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SL439

Trends in Rice Production and Varieties in the Everglades Agricultural Area [1]

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Background

Rice production in the Everglades Agriculture Area (EAA) of Florida dates back nearly seven decades. For a brief period of time during the 1950s about 2,000 acres of rice was grown in the EAA. Although the rice industry produced satisfactory yields, the discovery of the rice 'hoja blanca' (white leaf) virus, which was reported first in the late 1950s in Columbia and Venezuela, led to a federal quarantine of rice production in the state of Florida.

Rice was reintroduced in the EAA in 1977 after it was demonstrated that rice could be successfully incorporated into the sugarcane production cycle during the fallow period (Alvarez et al. 1978). The EAA comprises 445,000 ac of Histosols that are devoted to sugarcane production. During the summer period, more than 50,000 ac of fallow sugarcane land is available for rice production. In 2015, approximately 23,000 ac of rice were planted in the EAA (Florida Rice Council 2015). The net value of growing rice in the EAA as a rotation crop far exceeds its monetary return. In addition to being a food crop in Florida, production of flooded rice provides several benefits to the agroecosystem. By flooding fields, growers greatly reduce the negative impacts from issues related to soil subsidence (Wright and Snyder 2009), nutrient depletion, and insect pests (Cherry et al. 2015). This, in turn, enhances the subsequent sugarcane crop and maximizes the longevity of the soil by reducing soil loss due to oxidation. In addition, incorporating rice as a rotation crop in the EAA during the summer months also provides local employment (Schueneman et al. 2008). In 2015, seven commercial varieties of rice were planted in the EAA (Rex, Cheniere, Mermentau, Taggart, Wells, Jupiter, and Roy J) and evaluated on a yield-per-acre basis. Approximately 432,469 hundred weight (Cwt) of whole rice (broken, sub-products, and ratoon rice not included) was produced in 2015.

The objective of this publication is to (i) document trends in total acres of rice planted in the EAA between 2008 and 2015 and (ii) determine the percent acreage of the varieties that are being grown. Local growers would particularly benefit from such information because it provides them the acreage for each rice variety produced in the EAA. This type of information is useful in the variety selection process while planning for the following year.

Rice Production in the EAA—2008 to 2015

Rice production in the EAA has been steadily increasing since 2008 at a rate of ~1,343 ac yr^{-1} (Figure 1). Florida Crystals Corporation (FCC) is the largest rice producer in the EAA, while the remaining rice is produced by local growers. The local growers are made up of farmers who grow sugarcane and winter vegetables, rotating with rice in the summer. They are part of the Sugar Cane Growers Cooperative of Florida and individually own >3,000 acres of land per farm. In 2008, a total of 11,912 ac of rice was planted in the EAA; of which 9,644 ac was planted by FCC

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and 2,268 ac was planted by local growers. In 2015, a total of 22,861 ac of rice was planted in the EAA; of which 16,297 ac was planted by FCC and 6,564 ac was planted by the local growers. The amount of rice harvested is reflective of the acreage planted. In 2008, 602,320 Cwt of green rice was harvested compared to 1,042,000 Cwt in 2015 (Figure 2). Between 2008 and 2015 rice yields in the EAA have averaged 50.4 Cwt ac^{-1}. The highest average yields were observed in 2012 at 56.0 Cwt ac^{-1} while the lowest was observed in 2010 at 43.6 Cwt ac^{-1}.

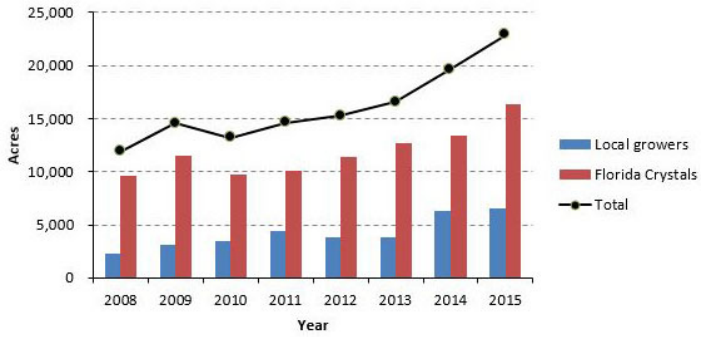

Figure 1. Total acres of rice planted in the EAA from 2008 to 2015.
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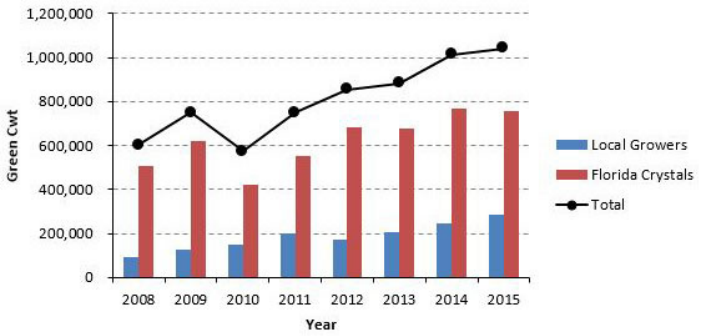

Figure 2. Total harvested green rice (Cwt) in the EAA from 2008 to 2015.
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Rice Varieties Grown in the EAA

Rice is produced on a smaller scale in south Florida than in other states such as Arkansas, California, Louisiana, and Texas, limiting the amount of resources available to the growers. While research and Extension personnel are available to address the needs of rice growers, historically the industry has suffered from a lack of diversity in terms of available varieties. Because neither UF/IFAS nor USDA-ARS have dedicated rice breeders, Florida is dependent on using varieties acquired from breeding programs in other states. More importantly, this lack of diversity in Florida rice leaves the industry susceptible to disease and arthropod outbreaks.

