



# The Opportunity in Permanent Crops

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*Permanent crops offer an overlooked investment opportunity in agriculture. With a more attractive return profile than traditional asset classes and row crops (i.e., corn, soy and wheat), permanent crops have generated current income of 10% over the past 20 years, double the 5% current income for row crops. Permanent crops are well positioned to take advantage of the macro trends of global population growth and the associated increase in food consumption, the rise of the middle class and their demand for more produce, and a limited supply of arable land. Fragmented and capital constrained, the permanent crop industry is in need of new ownership to take over from an aging farming population that is looking for exit strategies. Through an allocation to permanent crops, institutional investors have the opportunity to deploy capital into an inefficient market and transition more of the industry to professional management. This paper provides an introduction to understanding the permanent crop business, both its structure and economics.*

## INTRODUCTION

Permanent crops—perennial tree, bush or vine crops like citrus, apples, blueberries, nuts or grapes—represent a large, untapped market in agriculture. Fragmented and capital constrained, the permanent crop industry is poised for institutional investment by transitioning to professional management and scaling operations.

The macro trends of rising global population and the expansion of middle class consumption, decreasing supply of arable land and changing consumption habits toward nutritious foods are driving the opportunity in permanent crops. International markets, largely Asia, are fueling a material portion of this growth.

Permanent crops display an attractive long-term return profile, generating 18% annualized returns over the past 10 years.<sup>1</sup> With productive lives of 25 to 50 years, they can also produce significant current income—above 12% over the past 10 years, offering investors an attractive investment opportunity.

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<sup>1</sup> NCREIF data.

To understand investment opportunities in permanent crops, we will present the structure and economics of the permanent crops business as well as the similarities and differences to row crops. The term “row crops” in this paper refers to non-fresh market row crops such as corn, wheat and soy. “Permanent crops” in this paper refer mainly to fresh market crops.



## THE FUNDAMENTALS OF PERMANENT CROP INVESTING

Permanent crop investments can be in existing, productive farmland or in development opportunities—either bare ground or redevelopment out of another crop. Development land of permanent crops typically requires two to three years to reach initial harvest and six to seven years to reach maturity (assets can be depreciated during this time, which can be a benefit to taxable investors<sup>2</sup>). Despite the initial lag in cash flow, development land provides the opportunity for higher land appreciation over the long-term. Because of the longer-term nature of the investment as well as the higher capital cost compared to row crops, the permanent crop industry presents significant barriers to building scale, which can benefit long-term institutional investors.

### The Opportunity

Family or individual owner-operators currently represent 86% of U.S. farming operations,<sup>3</sup> which are managed by an aging population of farmers (the average age of a U.S. farmer is 58). These operations are severely constrained with respect to both capital and management resources but are facing rising unmet demand. Transitioning the permanent crop industry to professional management across the value chain and scaling operations can improve profits.

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<sup>2</sup> Permanent crop assets can be depreciated from the time of purchase, including the trees/vines/bushes, irrigation systems, wells, fences, buildings, wind machines, pumps and other related assets. With row crops, a much smaller fraction of the purchase price is depreciable assets.

<sup>3</sup> USDA. Census of Agriculture, 2007.

The increasing consumer focus on healthy and nutritious foods is a key driver of demand for permanent crops. Demand for fruit and nuts is projected by the USDA to be the fastest growing major food category over the next 10 years<sup>4</sup>; U.S. consumption of blueberries alone has risen 533% over the past 20 years.<sup>5</sup> International markets are responsible for a portion of this growth: global exports of tangerines increased 45% and blueberries 99% from 2002 to 2010, with Asia accountable for much of that demand.<sup>6</sup>

Additionally, permanent crops represent a different investment opportunity in agriculture than row crops, with higher value products that are well positioned to scale. There are 12 million acres of permanent crops in the U.S.,<sup>7</sup> comprising 12% (or \$24 billion) of total cropland market value.<sup>8</sup> Permanent cropland values have also not appreciated to the same degree as row crop's (see the chart on page 10), and yet permanent crops continue to offer high levels of current income.

### The Permanent Crop Value Chain

There are three key segments of the permanent crop supply chain: growing, packing and marketing. With permanent crops, investors can profit from not only investments in farmland but also from midstream opportunities.

