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# Wes Jackson and The Land Institute: Relevancy Within Sustainable Agriculture

Submitted by: Darren Knapp

Agriculture has been the main form of human food production for over 10,000 years. For the most part, it has changed very little in concept since its inception. Humans select a patch of land, clear it of any living organisms and plant it to their desired crop. Although this conventional form of agriculture has helped the human population grow and expand, the recent industrialization of agriculture has had severe effects on nature, our society, and the farmer himself. Wes Jackson and his fellow researchers at the Land Institute in Salina, Kansas have devoted their time and energy for the past 30 years to developing a form of agriculture that they hope will revolutionize the way humans produce food and hopefully resolve these issues created by conventional and industrial agriculture. This “natural systems agriculture” is a form of sustainable agriculture based around the cultivation and harvesting of perennial polycultures. Those at the Land Institute believe this is the best way for farming and food production to work with nature, not against it. When initially viewing this research one may be led to believe that natural systems agriculture is a simple pipe dream of a former university professor. Upon looking further into this matter however, it becomes clear that natural systems agriculture and the activities and studies associated with it at the Land Institute were (and still are) much more than this. The study of perennial polycultures has received substantial monetary support from government funded agencies along with respect and usage of their research and information from those within the agricultural community. Through these sources it becomes evident that the Land Institute is not merely a small group of researchers trying to develop a radical form of agriculture, but a

serious and relevant force within the field of sustainable agriculture. The work done at the Land Institute has not only received attention from the government and prominent researchers, it created a whole new field of agricultural research and, along with it, the hope for a more sustainable future.

If one is to explore this topic, it is imperative to answer several questions pertaining to the development and success of the Land Institute over the past thirty years. In order to reveal the purpose and goals that the Land Institute has been working on since the late 1970s, it is important to ask questions such as: What is the purpose of the Land Institute? What are the goals of the Land Institute? Considering these questions, have they accomplished their goals? What proves or disproves this? If they have, how have they accomplished their goals and aims? When looking at the practicality of the Land Institute over the years one must ask, how much support this form of agriculture has received from government funded research. Relating to this, has the specific research at the Land Institute received any form of monetary support from the USDA or other government funded agencies? Has the research at the Land Institute received any notice from other researchers in the sustainable agriculture field over the past thirty years? Has the Land Institute developed a workable prototype? By exploring these questions and through the use of various government documents, archived materials from the Land Institute and works done by Land Institute researchers, the relevance and importance of the Land Institute in the field of sustainable agriculture will become apparent.

In order to reveal the relevance of the Land Institute in the field of sustainable

agriculture and its work on perennial polycultures, it is important to look at the basics of the Land Institute, their form of agriculture and the thoughts associated with it. Therefore the first part of this paper will look at the development and formation of the Land Institute, its purpose, and the research done there. Following this, this section will also contain the basic information related to perennial polycultures. It will be important to look at perennial polycultures specifically how they work, their benefits, their shortcomings and their overall ability to become a viable form of agriculture. By establishing the basic information related to the Land Institute and its research, further elaboration on this subject will be possible through the use of government documents and other primary sources. Therefore, the following section will be devoted to viewing various research, government, and Land Institute documents. Within this section, the support, relevance and accomplishments of the Land Institute and its form of agriculture will be displayed.

The foundations of the Land Institute were a development of Wes Jackson's experiences as a teacher, professor and coach prior to the founding of the Land Institute. Following a short career as a professor at University of California at Sacramento, Jackson decided to return "to his native state to form his own research and training facility in 1976."<sup>clxiii</sup> One major reason for this decision was that since "students seemed to be given more to minimal compliance than spontaneous elaboration" when dealing with subject matter in the university setting, he would create an institution that had "no grading system and no tests" but instead would have students "collaborate on some common problems."<sup>clxiv</sup> This form of education would require students to "weed and water, pollinate and harvest, and gather the data and analyze the data and have it available for publication."<sup>clxv</sup> While students are doing research work associated with their topic, "[the students] are all cooperating on these different experiments so the pressure is coming from the whole group" compared "to the industrial model" where they "only answer [to the teacher]."<sup>clxvi</sup> Jackson's form of education in

itself was revolutionary, for it "gives no certificate at the Land [Institute]" but instead "enlarges the intellectual life and ties it to the real physical world where they are doing work."<sup>clxvii</sup> This out-of-the-box thinking propelled Jackson and his institute from a budget of "nine or ten thousand dollars" in 1976 to close "to half a million dollars" in 1990."<sup>clxviii</sup> It has also led to major discoveries and breakthroughs in the field of sustainable agriculture.

