a trade secret will provide farmers with another layer of protection.[142] As a trade secret, the data will have its own standing and will not have to rely on industry policies.[143] However, as industry policies begin to gain more traction and become the standard, a farmer will have more bargaining power when dealing with companies that refuse to accept them. A farmer can simply take his data to a company that will incorporate the industry policies. All of these new protections would be a great step in providing clarity to the often-murky area of data ownership.

If it is conclusive that farmers own the data, they will be able to do with it as they please.[144] The companies will become more limited in their use of the data if they are contractually bound to certain terms.[145] After the recent release of the *Privacy And Security Principles For Farm Data* by the American Farm Bureau Federation, which included a principle that companies cannot "use the data for unlawful or anticompetitive activities, such as a prohibition on the use of farm data by the ATP to speculate in commodity markets,"[146] there have been statements that such activities would be illegal anyway.[147] This is a relief to farmers who are concerned their data will be used in the commodities markets.[148] However, as

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141. *Id.* This list is not exclusive, as there are many other contract terms that should be included in the non-disclosure agreement, but are outside of the relevant scope.

142. *See* Brooks, *supra* note 124 (describing that precision agriculture data is still in its infancy and every legal protection that can be provided should be).

143. *See* MINN. STAT. § 325C (2014) (providing for a cause of action based on the misappropriation of a trade secret).

144. *See* AM. FARM BUREAU FED'N, *supra* note 115 (discussing how farmers can freely transfer their data between companies or select various services).

145. *Id.*

146. *Id.*

147. Dan Charles, *Big Data Companies Agree: Farmers Should Own Their Information*, NPR: THE SALT (Nov. 16, 2014, 6:28 AM), http://www.npr.org/blogs/thesalt/2014/11/16/364115200/big-data-companies-agree-farmers-should-own-their-information (discussing the prohibition on using information to speculate in commodity markets, "[t]he companies . . . have concluded that such activities would be illegal.").

148. *Data Privacy Survey Final Results*, AM. FARM BUREAU FED'N (2014), http://www.fb.org/tmp/uploads/AFBF_Final_Big_Data_Survey_Highlights_9-8-2014.pdf ("Over 75% of farmers are concerned that their farm data could be used by a company or third party for market-sensitive commercial activities.").

set forth in the following section, such activities are arguably entirely legal.

B. DATA IS LEGALLY ALLOWED TO BE USED IN THE COMMODITY MARKET

1. Precision Agriculture Data is No Different Than Other Non-Public Information

"Unlike the federal securities laws, the Commodity Exchange Act does not contain a broad proscription against the use of 'inside information.'"[149] It may, however, prohibit the use of material non-public information in a breach of a pre-existing duty.[150] This pre-existing duty is the key to using non-public data in the commodities market.

Seeking to increase its authority, the CFTC implemented Rule 180, which broadly prohibits "fraud and manipulation in connection with any swap, or contract of sale of any commodity in interstate commerce, or contract for future delivery on or subject to the rules of any registered entity."[151] Even under the expanded scope of Rule 180, it is clear that a company which produces a commodity does not need to publicize relevant information on its production and can trade on this production information.[152] Similarly, a farmer could use his yield data from a wheat crop to trade on the wheat commodity market. Obviously, if the farmer does not have a large operation, his own data is not too helpful because it is only a small sample. But if it is a large operation, a correlation could be found. What Rule 180 would prohibit is an employee of said company using the company's information to trade on the commodities market in violation of a confidentiality agreement in the employee's contract.[153] Rule 180 also does not change the current practices of private companies that produce commodity forecasts. These

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149. 13A JERRY W. MARKHAM, COMMODITIES REGULATION: FRAUD, MANIPULATION & OTHER CLAIMS § 18:8 74 (2014).

150. 17 C.F.R. § 180 (2014).

151. *Id.*

152. *See Insider Trading in Commodities and the Eddie Murphy Rule*, CROW & CUSHING (Feb. 2011), http://ccrow.com/newsletters/insider-trading-in-commodities-and-the-eddie-murphy-rule/ (explaining that an oil company can use information about its own production to trade in the commodities market and has no duty to disclose this information).