The first segment of the value chain is growing the crop. Permanent crops have productive lives of 25 to 50 years and typically produce one harvest per year. Because of their long lives, a significant amount of permanent cropland value resides in the tree, bush or vine, as well as in capital improvements such as irrigation systems or structures used to grow the crop. Returns are impacted on the revenue side by the yield and quality of that crop, which are influenced by the growing practices implemented by the farmer and on the expense side by the cost management of key inputs such as water, nutrients and pesticides. Most institutional investors allocate capital to this segment of the supply chain alone.

The second part of the supply chain involves the midstream activities of packing and processing. Once a crop is harvested, it is sent to a packing/processing facility where the crop is sorted, grated, sized and packaged in order to be prepared for market. Packing facility returns are driven by the number of units processed by the facility.

The third part of the value chain is marketing. Typically the packer also performs the marketing function, and a grower normally hires a packer/marketer to both package and sell their product. Marketing can provide an additional source of profit for growers or packers. The marketer sells the produce either directly to a retailer or to a wholesaler. Marketing can also provide insight into long-term demand trends, which can then be used to drive crop

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<sup>4</sup> USDA. *Long-term Projections Report*, February 2012.

<sup>5</sup> USDA ERS. *Fruit and Tree Nut Yearbook* 2011.

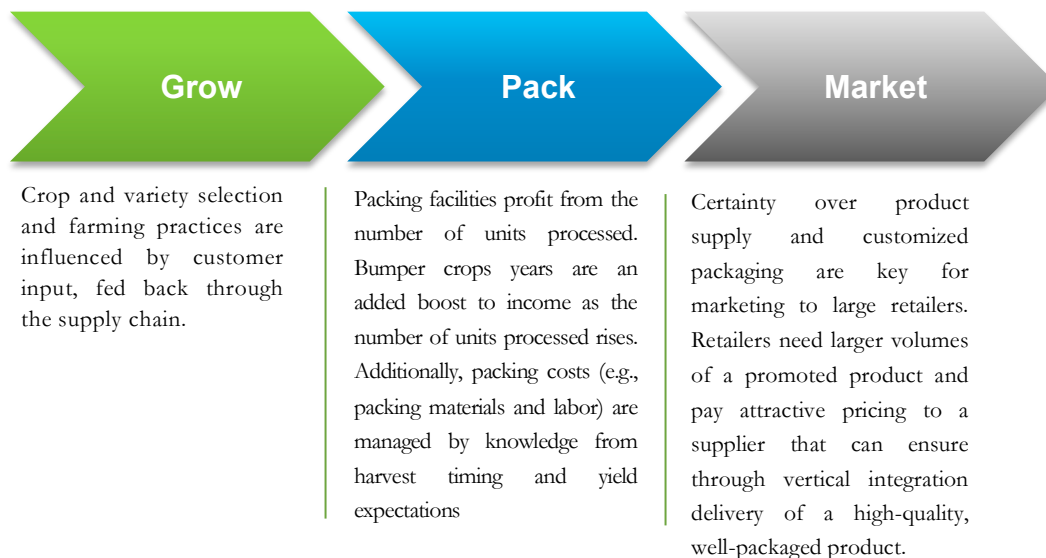
<sup>6</sup> USDA ERS. *Fruit and Tree Nut Yearbook* 2011.

<sup>7</sup> Data excludes acreage from nurseries. USDA, Agriculture Census Data 2007.

<sup>8</sup> Data represents sales of farm products. From USDA, "[Monthly cash receipts from farming, by commodity group, 2012.](#)"

type and variety selection. Marketing returns are driven by the sales team's ability to successfully market a product, including the use of unique packaging and promotion to develop relationships with customers that generate above-market pricing.

### How Vertical Integration of the Permanent Crop Value Chain Works



### Owner-Operator vs. Leasing Model

An investor in agriculture has two options for managing land: the investor can own and operate the land him/herself or lease out the land to a farmer. In an owner-operator model, the owner (investor in the land) has exposure to all of economics of the underlying farm activity as compared to solely rental income from a lease. The owner (investors can also hire a farm manager to operate the properties for them) has full oversight over the operation and earns current income from the sale of the crops. Additionally, the owner has control over the marketing and sale of the product. The owner/operator model is more common in the permanent crop sector versus the row crop sector.