When looking at the Land Institute it is also important to discover the research purpose for this place of learning. Prior to his founding of the Land Institute in 1976, Jackson came across a statistic that displayed soil erosion rates that "were extremely high" and it seemed to him that "we ought to be doing [a] better [job of controlling soil erosion]."<sup>clxix</sup> Jackson came to find that "soil erosion was right at the core" of "the problem of agriculture rather than problems in agriculture."<sup>clxx</sup> Jackson found that throughout history, this loss of soil has led to the demise of many powerful ancient civilizations. It was his thought that "unless the pattern of agriculture is changed, our cities of this region will stand as mute as those near the Great Wall of China, along the Fertile Crescent or the northern region of Egypt which once hosted grain fields that supplied the empire of ancient Rome."<sup>clxxi</sup> These thoughts propelled Jackson to rethink how we practice agriculture in the United States. This rethinking of agriculture is one of the main purposes of creating the Land Institute, for it must construct an agriculture that instead of promoting soil erosion, prevented it. But how could he and his cohorts do this? Jackson found that "that the best agriculture for any region is the one that best mimics the region's natural ecosystems."<sup>clxxii</sup> It was obvious to Jackson that "the monoculture of annuals leads to soil erosion" and that the "polyculture of perennials" with their "more elaborate root system" provided "an excellent soil binder."<sup>clxxiii</sup> Thus began the Land Institute's mission to develop a perennial polyculture that could be harvested and used for human consumption, just like the annual monocultures it was attempting to replace. Jackson and the Land Institute have been "working to create, in effect, a

domesticated prairie.<sup>clxxiv</sup> They needed to “create prairielike grain fields” that implemented “combinations [Jackson] called herbaceous perennial seed-producing polycultures.”<sup>clxxv</sup> This mission that the Land Institute implemented contained several goals within it. In order to allow the development of perennial polycultures, the Land Institute should be an incubator of sorts that, through its educational properties, creates researchers, scientists and advocates that will continue the study of perennial polycultures after their short stay at the Land Institute. From here “the tremendous potential of the already established land grant, [State Agricultural Experimental Stations, and [the United States Department of Agriculture’s] research network must be tapped” because “it is necessary that research go beyond the current approach of merely tinkering with monocultures and into new territory of assembling agricultural analogs of natural ecosystems.”<sup>clxxvi</sup> It is hopeful that these former workers will go on to work in land grant universities and other research orientated government funded institutions. By doing so it is hopeful that the thoughts attached to perennial polycultures will be multiplied through the educational and research systems. Also in order to further develop the proliferation of this form of sustainable agriculture, government funds and support should be achieved. The obtaining of these goals will be further addressed in a later section of this paper.

When looking at perennial polycultures, it important to address the basics attributed to these types of plants. First it is important to dissect the two words that make up this integral concept. Perennial means that this type of plant is capable of being harvested multiple times in a growing season and that it is capable of making it through the harsher season of winter alive. The following season the process repeats. Polyculture means that within a field there is a variety of different plant species. For example, a hay field which consists of different species of grasses and legumes such as timothy, clover and fescue is a polyculture because of the variety of species within the field. This field is also perennial because it can be harvested more than once a year and is able to go dormant and

winterize itself which allows it be used again the following year. This type of crop system may only have to be plowed and replanted every five years or so which, along with the strong root systems these plants have, prevents substantial soil erosion. These plants also tend to be polycarpic which means they “generally don’t allocate much energy to seeds” but their “roots have most of the energy.”<sup>clxxvii</sup> This provides for a very strong and durable plant but usually a poor food (seed) producing organism.

