

# USING ARCGIS TO ADDRESS THE ISSUE OF FOOD DESERTS IN TARRANT COUNTY

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## ABSTRACT

For our research project, we plan to use GIS remote sensing technology to locate and identify potential land plots for urban farming. The purpose of this project is to recognize and assist in the issue of food deserts in urban areas such as the DFW (Dallas Fort Worth) metroplex, NYC, and Los Angeles. A food desert refers to any area with limited or no access to affordable, nutritious food. This could include a lack of access to farmers' markets, vegetable shops, or fresh produce. This project aims to recognize and assist in the issue of food deserts in urban areas with a particular focus on the East Fort Worth/Arlington areas in Tarrant County. Several relevant datasets including high spatial resolution commercial remote sensing and other relevant spatial (such as property appraisal datasets, soil data) and non-spatial datasets, and data analysis products (such as the proximity of the areas to fresh produce/major grocery stores) will be combined in a GIS environment to identify empty plots of lands that could be used for the purposes of urban agriculture and assess their potential for food growth.

## BACKGROUND

In many of the U.S.'s most urbanized areas, it is common for neighborhood residents to lack access to fresh, affordable, and nutritious food. This can include a lack of access to fresh produce, fruits and vegetables, or local markets. Instead, residents are forced to buy and consume more processed, packaged, and artificial foods, triggering an overall decline in health and fitness in the populations of these areas. A proposed solution to the growing issue of food deserts is urban agriculture: the practice and producing and distributing agricultural products- such as fresh produce or even raising livestock- in urban and suburban areas.

## METHOD

To identify the potential areas for urban agriculture, supervised classification was used through the program ArcGIS. Using an image raster of the eastern portion of Tarrant County, supervised classification was used to divide the image into four classes, including barren land, water, forest, and developed land. We programmed the computer to include roads, buildings, and suburbs in the developed land class. The barren land class was programmed to include any open green space, such as fields, lawns, or road medians. Each class was provided about fifty samples in the supervised classification process. From this point, the attribute data is analyzed and any barren land belonging to a church is identified as a potential location for urban agriculture. We hope to coordinate with these churches and establish some form of urban farming so that fresh produce will be available to the nearby public.

## RESULTS

The supervised image classification performed on the Tarrant County satellite imagery using ArcGIS located areas of barren land that could potentially house urban farming sites. The image classification wizard was used to identify 4 main land cover types- water, developed land, barren land, and forests. Among the identified areas of barren land, key churches with available plots of land were identified. These churches include Freedom in Worship Church, New Beginnings in Holiness Church, Tucker Street Baptist Church, and many others. The barren land surrounding these churches serves as possible locations suitable for future urban farming.

## OBJECTIVE

The objective of this research is to identify potential spaces for urban agriculture to develop. It is also a future goal to coordinate with the owners of these spaces and set the development of urban farms into action.

## DATA

Using clause builder, 592 land plots belonging to churches were identified. The result was then further reduced to 249 by selecting churches with an acreage greater than 0.2 acres. From there, the classification wizard was used to identify churches containing land ruled as barren. At least 23 churches with potential land for urban agriculture have been identified this way, with more to be discovered.

## CONCLUSION

ArcGIS image classification tool identified possible areas of land suitable for urban farming near churches. These pieces of undeveloped land can help provide fresh produce to local Tarrant County communities to help combat urban food deserts.