To provide a continual influx of new varieties, UF/IFAS and FCC conduct annual rice variety trials to rate new or existing varieties in south Florida. Varieties developed from other breeding programs are planted in small-plot variety assessment trials and parameters including yield quality/quantity and disease susceptibility are ranked by variety. Varieties ranking high over multiple years are introduced into commercial production. Due to the efforts of these rice variety trials, the diversity of rice varieties planted in south Florida has steadily increased from three varieties (Wells, Cypress, Jupiter) in 2008 (Figure 3) to seven varieties in 2015 (Roy J, Mermentau, Taggart, Cheniere, Wells, Jupiter, Rex) (Figure 4). In addition, acreage by variety was more uniform in 2015 than in previous years.

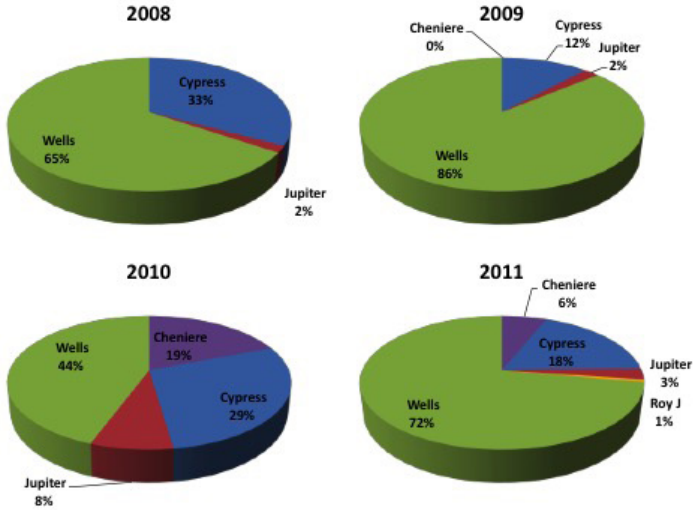

Figure 3. Percent acreage of different rice varieties grown in the EAA from 2008 to 2011.
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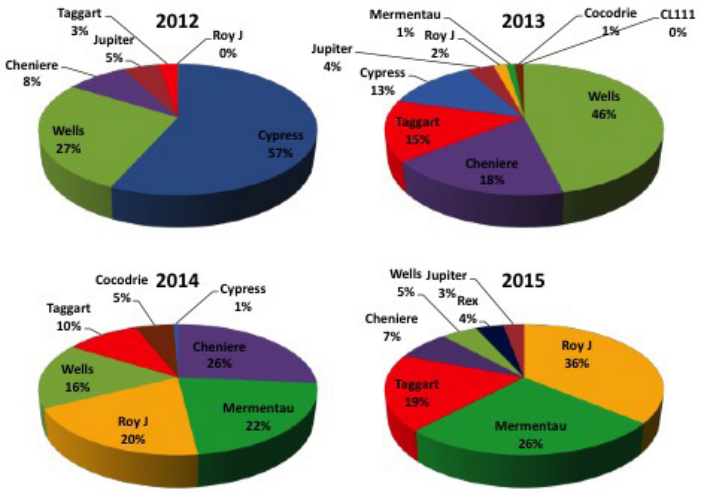

Figure 4. Percent acreage of different rice varieties grown in the EAA from 2012 to 2015.
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In 2009, 86% of rice planted in Florida was of a single variety (Wells), leaving the industry dependent on the continued success of this variety. This situation emphasizes the need to have multiple varieties available in the event

that a variety fails because of adverse biotic or abiotic conditions. In 2015, the top two varieties (Roy J and Mermentau) of planted rice covered only 62% of the total acreage of planted rice in the EAA (Figure 5). Studies conducted by Louisiana State University on rice varieties refer to Roy J and Mermentau as long-grain rice varieties. Roy J has shown excellent yield potential, and Mermentau has shown good seedling vigor and ratoon crop potential (Saichuck et al. 2015).

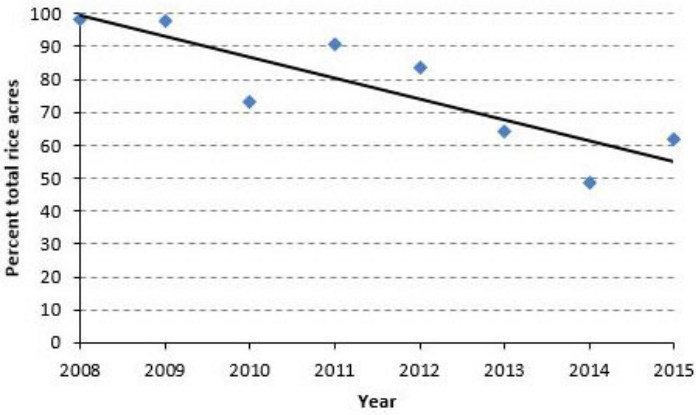

Figure 5. Percent of EAA rice acreage planted with the top 2 varieties. Credits: Jehangir H. Bhadha and Matthew VanWeelden

Conclusion

There has been an increasing trend in rice production within the EAA from 2008 to 2015. As the acreage of planted rice increases, so does the number of varieties that are being planted. While only two dominant varieties were planted in 2008 across 11,912 ac, seven varieties were planted across 22,861 ac in 2015. Increasing trends in rice acreage and available varieties are testaments that growers in the EAA prefer planting flooded rice in the summer months rather than managing flooded fallow fields.

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