Leasing, more common for investors in row crops, is a wholly different economic model, where the owner leases the land to a farmer that pays rent. Depending on the structure of the lease, investors benefit from none or only a portion of the crop value. With a lease, investors earn a rental payment of low single-digit percentages on average, without any of the crop revenue or risk. The primary risk is the creditworthiness of the farmer. Over time, the investor will profit from land appreciation but not as much, or at all, from the growth in crop yield or pricing.



## The Value in Vertical Integration

Vertical integration of the permanent crop value chain (growing, packing and marketing) allows permanent crop operations to capture and enhance margin across the supply chain. This gives farmers better control over each activity and the ability to positively impact margins by modernizing operations and eliminating the middlemen who would ordinarily package and market the goods. Vertically integrated operations also provide operational advantages to mitigate risk. For example, as packing facilities profit from the number of units they process, bumper crop years—where crop pricing is lower—can actually be an extra boost to revenue for the facility.

As permanent crops are predominantly for fresh market sales (although they can also be sold as juice, frozen and dried) quality and packaging plays a key role in their final sale; marketing is integral as the example below illustrates.

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## How Marketing Helps Create Value: An Example from the Almond Industry

The impact of product development and marketing on value creation of permanent crops is exemplified through the success of Blue Diamond, the largest producer of almonds in the world.<sup>9</sup> Blue Diamond, a cooperative owned by over half of California's almond growers, sells an estimated 50% of almonds in the world.<sup>10</sup> In 1915 when Blue Diamond formed, the state produced less than 20% of the world almond supply.<sup>11</sup> Over the next century, the cooperative led California to its dominant position in the world almond market, responsible for over 80% of global production,<sup>12</sup> around 70% of which it exports. Blue Diamond has been integral to this growth through its marketing strategy and as well as innovations in developing new almond products, which have doubled its revenues in the past three years to well over \$1 billion in sales.<sup>13</sup> Additionally, the cooperative has aggressively developed new markets for its products and has helped create a robust export market. Between 2006 and 2010, almond exports to China grew 169%.<sup>14</sup>

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<sup>9</sup> About Blue Diamond Growers, 2013.

<sup>10</sup> White, Martha. "Blue Diamond Growers: What a California Almond Company Can Teach Us about the Globalization of American Agriculture." *Slate*. October 28, 2010.

<sup>11</sup> Blue Diamond Marketing and Media History, 2013.

<sup>12</sup> About Blue Diamond Growers, 2013.

<sup>13</sup> Food and Beverage People. "Blue Diamond Expands Sacramento Headquarters With World's Only Almond Innovation Center." March 14, 2013.

<sup>14</sup> White, Martha. "Blue Diamond Growers: What a California Almond Company Can Teach Us about the Globalization of American Agriculture." *Slate*. October 28, 2010.

With row crops, there is little differentiation in product because they are commodity crops, as compared to quality differences in permanent crops, such as the size and flavor of an orange, for example. As such row crop pricing is commoditized, there is limited ability to generate above market pricing. In addition to animal feed, row crops can be processed into fuel for ethanol production or fiber for clothing (e.g., cotton). Only about 12% of U.S. corn ends up in foods for human consumption; the majority of corn is used either in feed for livestock, poultry and fish or in biofuel production, nearly evenly split between the two. For wheat, 70% is used for food products.<sup>15</sup>

Compared to row crops, permanent crops provide more opportunity to generate alpha from operational improvements. Farm management practices can significantly alter one permanent crop farmer's yields versus another, while row crop farming affords less opportunity to impact yields. High performing permanent crop farmers, using new technology, can earn considerably greater incomes than those using antiquated practices and technologies. Growing techniques used, nutrient programs employed (e.g., application of nutrients through drip irrigation to increase efficacy), irrigation techniques (e.g., using micro irrigation systems to decrease water consumption), as well as more efficient use of labor and machinery (e.g., year-round harvesting from a multi-crop operation) are all areas where permanent crop farmers can increase returns.

The next section details the economics of permanent crops, including revenues and costs.

