The USDA-ARS Aerial Application Technology Group (AAT) publishes almost 20 papers a year in peer-reviewed scientific journals. That scientific stamp of approval provides important validation, but academic journals aren't part of the daily reading lists of most aerial applicators. In an effort to share its research efforts with the people it is intended to help, ATT has developed one-page summaries for each of its peer-reviewed manuscripts. These Applied Research Summaries have been boiled down to a few quick take-away messages and will be appearing regularly in Agricultural Aviation. Full reports are available at AAT's recently revamped website, apmru.usda.gov/aerial.

Current Status and Future Directions of Precision Aerial Application for Site-Specific Crop Management in the USA

Original Citation: Lan, Y, Thomson, S.J., Huang, Y., Hoffmann, W.C., and Zhang, H. 2010. Computers and Electronics in Agriculture.

Research Objective: To explore the current state of precision application and remote sensing technologies that support the aerial application market and to determine and discuss where these systems are going in the future, what research areas need to be addressed to bridge any gaps, and ultimately, how these systems will make aerial applicators more efficient.

Research Methods: The available body of literature, along with current research efforts and experiences were reviewed. The most promising equipment and techniques are described and discussed. An overview of what a complete variable-rate, precision application system would look like is discussed in detail.

Research Results: The basic components required for a fully functional variable rate, precision application aerial system are already available. There is still room for developing and improving how remotely obtained (aerial or satellite imagery) data is interpreted and used to create prescription application maps, but through use of new data fusion technologies, this information is becoming more readily available

Research Application:

- The basic components for aerial variable rate, precision application systems are readily available. With continued improvements to how field and crop conditions are obtained and interpreted to create prescription application maps, these systems will be fully operational within the next several years with real-time operational capabilities.
- The development and adoption of real-time, remote sensing, variable rate, precision application aerial systems will allow applicators to respond quickly to emerging pests on an areawide basis through targeted and judicious usage of pesticides that will result in effective, environmentally responsible applications.

Article can be downloaded in the **Publications** Section of the Aerial Application Technology website: Apmru.usda.gov/aerial ■