Considering the basics of the perennial polycultures, it is important to look at the advantages that Wes Jackson and the Land Institute associate with them. As stated before, these plants are very reliable in preventing soil erosion. Their strong root systems and the density with which they are planted in a field allows for this. They are also useful because they provide several harvests a year and only have to be replanted every five years or so. When compared to a monoculture of annuals (such as a corn field), there are several advantages to the perennial polyculture. One of the main advantages of perennial polycultures (as compared to annual monocultures) is their yield advantages. Considering the fact that “farmers throughout the world choose to use polycultures” because they “frequently yield [more harvest] from a given area” than “an area sown in separate patches of monocultures”, it becomes apparent that this type of agriculture was not a new concept when Jackson decided to implement it.<sup>clxxviii</sup> The difference between Jackson’s model and what farmers were already doing is that he wanted to feed millions of people with his form. Perennial polycultures are also much more effective in preventing soil loss considering most annual monocultures promote soil erosion through their weak root systems and row crop style of planting. Annual monocultures require replanting every year which leads to more soil erosion while perennial polycultures on the other hand are replanted only every five years or so. Not only do polycultures prevent soil erosion, they require little or no use of chemical fertilizers and pesticides. Matt Liebman stated that “farmers often use polycultures without applying fertilizers or pesticides.”<sup>clxxix</sup> One major reason for this is that

“insect pests are frequently less abundant in polycultures than in monoculture” because “insect pests, particularly species with a narrow host range, have greater difficulty in locating and remaining upon host plants.”<sup>clxxx</sup> This is because these host plant are not as abundant as they would be in a monoculture. Also, polycultures introduce a variety of naturally predatory insects that would keep pests population at a low level. Chemical herbicides are also a non factor in the usage of perennial polycultures because when “compared to monoculture cropping systems, polycultures appear to offer many options for improving weed control with less labor, fewer chemicals and lower costs.”<sup>clxxxi</sup> This benefit is amplified by the fact that “pesticides, being petrochemical products will become increasingly expensive in terms of both money and energy consumption in the agricultural budget.”<sup>clxxxii</sup> Because perennial polycultures do not require chemicals to be productive, they can produce a healthier food stuff environmentally and for those who consume them. They will also demand less fossil fuel usage because of this lack of chemical usage and because high energy till-work is needed only every few years.

As it can be seen, this type of agriculture has significant benefits over the use of annual monoculture (industrial) agriculture. If this is so, then why are we still practicing agriculture that could lead to our eventual demise? Wes Jackson pointed out that “we have a psyche predisposed to take from the environment with little thought for the future, especially when the connection between the product and the source is separated by numerous links.”<sup>clxxxiii</sup> But with our modern capabilities it is possible to look beyond the short term of survival because of advancements in thought and science. This is where within perennial polycultures, Jackson saw a system that could work with nature, not against it and thus effectively solve this problem of modern day agriculture. Jackson states that the “success in herbaceous perennial crop development would lead to a reduction in resource depletion for both fossil fuels and germplasm and would reduce pollution of our waters, soil and ultimately ourselves.”<sup>clxxxiv</sup> This would reduce the use of fossil fuels for through the

elimination of every-year tillage. Because perennial polycultures are only planted once in a cycle of about 20-25 years, this would reduce the need for tillage practices such as plowing, disking, and planting that require a high amount of fuel to conduct. Germplasm, which is variety of genetic information available to a plant species, the Although this system presents abounding benefits to the environment and ourselves, it also provided significant obstacles to overcome in order to make it a reality.

One of the major problems associated with this agriculture is the polycarpic problem which was spelled out earlier in this paper. Because most perennial polycultures are polycarpic, they “generally don’t allocate much energy to seeds”, but instead they divert their energy to their roots.<sup>clxxxv</sup> This results in a poor seed (the edible part of the plant) producing plant that has little use in human diets. This physiological barrier is the biggest hurdle that the Land Institute had to overcome in their research and development of the seed producing perennial polyculture. Another problem associated with this agriculture is a problem that Jackson readily addressed in an essay titled “The Perennial Problem.” Jackson stated that “it will likely require 50 to 100 years before moderate success is achieved” and that “payoff on this research will be a long time coming.”<sup>clxxxvi</sup> The time that this research will require, as Jackson was fully aware of, is substantial. These problems associated to the time required to develop this type of agriculture could produce for the Land Institute. Interest in this topic could slowly decline in those who supply money to the Land Institute if no significant changes were developed. This lack of money would prove detrimental to the Land Institute. Also the sliding lack of interest due to the time required to develop this type of agriculture could provide fewer and fewer interns, scientists and workers at the Land Institute which are essentially the life blood of this operation. Another problem associated with this type of agriculture is that the machinery to harvest this type of crop did not exist at the time. If this machinery does not exist then the plausibility of it being harvested quickly is thrown out the window. If this machinery does

not exist that it would be impossible for Jackson to achieve his aim of feeding the masses with the seeds of his perennial polycultures.