## **ECONOMICS OF PERMANENT CROPS**

Permanent crops are a higher value and higher margin investment than row crops, as this section will demonstrate.

Permanent crops generate higher revenue on a per unit (acre) basis as compared to row crops due to the higher value they earn in the market (price per unit). As one example, one acre of mandarin oranges can generate 4,788 cartons (one carton equals five pounds), and each carton earns \$3.95, rendering total revenue per acre nearly \$19,000.<sup>16</sup> One acre of corn generates 32 tons per acre, worth \$45 per ton, for total revenue per acre of \$1,440.<sup>17</sup>

On average, the market value of permanent crops is far higher than that of row crops as the following chart displays.

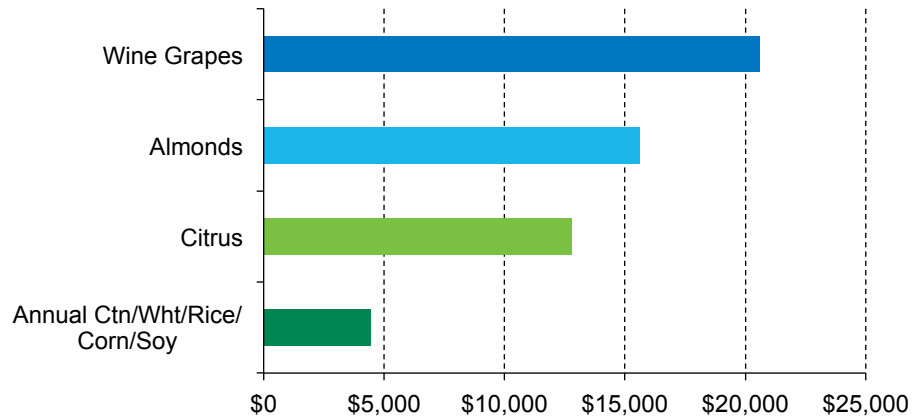
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<sup>15</sup> EPA, "Ag 101."

<sup>16</sup> University Of California Cooperative Extension. "Sample Costs To Establish A Citrus Orchard And Produce Mandarins Tango." San Joaquin Valley South: 2011.

<sup>17</sup> UC Davis, Agricultural and Resource Economics. "Current Costs and Return Studies." June 2013.

## Average Market Value per Acre of Permanent and Row Crops in 2012



Source: NCREIF

Note: Prices reflect the market value of the average of the first two quarters of 2012.

Across the agriculture industry, including a wider variety of crops than referenced in the graph above, the average revenues are as follows:

- Permanent crop revenue averages \$10,000-\$30,000/acre
- Row crop revenue averages \$1,000-\$5,000/acre

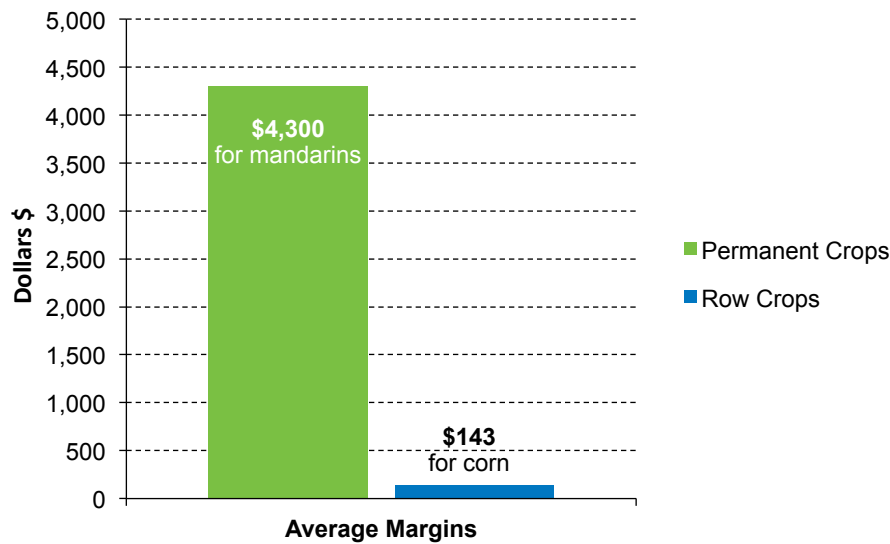
Permanent crops also provide top-tier farmers the ability to generate above-market pricing by producing higher quality crops. Superior farming operations can produce larger and more flavorful produce, earning a higher price in the market. As previously discussed, row crops have little opportunity to generate above-market pricing based on quality or a differentiated product due to their commodity nature.

