What is the National Agriculture Imagery Program (NAIP)?

NAIP is a USDA, Farm Service Agency (FSA) program to acquire “leaf on” aerial imagery during the peak growing season, and deliver this imagery to USDA County Service Centers. The NAIP imagery is used to maintain 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 acquired as a 4-band product, which can be viewed as either a natural color or color infrared image.

While the focus of NAIP is on agricultural areas, FSA funds and cost share partnerships between federal agencies are leveraged to acquire full state coverage.

Who acquires the imagery?

Independent contractors acquire the NAIP imagery. The current contract has three primary contractors acquiring imagery for the USDA Farm Service Agency (FSA).

Contractors are selected via “best value” criteria. Contract proposals are evaluated on past performance, ability and capacity to perform the work, and cost. Secondary contracts with 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?

When the NAIP program began, imagery was acquired from aircraft using film or digital cameras; at present, acquisition is entirely with digital sensors. Both film and digital cameras must meet rigid calibration specifications. The digital sensors currently in use may acquire imagery through a continuous collection technology, or may use set “exposures,” similar to film based acquisition.

Aircraft…what about satellites?

Commercial satellite imagery may also be used in NAIP contracts, although as of 2015 it has not been used. In 2004, the contract specified a spatial resolution of 1 meter or higher in all color bands. In 2005, the requirement was changed to allow pan-sharpening of color bands in satellite or aircraft acquired NAIP imagery.

What is the spectral resolution of the imagery?

The default is four-band imagery, containing red, green, blue, and near-infrared bands. Either natural color or color infrared imagery (CIR) can be displayed by changing the band assignments in the viewing software.

What spatial resolution is the imagery?

NAIP imagery has a 1-meter ground sample distance (GSD). Beginning with the 2011 NAIP season, ½-meter GSD imagery is an option through a contract “buy up” if the additional funding for the higher cost of the imagery is available from state or federal partners. The 2013 NAIP imagery for Idaho and the 2015 NAIP imagery for Wyoming are the only states to have received ½-meter imagery. In earlier years of NAIP, some states were flown at a 2-meter GSD for compliance uses.

What is reference ortho imagery?

Until 2006, the horizontal accuracy of all NAIP imagery was inspected by comparing the NAIP imagery to existing orthorectified imagery, the mosaicked digital ortho quarter quads (MDOQ), which were initially used to digitize FSA common land unit (CLU) data. The NAIP imagery was required to match within 5-meters to the existing MDOQs.

What is the absolute accuracy specification?

NAIP transitioned to an absolute accuracy specification beginning in 2006, which tied the imagery to true ground rather than another imagery source. The contract states that “all well-defined points tested shall fall within 6 meters of true ground at a 95% confidence level”.


Is the imagery reviewed to make sure it is accurate?

APFO has stringent imagery compliance guidelines, and all deliverables are inspected using automated and visual methods to ensure accuracy and compliance with the contract specifications.

How long has NAIP been in existence?

NAIP pilot projects began in 2002. The program has continued to grow ever since.

Each year several federal and/or state agencies contribute funds which together with the FSA funds allow for greater acquisition of data. These NAIP funding partnerships reduce duplication of effort and fiscal waste.

The NAIP acquisition schedule avoids grouping states in areas where weather conditions make acquisition difficult.
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 – 2015 Natural Color NAIP
      is MrSID MG3 at a ratio of 15:1 for 1-meter and
      60:1 for ½-meter.
   c. Compression for 2004 NAIP and earlier was MrSID
      MG2 at a ratio of 50:1 for 1-m and 20:1 for 2-m
      resolution imagery.
   d. In 2008, 4-band NAIP imagery was compressed
      with JPEG 2000. For all other years of NAIP since
      2005 3-band, MG3 has been used.
   e. The mosaic may cover all or portions of an
      individual county or project area.
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, and
      all individual DOQQs and resulting mosaics are
      rectified to the specified UTM coordinate system
      zone.
   c. DOQQs can be purchased through the APFO
      Customer Service Section. For detailed information
      on NAIP availability and other items, please see
      the NAIP Status maps or contact the Customer
      Service Section at 801-844-2922, or by email at
      apfo.sales@slc.usda.gov

How can I get NAIP imagery?

1. Compressed County Mosaics (CCMs) are available 45 days
   or less after the end of the state flying season. The natural
   color CCMs are available to the general public through the
   USDA Geospatial Data Gateway. All years of available
   imagery may be downloaded as ½, 1, or 2 meter CCMs
   depending on the original spatial resolution. Downloads are
   free. CCMs with a file size larger than 8 GB may not be
   downloaded from the Gateway; they can be obtained by
   contacting the APFO Customer Service Section. Pricing and
   delivery methods can be found in the contact information
   listed below.
2. Full resolution quarter quads (DOQQs) are delivered to
   APFO within 30 days after the acquisition period ends.
   They will be available in a natural color format, through the
   public facing web service, after the entire state has been
   received at APFO. The four band DOQQs are available for
   purchase. Media options for delivery include hard copy
   photos, CD/DVD, and portable hard disk drives.

3. Orders for CCMs and DOQQs on media can be placed
   at the Aerial Photography Field Office (APFO) in
   person or on the APFO website. Select Find out more
   about the NAIP Imagery Program, then Ordering
   NAIP Imagery.
4. NAIP DOQQs can be added into a GIS project for
   viewing through APFO’s ArcGIS service. Detailed
   instructions for using this web service can be found on
   the APFO website. Select Imagery Programs and then
   select NAIP Imagery. Scroll down to the section titled
   “How can NAIP be accessed.”

How much does NAIP imagery 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.

What software is needed to view the imagery?

1. NAIP CCMs from 2005 – 2013 require software that
   reads the MG3 or JPEG 2000 format. Pre-2005 CCMs
   used the MG2 format. Four band imagery will require
   software which can recognize all four bands. A list of
   free viewing software is available at the APFO
   website. 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 display GeoTIFF
   files.

Who do I contact for more information?

1. NAIP acquisition and other information can be found on
   the NAIP Status Maps site.
2. For sales information, contact USDA-FSA-APFO at
   2222 W 2300 S, Salt Lake City UT, 84119-2020, call
   801-844-2922, or visit the APFO website.
3. For further information contact the NAIP Project
   Manager David Davis 801-844-2933; or GIS
   Specialists Joan Biediger 801-844-2951 and Nathan
   Pugh 801-844-2927.

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