153. 17 C.F.R. § 180 (discussing trading on information in breach of a pre-exiting duty the employer).

companies are producing substantially the same information as the USDA Reports, but can sell it or freely disclose it to the public. This information too would not be prohibited from being used to trade in the commodities market, absent a pre-existing duty.[154]

Again, a pre-existing duty is key for agricultural data companies. If the agreement between the agricultural company and the farmer explicitly prohibits the company's use, or transfer to another company for use, of data generated by the farmer the company could not transfer or use the data in the futures market. The company could be liable for a breach of contract claim, a violation of Rule 180, and a misappropriation of trade secrets claim.[155] However, if the agreement between the parties does not prohibit such activity and states that once the data is aggregated with other data the company owns it, they would be free to use the data however they please.[156] Because there would be no pre-existing duty, there would be no breach, and the data could be freely used in the commodities future market. Due to the contract standards that many companies in the industry have recently agreed to follow, the likelihood of a company like Monsanto using the data in the commodities future market has decreased. This decreased likelihood will only exist if the companies actually follow the industry standards, as there are no laws that require them to do so.

2. Does it even matter that it is legal?

It can be argued on both sides whether companies should be allowed to use data that, in its original form, is produced by farmers. "[F]armers fret that Wall Street traders could use the data to make bets on futures contracts. If such bets push futures-contract prices lower early in the growing season, it might squeeze the profits farmers otherwise could lock in for

154. *But see* U.S. COMMODITY FUTURES TRADING COMM'N, *supra* note 91, at 89 ("This study provides no significant evidence that insider trading by employees of firms related to the cash markets or firms issuing reports that might affect those markets exists or that it has harmed futures markets."). Although dated, this report found that this was not happening very often and if it was, there was no harm to the market.

155. This depends on if agricultural data will be classified as a trade secret.

156. In addition, the company could not induce the contract through fraud or deception. *See* 17 C.F.R. § 180 (2014).

their crops by selling futures."[157] "There is potential for market distortion . . . [if data is available to traders], it could destabilize markets, make them more volatile."[158] This explains the main reason why farmers will not be compelled to provide their data to companies knowing it could be used in the commodities market, even if it is legal to do so. Since purchasing farmers' data to use in the commodities futures market has not yet been done in practice it is difficult to know if the likelihood of lower profits for farmers could be offset by contracting for high premiums to be paid in order to obtain their data.[159] However, even if the farmers were paid a high premium, at some point it would become uneconomical for the companies to do so, as the profit gained would not overcome the losses incurred by paying for the data.[160] If farmers are not willing to provide their data knowing that it will be used in the commodities markets, there is no legal way companies could obtain this information directly from the farmer that wouldn't be in breach of a pre-existing duty, which is a violation of Rule 180.[161]

Although it is not likely that farmers will provide this information due to the potential economic losses,[162] there are a few ways the CFTC could regulate this type of practice. Again, if agricultural producers are self-regulating, there will be no need for the CFTC to change the regulations and expend unnecessary time and money on something that is already

157. Bunge, *supra* note 7.

158. Khan, *supra* note 110 (quoting Kyle Cline, policy advisor for national government relations at the Indiana Farm Bureau).

159. The agricultural industry will not have to wait much longer to judge the practicality as one company, Farmobile, plans to introduce a cloud data exchange where farmers can store their data and choose to sell it to interested parties. Farmobile does not plan to exclude traders from buying the data. Revenue from the data sale would be split equally between the farmer and Farmobile. *See* Jacob Bunge, *Farm Startup Seeks to Profit from Harvesting Big Data*, WALL ST. J. (Nov. 13, 2014, 2:02 PM), http://blogs.wsj.com/corporate-intelligence/2014/11/13/farm-startup-seeks-to-profit-from-harvesting-big-data/.