The operating costs of permanent crops are also greater than that of row crops, but the overall return from permanent crops is higher. For example, while total operating costs for one acre of mandarin oranges may be almost \$14,600 per acre, which is on the higher end of permanent crop costs per acre<sup>18</sup>, the net profit on that acre is \$4,300. That compares to an acre of corn, where the total operating costs are only \$1,300 per acre, but the total margin per acre is only \$143.

<sup>18</sup> University Of California Cooperative Extension. "Sample Costs To Establish A Citrus Orchard And Produce Mandarins Tango." San Joaquin Valley South: 2011.



## Average Margins per Acre



Source: Equilibrium Capital calculations based on UC Davis data.

The greater margin per acre for permanent crops translates into a higher cost to purchase an acre of permanent crops over row crops. This creates a barrier to entering the permanent crop sector at scale because of its capital-intensive nature; therefore sufficient capital is needed to enter the permanent crop business at scale and take advantage of the opportunity.

- Permanent crops purchase cost is \$12,000-30,000/acre on average
- Row crops purchase cost is \$5,000-\$10,000/acre on average

Implicit in the cost per acre is both the land price as well as the cost of improvements made on the land, which includes irrigation, buildings, fences, pumps and the actual tree/vine/bush with permanent crops, among others. Land prices can vary based on location, quality of the soil, water availability as well as other factors. With developed permanent crops, as much as 37% to 62% of the value per acre could be the improvements together with the crop—a productive asset. With row crops, over 90% of the value is just the land itself.<sup>19</sup>

<sup>19</sup> Agriculture Capital Management estimate, May 2013.

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## Farmland Prices in California's Central Valley<sup>20</sup>

As one example of farmland pricing in California, undeveloped permanent cropland generally sells in Tulare, Fresno, Kern and Kings County, California for \$12,000 to \$14,000 per acre for properties with good soil and water supplies that are well suited for most permanent plantings.<sup>21</sup> The majority of the value (85%-90%) is in the land, the other 10%-15% is in the irrigation system and other improvements (unless specialized buildings are involved). Developed permanent cropland, on the other hand, sells for \$18,000 to \$30,000. While the land value is the same for both, the difference is in the crop and improvements. This means that over 60% of the value could be in the crop (a productive asset) and improvements, whereas in row crops 90% of capital is typically invested in just the land.

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## RETURN PROFILE OF PERMANENT CROPS

Returns from investments in farmland are generated from the combination of current income and capital appreciation of the underlying asset.

Permanent crops are current-income driven, profiting from the annual sale of harvested produce. Returns from current income are 10% annualized over the last 20 years. Row crops earn less current income, averaging below 5% over the last 20 years.<sup>22</sup> This is attributed to the fact that they are lower value crops and that much of row crop current income is earned from lease payments. While lease payments reduce the variability and risk of agriculture investing, they also lower returns, as owners do not share in the profit from farm operations. Leases also transfer the underlying exposure from the agricultural activity away from the investor and to the farmer.

Over the past 10 years, permanent crops have displayed higher total annualized returns of over 18% versus 14% for row crops, according to NCREIF's Farmland Index. Over the same 10-year period, the current income for permanent crops was 12.2%, while it was 4.5% for annual crops. In 2012, permanent crop current income rose to 15.3% while row crop current income stayed roughly the same. The chart below illustrates the difference in returns between the NCREIF permanent and row crop indices over a 10-year period.

