

Practitioner Grant Report: Research about the Florida Springs Region's Water Resources and Agriculture Production

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Introduction:

The Floridan Aquifer System (FAS) provides water to more than 1,000 artesian springs in Florida (FDEP, 2018; FSI, 2018), enabling the largest concentration of freshwater (FDEP, 2018) and first magnitude springs in the world (FSI, 2018). These springs conform the Florida Springs Region (FSR), which comprises 42,000 square miles and includes 56 counties (FSI, 2018).

Springs provide a broad spectrum of environmental services. They source 90% of drinking water in the state (Borisova, Olexa, & Davis, 2017; Donaldson, 2018; FDEP, 2019); they offer critical habitats for plants and animals; and they provide recreational opportunities valuable for the tourism sector (Borisova et al., 2017; FDEP, 2019). In addition, the FSR supports agricultural production. In 2017, crop production sales in Florida were estimated at 5,704 million USD; out of which 3,166 million USD corresponded to sales in the FSR's counties (USDA & NASS, 2017).

Among some of the main concerns in relation to the springs include decreasing spring flows; and excessive nutrients that can lead to algal growth and habitat degradation (Borisova et al., 2017; FDEP, 2019). Both occur as a result of agricultural and urban landscape practices, leaking septic systems; and inadequate stormwater management, among others (Borisova et al., 2017).

The objectives of this research were: i) to analyze the economic importance of various crop types in the Florida Springs Region, ii) to analyze these crops' relationship with nitrogen application; iii) to analyze these crops' relationship with groundwater withdrawals, iv) to analyze import and export statistics to understand which crops are being exported, and which are being imported from other countries, and v) to develop communication strategies about springs' conservation to farmers.

The main axis of the report is the importance of water resources conservation for maintaining the springs' ecosystem services, while acknowledging the importance of agriculture production. The main results are expected to contribute current efforts to adopt Best Management Practices (BMPs) related to the development and implementation of Basin Management Action Plans (BMAPs).

In order to reach the objectives of the research, the Florida Springs Institute provided advice through consultations with representatives of the organization, as well as access to digital information.

The study corresponds to an intermediate assessment of different official databases and the development of a major database in Excel and the development of maps using ArcGIS Pro. Table 1 shows the information that has been produced as part of the study.

Table 1. Information produced

Items	Crop production	Water withdrawal	Nitrogen application	Imports and exports
Databases	1	3	2	1
Charts	20	21	11	18
Maps	12	20	16	

Preliminary results:

In 2017, crop production sales in the Florida Springs Region (FSR) were approximately (\cong)3,166 million USD. The county with the most sales was Hillsborough with \cong 410 million USD. In relation to the Florida springs, approximately one third of these sales were located at the south of the FSR, where 2nd, and 3rd and greater magnitude springs are present. These are located in the Gulf Coast and St. Johns Restoration Areas. In the case of Volusia, it is possible to find some 1st, 2nd, and 3rd and greater magnitude springs. In 2016, water withdrawal for crop production in the FSR was \cong 967 MGD, from which groundwater withdrawal (GWW) was \cong 852 MGD. The county with the most GWW was Highlands with \cong 89 MGD. In relation to the Florida springs, GWW in these counties and crops added to approximately one third of total GWW. Most GWW was located at the southwest of the FSR, in the Gulf Coast Restoration Area, where 3rd and greater magnitude springs are present.

In 2016, nitrogen application (N-App) for crop production in the FSR was \cong 158 million pounds. The county with the most N-App was Highlands with \cong 15 million pounds. In relation to the Florida springs, N-App was localized mostly along the Gulf Coast, and the Suwannee Restoration Areas. Both areas have concentrations of 1st, 2nd, and 3rd and greater magnitude springs.

In 2018, Florida's exports were valued at \cong 771 million USD. The main country of destination was Canada, for which exports were valued at \cong 455 million USD. In the same year, Florida's imports were valued at \cong 3,562 million USD. The main country of origin was Guatemala, for which imports were valued at \cong 921 million USD.

Finally, the Agriculture and Springs Communication Strategy aims to move towards an agri-environmental scheme. It is based on two components: i) the Springs Dialogue, and the ii) Agriculture and Springs Education. The first focuses on opening possibilities to generate a multi-stakeholder generative dialogue space about Florida springs topics that enables to build a collaborative and cooperative road map for springs conservation efforts. The second focuses on developing a curriculum for young people in the agriculture sector to learn about the FSR and the role of agriculture in its conservation.