It is important to consider that most of these developments, discoveries, and foundations were explored and considered twenty five to thirty years ago. In order to reveal the legitimacy of the Land Institute and the practicality of seed producing perennial polycultures it is important to look beyond what Wes Jackson and Land Institute workers say in their books and pamphlets. The sources that display the relevance and practicality on this subject range from government documents to archived Land Institute fiscal papers to modern day studies of perennial polycultures. The key question that must be answered in this research is not how perennial polycultures work (although very interesting) nor how Wes Jackson founded the Land Institute but what have they done since their inception and how relevant and legitimate their work has been.

In order to investigate the relevancy of the Land Institute, one must look at what the most powerful and respected agency related to agriculture has to do with the Land Institute. The USDA (United States Department of Agriculture) is basically responsible for making sure that agriculture in the United States is regulated, developed and sustained to make sure food is always available to our nation. Considering this, if the USDA were to pay any attention to the Land Institute and their work on perennial polycultures, it would show some interest in this type of agriculture. In the late 1980's and early 1990's the USDA came up with an agency whose chief purpose was to allocate government funds towards the development and research in sustainable agriculture and its associated practices. Funded through the 1985 Food Security Act (FSA), the Low Input Sustainable Agriculture Program (LISA) was created in 1987 and made "sustainable agriculture a household word on the farm and funded numerous research, demonstration, and educational projects involved in sustainable agriculture."<sup>clxxxvii</sup> It is important to note that LISA's name was eventually changed to Sustainable Agriculture Research and Education program (SARE). This

program was aimed at making sure that the sustainable agriculture movement received the funds it needed to ensure that the sector of agriculture was always being developed and researched. When looking at the amount of participants in LISA, "the USDA's Low-Input Sustainable Agriculture (LISA) competitive grants program funded some 90 projects in its first three years (1988-1990)" and it can be noted that there were many researchers and workers benefitting from this funding.<sup>clxxxviii</sup> Considering this, it is important to think about the Land Institute's involvement in LISA and SARE and how much attention the institute received. The amount of attention received by these USDA funded agencies can be measured in the amount of money they contributed to a research project. When looking at a 1990 through 1993 Land Institute research proposal titled "Development of a Perennial Seed Crop Agriculture Modeled on the Prairie Ecosystem" it becomes evident that the Land Institute received substantial LISA funding. In 1990-1991 the budget proposed that LISA would provide "\$46,434 in personal services [employee wages and benefits]", "\$12,500 in non-personal services [travel, supply and equipment expenses]" for a total of \$58,843.<sup>clxxxix</sup> In 1991-1992 the Land Institute received "\$48,660 in personal services" and "\$8,000 in non-personal services" for a total of \$56,660 in LISA funding.<sup>cx</sup> In 1992-1993 the Land Institute received "\$51,087 in personal expenses" and "\$7,300 in non-personal expenses" for a total of 58,387 in LISA funding.<sup>cxci</sup> So from 1990 to 1993 the Land Institute received over 173,000 dollars in government-provided, USDA-approved LISA funding. If this amount of money was considered in the monetary values of 2009 it would be worth over 285,000 dollars. This substantial amount of money can effectively show the amount of attention the LISA program and thus the USDA paid to Land Institute only 15 years after its establishment. Also one must consider the fact that this research funding was going directly to research on perennial polycultures. If the USDA was providing funds towards the development of this form of agriculture, it must have seen some value and potential within it.

In more recent times the Land Institute and its researchers have received additional funding from the USDA through the SARE program. In 2006 the SARE provided to the Land Institute a sum of \$70,188 for research on “Pasture-wheat intercropping for post-contract Conservation Reserve Program Lands.”<sup>cxcii</sup> The purpose of this research was to develop a viable pasture-wheat intercropping (PWI) system with potential for managing post-contract Conservation Reserve Program (CRP) lands and enhancing grazing systems.”<sup>cxci</sup> Although not directly related to perennial polycultures, this research deals with polycultures for it is a “pasture-wheat” crop system that intertwines pasture grasses with wheat. Also it can be seen that the USDA is still providing funds to the Land Institute for their research in the sustainable agriculture field. Once again, the legitimacy of the Land Institute as a viable place of learning and change is supported through the amount of funding the USDA is providing. Also in 2006 the SARE program provided \$134,765 to the Land Institute for research in “Domesticating Intermediate Wheatgrass for Sustainable Grain Production.”<sup>cxciiv</sup> Once again it can be seen that the USDA provided substantial funding to the Land Institute for their work in sustainable agriculture. This funding not only legitimizes the establishment of the Land Institute, it reveals a place of learning that through the USDA’s eyes is a place that is worth the investment needs that they require to operate and research. These funds allocated to the Land Institute, be it LISA or SARE, also disclose a funding relationship that continued from 1990 to, at the earliest, 2006. This continuity of funding from the U.S. government adds to the relevance and importance of the Land Institute in the field of sustainable agriculture.