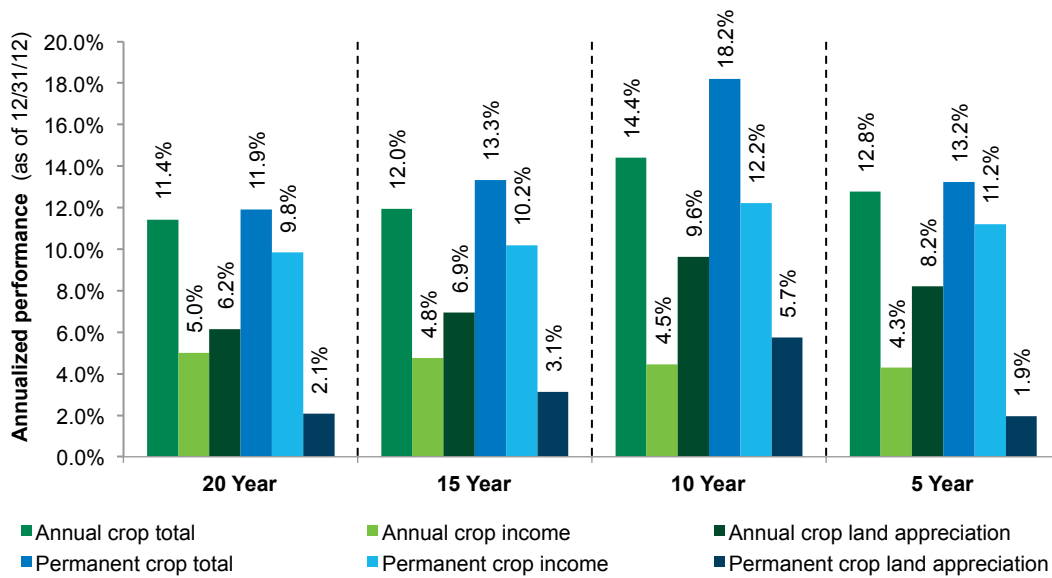
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<sup>20</sup> Agriculture Capital Management estimate, May 2013; American Society of Farm Managers and Rural Appraiser, "2012 Trends in Agricultural Land and Lease Values: California and Nevada." 2012.

<sup>21</sup> Properties can sell for cheaper but lesser valued properties typically have less desirable soils and irrigation water conditions, and more limited adaptability to permanent planting development.

<sup>22</sup> NCREIF data.