Pictures:

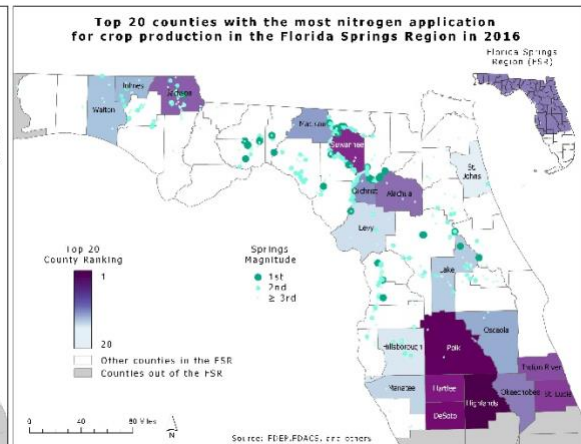
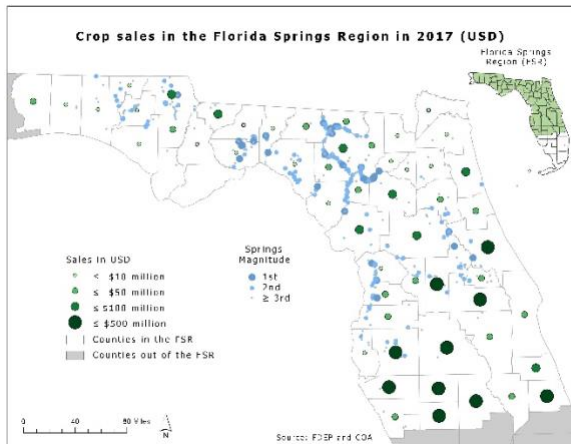
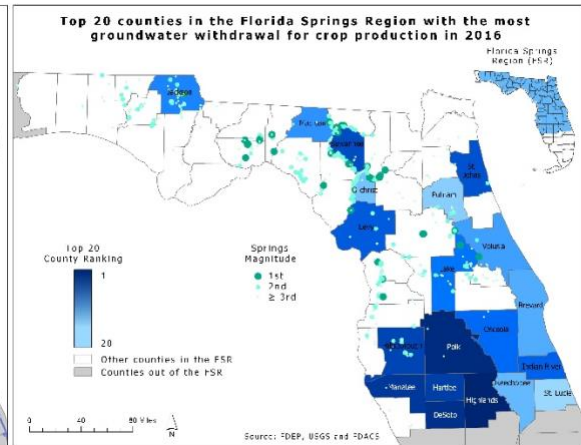
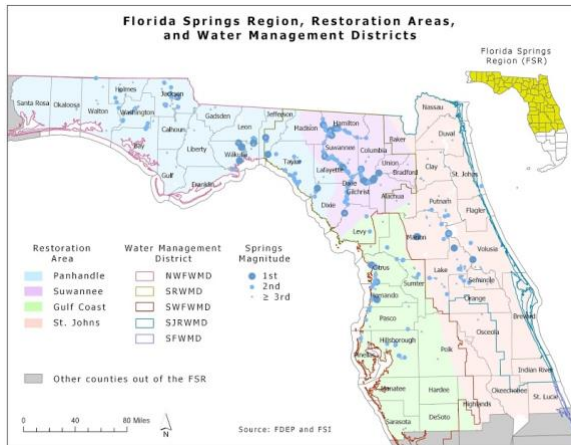
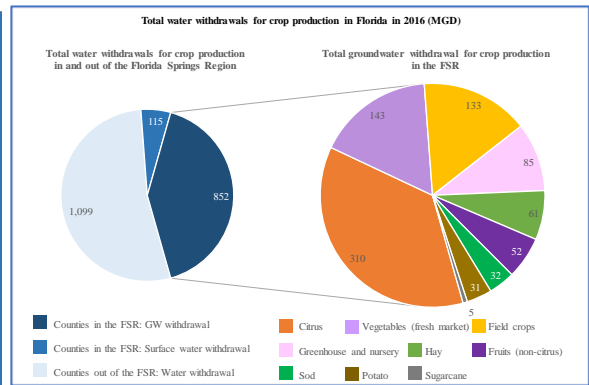


Agricultural Production in the Florida Springs Region

Learn more about agricultural production in the Florida Springs Region (FSR).

This database contains information about crops that are being produced in Florida's counties. It includes data on production areas, sales, water withdrawals, and nitrogen use. It also includes data on imports and exports at a state level.

[Let's go >](#)



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