When looking at all these fiscal reports it is important to consider that when looking at the big picture of government funding agriculture, these various amounts of money are nominal compared to the overall SARE budget and the USDA budget in general. In 2009 the USDA provided the SARE program with 19 million dollars.<sup>cxcv</sup> Although this number would be deflated 10-20 years ago, it can be seen that

what the Land Institute has received can be considered a drop in the bucket compared to the funding expense allowed by the SARE. When looking at the total research budget for 2009 it can be seen that 2.3 billion dollars was spent towards research.<sup>cxcvi</sup> The majority of the research would be spent on major crops, not sustainable agriculture. This should not take away from the relevancy and legitimacy of the Land Institute in sustainable agriculture. Although small in comparison to the funding of major crop studies, the fact that USDA provided any money to this radical form of agriculture reveals its relevancy in the eyes of the USDA. If this relevancy was not seen, then would the USDA simply throw money at it for no reason? Highly doubtful. Although funding is what allows the Land Institute to operate and continue research, it is important to look at how this place of learning is viewed within the field of sustainable agriculture.

In order to view the standing of the Land Institute and their research and work on perennial polycultures one must look at how other professionals in the field of sustainable agriculture use, view and cite the Land Institute. The SARE funded research project titled “Management of Perennial Wheat as a Sustainable Alternative Cropping System in the Pacific Northwest” is one of many examples of researchers implementing the Land Institutes work on perennials.<sup>cxcvii</sup> In this 2003 research project, researchers state that they “have released perennial lines [of wheat] to researchers at Kansas State University and The Land Institute in Salinas, Kansas” in order to further their development of a perennial wheat crop.<sup>cxcviii</sup> This tid bit of information provides several thoughts. One thought is that the Land Institute must be considered one of the top researchers on perennials in the nation for this research group selected them to test and evaluate their work on perennial wheat. Another thought is that the Land Institute is being regarded as highly as Kansas State is in this area of sustainable agriculture because they were both selected to further this research. Another instance of perennial researchers using the Land Institute is when a 2002 SARE funded research titled “Native Perennial Legumes: New Species

for Grazing Systems” cites the work of the Land Institute and their work with the Illinois bundleflower.<sup>cxciix</sup> In this study researchers state that “the Land Institute of Salina, Kansas, has conducted research with this plant [Illinois bundleflower] and considers it to have great potential as a perennial grain crop for human consumption.”<sup>cc</sup> Here we can see the Land Institutes’ previous research work providing the background knowledge that allows this study to elaborate on their study of the potential of the Illinois bundleflower to be a possible legume in grazing prairies. In another SARE funded project, Wes Jackson and other Land Institute employees partake in the formation of the “Midwest Alternative Agriculture Education Network” which is designed to provide “midwestern farmers with accessible, farmer-centered information and educational programs on alternative agriculture systems.”<sup>ccii</sup> This 1994 project included Wes Jackson as a member of a board which purpose was “marketing grass fed beef” while Land Institute employee Tom Mulhern was part of group that promoted the development of the Heartland Sustainable Agriculture Network.”<sup>cciii</sup> The inclusion of the Land Institute members in a vital project such as this provides the thought that this organization (the Land Institute) was well known enough to be included in the formation of this sustainable agriculture education network.