## NCREIF Permanent vs. Row Crops Annualized Returns



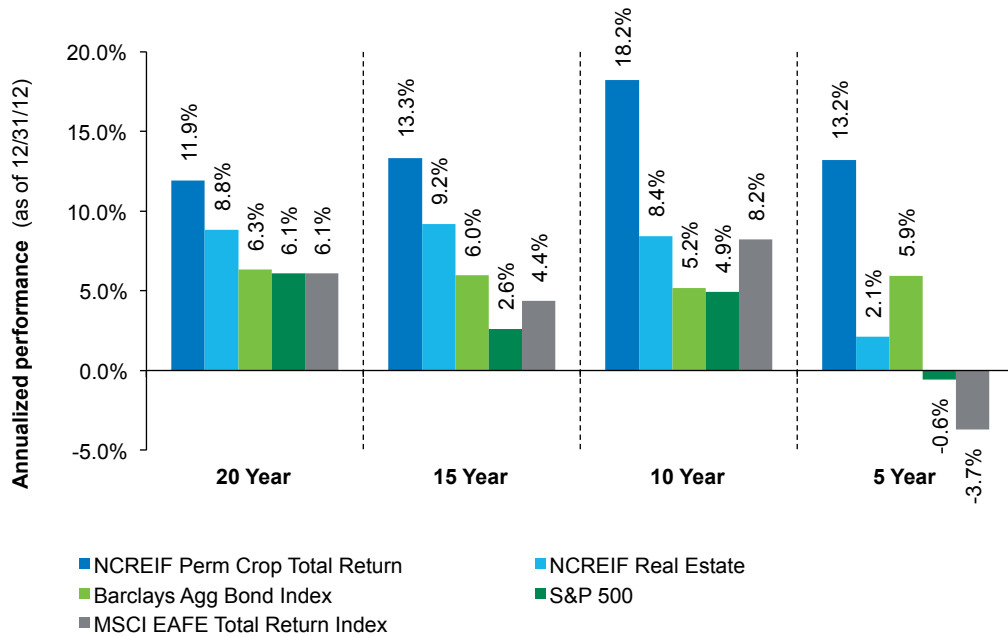
Source: NCREIF

Over the past three years, farmland values have been appreciating after a downturn from 2006-2009. This has led to many discussions on whether farmland is becoming overpriced. In looking at the breakdown of permanent and row crop appreciation, it becomes clear that row cropland is appreciating at a faster rate than permanent cropland. Additionally, row crops have historically been the recipient of U.S. government-sponsored support via subsidies, insurance and stabilization payments; permanent crops do not receive nearly as many of these supports. Some studies suggest that these payments are capitalized into the value of land and estimates vary widely about how much of row cropland value reflects this. One study indicates up to 69% of row cropland value can be attributed to government price supports, whereas other studies have found little relationship between land prices and government subsidies.<sup>23</sup> Regardless of the relationship, it is clear that the value of permanent cropland has increased by less than half that of annual cropland going back as far as 20 years.

Furthermore, permanent crops have outperformed traditional stock and bond market indices across 20 years, including the S&P 500, MCSI EAFE, Barclays U.S. Aggregate and the NCREIF Real Estate Index, as illustrated in the chart below.

<sup>23</sup> CAIA Level II: Advanced Core Topics in Alternative Investments.

## Annualized Historic Asset Class Performance



Source: NCREIF, Barclays, Bloomberg, Yahoo Finance.

## RISK PROFILE OF PERMANENT CROPS

Permanent crops display a strong return profile, but they are not without risks. In examining the risk-return profile of permanent and row crops, we find that permanent crops have higher returns, accompanied by a higher standard deviation than row crops.

Another large difference in risk profiles is that permanent crops that are in development take a number of years to reach maturity and generate value whereas row crops produce yields within the same season of planting. Consequently, permanent crop farmers incur a significantly higher cost to redevelop a crop. Once the crop is developed, the primary risks include environmental (weather, pests or disease), market and food safety risks, all of which can be addressed through proper management.

Weather risk can be managed by diversification, crop insurance, and weather prediction and prevention technology. Diversification includes both geographic diversification as well as diversifying by crop type (cold weather in spring will have differing effects on citrus versus blueberries) and by harvest cycle within a crop (early varieties versus later varieties). Crop insurance also significantly mitigates weather risk. With cost effective policies, crop insurance can allow farmers to recoup costs even in the most severe weather events. Finally, prediction and prevention technology uses expert weather monitoring systems that can catalyze a decision to deploy helicopters to prevent frost from hindering a citrus crop. Additional automated technology such as wind machines can automatically turn on to help mitigate damage from frost for a particular crop once the temperature hits a certain threshold.

The risk of pest and disease are mitigated through integrated pest management systems including field tracking data by pest and the introduction of beneficial species including benign insects, bio-fungicides or required spray applications. One final environmental risk is access to quality labor. Developing synergistic relationships and respectful labor practices helps to ensure a quality workforce.

Market risk of fluctuations in demand or oversupply due to a bumper crop is the next layer of risk. There are a number of ways to mitigate market risk, the most important of which is the strength of the marketing program. Leveraging established relationships with retailers, through multiple sales avenues and long-term forecasting of demand all contribute to marketing success, ensuring demand for the product.

Food safety, which refers to foodborne illnesses, is the final level of risk. This risk can be managed through stringent certification compliance such as the Global Food Safety Initiative benchmark compliance (e.g., Global GAP audits for properties and the appropriate facility audits such as Primus GFS, SQF and/or BRC), and product traceability requirements, including the ability to trace products from the field to customers and back, with the exercise of voluntary biannual recalls ensures full traceability.

## CONCLUSION

Permanent crops are long-term, current-income producing assets with strong fundamental economics, driven by the global macro trends of population growth and changing consumption habits. Previously overlooked, the fragmented permanent crop industry offers institutional investors a compelling opportunity to generate strong returns through professional management and scale. With over 18% annualized returns in the past 10 years, according to NCREIF, the permanent crop industry has demonstrated a solid track record as an institutional asset class.

## BIBLIOGRAPHY

Agriculture Capital Management. California. May, 2013

Blue Diamond. "About Blue Diamond Growers." 2013.

