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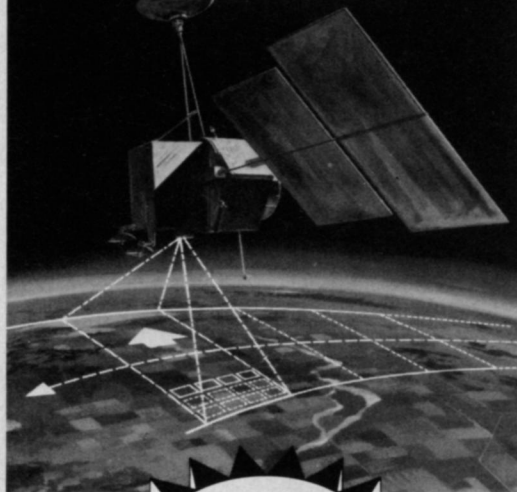
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# Conversation Pieces

## PLANETARY CROP- WATCHER WITH 20/20 VISION



Forecasting crop yields is still more of an art than a science. No electronic system, however sophisticated, can yet match a farmer's feel for how his crops are doing. But individual assessments like "pretty good" or "we'll have a bumper crop if the weather holds" can't be used effectively for worldwide or even regional forecasts. They don't fit into a computer, and they take too long to compile and analyze.

What's needed is millions of precise, numerical estimates of crop status flowing steadily into the computer on an acre-by-acre basis. This calls for a satellite-borne system which provides a truly synoptic view of the earth's arable areas. NASA's Landsat, in orbit since 1972, provides this kind of general data. But the data requires a lot of correction to compensate for satellite motion and the optical and electro-mechanical limitations of the sensors.

The next generation Landsat sensor system, called Thematic Mapper, is now in the study phase. This new system will provide improved spatial and spectral resolution over the present system. It will be able to discriminate more effectively between different crops, stages of growth, and sick and healthy vegetation. Besides crop watching, it will be able to survey forest resources, detect changes in land use, monitor rangelands for better livestock management, and help in watershed and water use management.

Thematic Mapper scheduled to fly in 1980 aboard Landsat-D spacecraft will be in sun-synchronous orbit at 705 km altitude, scanning a swath 100 nm wide and covering all inhabited areas of the earth.

Some additional advantages will be built into the Thematic Mapper design under study by TRW Systems and Perkin-Elmer. Because of its unique rotary scanning system, the scan is unidirectional and the sensor output is inherently linear. Little or no special processing will be needed to compensate for optical and electro-mechanical distortions. This means less complex spaceborne equipment, simplified data processing on the ground, faster status reporting, and thus an overall reduction in system operating costs.

Simplified ground data processing is particularly important. It means that low-cost ground stations can be set up around the world. They'll be able to take data on local crop conditions directly from the satellite as it passes overhead; no need to go through a central receiving station. Such reports will become even more valuable when they can be coordinated with long-range weather forecasts.

The Thematic Mapper is one of many ways that TRW is working to improve space technology as a tool to give us a better understanding of our earth and man's impact on it. If you are interested in using our skills in this area, we invite you to write and tell us about your specific needs.



### TRW

DEFENSE AND SPACE SYSTEMS GROUP

Attention: Marketing Communications, E2/9043, One Space Park, Redondo Beach, California 90278