

July 1997

# FARM CHEMICALS

**Gowan:**  
**Specialists In**  
**Specialty Crops**



COMPLIMENTARY ISSUE



**Special Section:**  
**"Water Friendly**  
**Farming"**

## FINE TUNING DETECTION

AMS' system, due for a 1998 launch, promises a cleaner picture of field problems.

**W**HEN it comes to evaluating a remote sensing system, it's a case of three strikes, you're out.

In order for an agricultural remote sensing system to be effective, it must meet a set of three criteria, according to Dr. Stephen Paley, whose company, Agricultural Management Systems (AMS), Oklahoma City, OK, will offer aircraft-assisted remote sensing in the 1998 season. The system must:

- Be able to detect all significant problems and conditions in the crop being surveyed.

- Detect all problems and conditions — above a small threshold — that are in the field each time the plane flies, without making the imagery too complex to read.

- Introduce no false positives. In other words, if the imagery shows a stressed area, it must really exist.

Paley claims his system is the only one that will offer all three.

### The AMS Approach

The concept, Paley says, is simple: A sensor, placed on board a small aircraft, detects and records all agricultural problems and conditions in a field in their early and pre-visible stages. Like all remote sensing systems, it cannot identify the cause of the problem; however, it can reveal the size, shape, location, and severity of the ailment.

**Criteria: Detecting all problems in the field, every time it's flown.** "You're not going to see one bug on three plants," Paley says, "but above a reasonably small threshold you really want to be able to see everything that is there every time you fly." In AMS imagery, each pixel represents 6 feet.

Paley says the system detects diseases at least one week before they turn visible to the human eye, and in some cases have been spotted up to three weeks in advance.

**Criteria: Introduce no false positives.** Paley defines false positives as a kind of visual clutter, and he guarantees his system against them. "Depending upon how finely you're imaging, the system and/or the environment could put false information in," he says. "They look like sources of stress, but they're not — they're of non-agricultural origin."

One of the biggest culprits is cloud cover, which AMS avoids by making flights at 3000 feet during the evening hours, when cloud cover is usually above that altitude.

If the images are being used to assist with crop scouting, false positives can actually make more work for the scout than normal pattern

scouting. "The scout has no way to distinguish between a false positive and an agricultural problem he has failed to identify, perhaps one that is pre-visible," he says.

### Scout It Out

AMS bills its system as a tool to assist with crop scouting. In one commercial application in South Texas, AMS imagery allowed fields to be scouted in one-third to one-fifth the normal scouting time.

Fields are flown at night and the images are delivered by the next morning — less than a 12-hour turnaround time. In a scouting application, AMS's system boasts a distinct advantage over many others which often take a few days to return images to the customer.

The system detects such variations as diseases and fertility problems in early and pre-visible stages. **FC**

## REMOTE SENSING SUPPLIERS

Images are obtained either directly from satellite company or through an image processing concern. Here's a list of some suppliers:

- AGRICULTURAL MANAGEMENT SYSTEMS  
Oklahoma City, OK  
405-721-0064
- AGRI IMAGIS  
Maddock, ND  
701-438-2242
- EARTH SATELLITE CORP.  
Rockville, MD  
301-231-0660
- EROS DATA CENTER  
Sioux Falls, SD  
605-594-6151
- RESOURCE21  
Englewood, CO  
303-749-3200
- SPACE IMAGING EOSAT  
Lanham, MD  
800-344-9933
- SPOT IMAGE CORP.  
Reston, VA  
618-656-7460