



National Agriculture Imagery Program (NAIP) INFORMATION SHEET May 2008

What is the National Agriculture Imagery Program (NAIP)?

NAIP is a program to acquire peak growing season “leaf on” imagery, and deliver this imagery to USDA County Service Centers, in order to maintain the common land unit (CLU) boundaries and assist with farm programs.

The goal of NAIP is to collect 1 meter imagery for the entire conterminous United States. The imagery is either natural color or “four band” imagery, and is delivered in the year of acquisition.

In 2009, NAIP will begin a second acquisition cycle. After an initial five year cycle, the program will continue with a three year cycle. NAIP will be flown for agricultural areas; full state coverage will be acquired through partnership cost shares. Minimum cost share at the national level is 10% of FSA costs.

The cycle schedule avoids grouping states in areas where weather conditions make acquisition difficult.

Who acquires the imagery?

Independent contractors acquire the NAIP imagery every year. There are currently 6 primary contractors flying imagery for the USDA Farm Service Agency (FSA)

Contractors are selected via “best value” criteria. Contract bids are evaluated on past performance, ability and capacity to perform the work, and cost. Secondary contracts between NAIP cost share partners and NAIP vendors are allowed, subject to FSA approval.

A downloadable PDF of the contract can be found on the APFO website (<http://www.apfo.usda.gov>), under the Contract Services subject, Business Opportunities topic.

How is the imagery acquired?

NAIP imagery is acquired from aircraft that have sensor systems meeting rigid specifications. Imagery is flown on a grid like system at specific elevations; the sensors take photographs at specific intervals. This is necessary to meet the standards as identified in the contract.

Aircraft...what about satellites?

Commercial satellite imagery may also be used in NAIP contracts. In 2004, the contract specified spatial resolution of 1 meter or less in all color bands. In 2005, the requirement was changed to allow PAN sharpening of color bands to reach a resolution of 1 meter ground sample distance (GSD). Although commercial satellite imagery can be used, it hasn't been to date.

What is the spectral resolution of the imagery?

The default is natural color, or RGB imagery. A “buy-up” option is “four band” imagery, with red, green, blue, and near infrared bands. Either natural color or color infrared imagery is displayed by changing the band assignments.

What spatial resolution is the imagery?

NAIP imagery has a 1 meter ground sample distance (GSD) with a horizontal accuracy that matches within 5 meters of reference ortho imagery, or which matches control points referencing photo-identifiable ground control points with an accuracy of 6 meters at a 95% confidence level.

In earlier years of the NAIP program, some states were flown at a 2 meter GSD for compliance purposes. Beginning in 2008, all acquisitions will have a 1 meter GSD only.

What is reference ortho imagery?

The reference ortho imagery is made up of mosaicked digital ortho quarter quads (DOQQs) used to digitize FSA common land unit (CLU) boundaries.

In order to measure the accuracy of deliverable imagery, it must be compared to some type of control imagery/points. Until a pilot in 2006, the control imagery was the existing baseline imagery.

What is the absolute accuracy specification?

Recently, nine states were selected to meet absolute ground control specifications. Two pilot projects were completed: Utah in 2006 and Arizona in 2007. In 2008, Indiana, Minnesota, New Hampshire, North Carolina, Texas, Vermont, and Virginia were all contracted with

this accuracy specification. The contract states that “95% of well-defined points tested shall fall within 6 meters of true ground”. This effort to move NAIP to absolute accuracy specifications in the future will result in an even more horizontally accurate product.

● Is the imagery reviewed to make sure it is accurate?

APFO has stringent imagery compliance guidelines, and all deliverables are checked via proven methods to ensure accuracy and compliance with the contract. Because NAIP is an annual program with short flying seasons, some defects such as 10% cloud cover are accepted.

● How long has NAIP been in existence?

NAIP pilot projects began 2001-2002. NAIP Contract Awards:

1. 2003 - \$9.5 million
2. 2004 - \$20 million
3. 2005 - \$24 million
4. 2006 - \$28.5 million
5. 2007 - \$9 million
6. 2008 - \$14 million

Much of this money is provided by other federal, state, and regional governments. Partnering on an endeavor such as NAIP is important because it reduces duplication of effort and fiscal waste.

● In what formats can I receive the imagery?

Imagery comes in two main formats:

1. Compressed County Mosaic (CCM)
 - a. Mosaics are generated by compressing digital ortho quarter quads (DOQQs) into a single mosaic.
 - b. Compression for 2005 - 2007 NAIP is MrSID MG3 at a ratio of 15:1. Compression for 2004 NAIP and earlier is MrSID MG2 at a ratio of 50:1 or 20:1 for 1m or 2m resolution imagery respectively. In 2008, 4 band states will be compressed with JPEG2000.
 - c. Coverage of the CCM extends up to 1 mile beyond the county boundaries.
 - d. The mosaic may cover all or portions of an individual final product.
2. Digital Ortho Quarter Quad (DOQQ).
 - a. Each individual image tile (DOQQ) within the mosaic covers a 3.75 x 3.75 minute quarter quadrangle plus a 300 meter buffer on all four sides.
 - b. The DOQQs are available in GeoTIFF format.
 - c. New for 2007: DOQQs for AZ are available in 4 bands

- d. New for 2008: 4 band acquisition for DOQQs and CCM in CT, IN, KS, MA, RI, TX, VA, VT.

All individual DOQQs and the resulting mosaic are rectified to the UTM coordinate system, NAD 83 and cast into a single predetermined UTM zone. See the NRCS website for a map of zones by county, at http://nm6.ftw.nrcs.usda.gov/website/county_utm_zone/vjewer.htm

● How can I get NAIP imagery?

1. Compressed County Mosaics (CCMs) are available for delivery 30 days after imagery acquisition, through the USDA Geospatial Data Gateway (<http://datagateway.nrcs.usda.gov>). Both 1 and 2 meter imagery is available. Downloads are at no charge, but download times may be slow. It may be recommended to order the imagery on CD or DVD.
2. Full resolution quarter quads (DOQQs) are available within 45 days of flying through APFO’s Customer Service Section, on media only. Media options include hard copy, CD/DVD and portable hard disc drives (firewire and USB2).

Orders for CCMs and DOQQs on media can be placed at the Aerial Photography Field Office (APFO) in person, or at <http://www.apfo.usda.gov/>. Select *Find out more about the NAIP Imagery Program*, then *Ordering NAIP Imagery*.

● How much does it cost?

Costs vary greatly by product and volume. Contact the APFO Customer Service Section at apfo.sales@slc.usda.gov or at 801-844-2922 for detailed information.

● Do I need special software to view the imagery?

1. CCMs from 2005 or 2006 NAIP require software that reads the MG3 format. A list of viewing software is available at <http://www.apfo.usda.gov>, select *Get a viewer for my digital imagery*. This list is provided for convenience; USDA-FSA-APFO does not support or endorse these products or services.
2. Most image viewing software will open and view GeoTIFF files.

● Who do I contact for more information?

1. For sales information, contact USDA-FSA-APFO at 2222 W 2300 S, Salt Lake City UT, 84119-2020, call 801-844-2922, or visit <http://www.apfo.usda.gov>.
2. For further information contact the APFO NAIP Program Manager Kent Williams at 801-844-2908, or GIS Specialist Louise Mathews at 801-844-2934.