160. *But see* Bunge, *supra* note 159 (discussing how selling data in small bits could potentially be viable through a middleman instead of selling all data directly to a large company such as John Deere or Monsanto, as farmers would be able to pick and choose what, how much, and who they sell their data to).

161. 17 C.F.R. § 180 (2014).

162. *But see* Bunge, *supra* note 159.

working. In *Chiarella v. United States*,[163] Chief Justice Burger's dissent argued that a far-reaching misappropriation theory should apply to Section 10(b) and rule 10b-5[164] which govern the use of inside information in the securities market.[165] If the CFTC were to apply this idea to commodities market, it could have a major impact on the use of material non-public information while trading commodities. Chief Justice Burger argued that liability should be placed on any person who traded securities using misappropriated information, regardless of whether it involved a breach of a duty to the source of the information.[166] The Chief Justice went on to define misappropriation as any unlawful acquisition of information.[167] Justice Brennan wanted to define misappropriation even more broadly, arguing it should include conversion of information that was obtained legally for personal profit as well as information obtain illegally.[168] If the CFTC wanted to prohibit all insider trading, they could adopt Justice Brennan's definition to apply in commodities market, which would eliminate the requirement that there be a breach of a pre-existing duty in order for there to be a violation of Rule 180. By using non-public information, even acquired legally, to trade in futures without the consent of the information source would be considered a misappropriation and could potentially be a violation.

This broad prohibition would make it much easier for the CFTC to regulate, as it would not have to determine if there was first, a pre-existing duty and second, a breach of this duty. However, it is unclear if this would apply to a company as a whole. Chief Justice Burger clarified that non-public information acquired through experience, hard work, and skill would not have to be disclosed before one could trade on such information.[169] It would have to be determined if commodities forecasting companies would be able to trade on such

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163. 445 U.S. 222, 230 (1980) (holding that the duty to disclose inside information arose when there was a pre-existing fiduciary duty between the two parties buying or selling stocks).

164. 15 U.S.C. § 78j (2012); 17 C.F.R. § 240.10b-5 (2014).

165. *Chiarella*, 445 U.S at 240 (Burger, J., dissenting).

166. *Id.*

167. *Id.*

168. *Id.* at 239.

169. *Id.* at 240.

information based on their acquisition of the information through their experience and skill.[170] This limitation would also not apply if the company contracted with the farmer to allow them to use the information. Because the information would be acquired legally and with the consent of the information source, it would not be considered misappropriated information.

With the passage of Rule 180 in 2011, it is not likely that the CFTC will make any sweeping changes in the near future. The CFTC had the opportunity to do so in 2011, but refrained from placing all-out bans on insider trading.[171] If insider trading using agricultural data grows into a major issue, the CFTC will need to seriously consider whether it needs to assess how it handles such insider trading activities.

III. CONCLUSION

This Note has sought to explain the legalities of using data produced by precision agriculture in the futures commodities market. Part I explained, (1) what precision agriculture is; (2) the issues precision agriculture raises; and (3) the commodities market. Part II explored how farmers should own the agricultural data they produce and determined that agricultural data can be legally used in the commodities markets.

Precision agriculture has the potential to forever change the way our food is produced by making production much more efficient and timely. This change is necessary as we move into a period where the demand for food will be at its highest levels and the cost of inputs will continue to rise. Farmers will need to rely on new technologies in order to squeeze every bushel out of their crops and maximize yields in order to profit from their operations. However, with new technologies come new legal issues.

At this fragile point in time, companies are not currently using agricultural data on the commodities futures markets. However, it will eventually happen. Whether the companies are directly using the information or third parties are contracting

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170. It would likely be found that they could trade on such information as Chief Justice Burger wrote that companies should be rewarded for "astute forecasting." *Id.*

171. *See* 17 C.F.R. § 180 (2014).

with the farmers, the allure of big profits will be too tempting for companies not to use agricultural data in the commodities markets. The precision agriculture industry is well on its way to finding a balanced approach to the issues of data ownership and the use of this data. The leadership that has emerged in finding this balance will be key as many more issues are sure to emerge as agricultural technology continues to advance.