<http://www.bluediamond.com/?navid=12>. Accessed May 28, 2013

Black, Keith, Chamber, Donald and Kazemi, Hossein. "CAIA Level II: Advanced Core Topics in Alternative Investments." CAIA Association. Second Edition, 2012.

Blue Diamond Marketing and Media History, 2013.

<http://www.bluediamond.com/index.cfm?navid=382>. Accessed May 28, 2013.

Cummins, Jared. "Futures, Stocks, ETFs: 50 Ways To Invest In Agriculture." SeekingAlpha, January 26, 2012.

EPA, "Ag 101." <http://www.epa.gov/agriculture/ag101/printcrop.html>. October 23, 2012. Accessed May 25, 2013.

Food and Beverage People. "Blue Diamond Expands Sacramento Headquarters With World's Only Almond Innovation Center." March 14, 2013.

[http://www.foodandbeveragepeople.com/cm/news/blue\\_diamond\\_expansion\\_innovation\\_center\\_sacramento](http://www.foodandbeveragepeople.com/cm/news/blue_diamond_expansion_innovation_center_sacramento)

Hancock Agricultural Investment Group, "Farmland Investment." Vol. 21, No. 1, Spring 2013. [http://haig.jhancock.com/pdf/spring\\_2013.pdf](http://haig.jhancock.com/pdf/spring_2013.pdf)

Hopper, Tim. "Farmland Investing: Cultivating a Diversification Opportunity. TIAA-CREF. Accessed May 15, 2013. [http://www1.tiaa-cref.org/public/advice-planning/market-commentary/market-commentary/investment\\_insight\\_articles/comm\\_063.html](http://www1.tiaa-cref.org/public/advice-planning/market-commentary/market-commentary/investment_insight_articles/comm_063.html)

Hunt Stookey and Philippe de Lape. "Agricultural Land Investment Ag Lands - a bright spot in the 2009 investment landscape." March 2009.

inAlternatives. "Which Crop is the Next to Pop?" 2012.

<http://www.inalternatives.com/2013/02/which-crop-is-next-to-pop.html>

Leon, Hortense. "Surge in Farm Prices Catches Investor Interest." March 26, 2013.

<http://www.worldpropertychannel.com/north-america-commercial-news/farms-national-council-of-real-estate-investment-fiduciaries-jeffrey-havsy-david-oppedahl-christopher-jay-farm-price-increases-6649.php>

Thompson, Boyce. “Big Pension Fund Investor Wants Mix of Row, Permanent Crops.”  
November 7, 2012  
[http://www.agweb.com/article/big\\_pension\\_fund\\_investor\\_wants\\_mix\\_of\\_row\\_permanent\\_crops/](http://www.agweb.com/article/big_pension_fund_investor_wants_mix_of_row_permanent_crops/)

TIAA-CREF. “Responsible Investment in Farmland.” 2012. <https://www.tiaa-cref.org/public/pdf/Farmland-Sustainability-Report.pdf>

UC Davis, Agricultural and Resource Economics. “Current Costs and Return Studies.” June 5, 2013 <http://coststudies.ucdavis.edu/current.php>

University Of California Cooperative Extension. “Sample Costs To Establish A Citrus Orchard And Produce Mandarins Tango.” San Joaquin Valley South, 2011.  
<http://coststudies.ucdavis.edu/files/MandarinsVS2011.pdf>

USDA, Agriculture Census Data, 2007.  
[http://www.agcensus.usda.gov/Publications/2007/Full\\_Report/Volume\\_1,\\_Chapter\\_1\\_US/st99\\_1\\_046\\_046.pdf](http://www.agcensus.usda.gov/Publications/2007/Full_Report/Volume_1,_Chapter_1_US/st99_1_046_046.pdf)

USDA ERS. *Fruit and Tree Nut Yearbook*, 2011.

USDA, “[Monthly cash receipts from farming, by commodity group, 2012.](#)”  
<http://www.ers.usda.gov/data-products/farm-income-and-wealth-statistics.aspx#27415>

USDA. *Long-term Projections Report*, February 2012.

White, Martha. “Blue Diamond Growers: What a California Almond Company Can Teach Us about the Globalization of American Agriculture.” *Slate*. October 28, 2010.



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