One important thing to note about all of these research projects is that they deal with the use of perennials polycultures in agriculture and sustainable agriculture. This fact is important because it displays the spread of this form of agriculture from the Land Institute to other research organizations. All of these projects were conducted either by universities throughout the United States (Washington State University and University of Minnesota, respectively) or by respected research foundations such as the Land Stewardship project. Again when questioning the relevancy of the Land Institute, would these researchers spend valuable time and money on researching a type of agriculture that they thought was unworkable? Once again this is highly doubtful and again proves the legitimacy of the Land Institute and their research work. Considering

this, it is important to go back to the original goals of the Land Institute. One goal was to penetrate the land grant system and university system with the thoughts of the Land Institute. Here it can be clearly seen that the Land Institute has been successful in achieving the spread of their study to these places of learning. Another goal of the Land Institute was to place former employees and interns in land grant institutions and other important research centers.

There are several instances of former employees and students leaving the Land Institute and continuing their work within the field of sustainable agriculture. While they may have left the Land Institute, they still work on the problems that perennial polycultures provide. By former employees and students continuing their work outside of the Land Institute they are spreading the knowledge and thoughts associated with perennial polycultures and thus hopefully making this form of sustainable agriculture more prominent. In one case “Pat Dreese, a former Land [Institute] student . . . earned his Ph.D. from the Kansas State University Grain Science and Industry Department” and continued his work with perennial polycultures by receiving “collected [gamagrass] seed” from the Land Institute and “found gamagrass grain processing relatively easy”<sup>cciii</sup> Although the production of gamagrass as a food stuff is not important in this essay, the fact that a student went on to receive his Ph.D. from a major land grant institution and continue work on perennial polycultures reveals the obtainment of the Land’s goal of producing scholars who stick with this study and contribute to it. Another example is a former employee of the Land Institute, James Henson, who went on to work at the Kerr Center for Sustainable Agriculture. In this example Henson, who “held a post doctorate at the Land and is currently employed at the Kerr Center for Sustainable Agriculture. . . established from seed 77 different accessions of gamagrass from the USDA Experiment Station in Woodward, Kansas”<sup>cciv</sup> This example once again shows a previous Land Institute employee reaching out to another center for sustainable agriculture and continuing his work on perennial polycultures. To this extent it can be said that the Land



Institute achieved its goal of placing former employees and students in important and powerful universities and research centers in order to proliferate the existence of perennial polyculture studies.

As we have seen, the Land Institute was successful in obtaining several of its goals. It was able to place former employees and students in land grant institutions and prominent sustainable agriculture research centers. It was also able to receive a substantial amount of funding from the USDA through the SARE and LISA programs, legitimizing and validating the research done at the Land Institute. It also was able to spread the idea of this form of sustainable agriculture through the agricultural research community and thus proliferate the study of this type of agriculture. Although the Land Institute was able to achieve these significant goals one must wonder if anything has been produced by them that could be considered the “fruits of their labor.” This past July Wes Jackson, his good friend and fellow agrarian Wendell Berry and fellow sustainable agriculture researcher Fred Kirschenmann made a trip to Washington D.C. to propose to lawmakers their “50 year farm bill.”<sup>ccv</sup> This bill was an alternative proposal to the typical farm bill and would implement various changes within the field of agriculture. Within this farm bill the authors state that they have developed Kernza, a “perennial relative of wheat... [which has] overall quality is superior to that of annual wheat”<sup>ccvi</sup> They “will harvest 30 acres in 2009 and an additional 100 acres will be planted in 2009.”<sup>ccvii</sup> This development is monumental in the study of perennial polycultures because it reveals the possibility of creating perennials out of standard annual crops. Through this development, the thought of making a perennial polyculture a reality in the near future becomes relevant not only in the eyes of sustainable agriculturalists and researchers but to the public and government. This development is also substantial to the relevance, importance and legitimacy of the Land Institute because it displays that this research operation is capable of producing results.

Wes Jackson created the Land Institute over 30 years ago in order to address the

problem of modern day, conventional agriculture. Through his unique forms of education, agriculture and science the Land Institute has developed into a major research institution within the field of sustainable agriculture. The Land Institute has been largely responsible for the proliferation of research on perennial polycultures and has been able to place former students and employees within land grant institutions and prominent sustainable agriculture facilities. Their funding support from USDA sponsored programs has been substantial over the past 20 years which further reveals the relevancy and legitimacy of their cause and purpose. This legitimacy within the field of sustainable agriculture is exemplified not only through their breakthroughs in perennial polyculture development (Kernza), but also through the usage of their research on other perennial research projects. The Land Institute has developed into a legitimate and relevant force within the field of sustainable agriculture and through their work and research a more sustainable future is possible.

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