

Applications of Remote Sensing in Agriculture

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London Boston Singapore Sydney Toronto Wellington

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First published 1990

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British Library Cataloguing in Publication Data

Clark, J. A. (Jeremy Austin), 1938-
Applications of remote sensing in agriculture.
1. Great Britain. Agriculture
I. Title II. Steven, M. D.
338.16
ISBN 0-408-04767-4

Library of Congress Cataloging-in-Publication Data

Applications of remote sensing in agriculture/[edited by] J. A.
Clark, M.D. Steven
p. cm.
Includes bibliographical references
ISBN 0-408-04767-4 :
1. Agriculture-Remote sensing. I. Clark, J.A. (Jeremy Austin),
1939- . II. Steven, M.D.
S494.5.R4A66 1990
630'.28-dc20 90-1778

Composition by Genesis Typesetting, Laser Quay, Rochester, Kent
Printed in Great Britain at the University Press, Cambridge

REMOTE SENSING IN AGRICULTURE: PROGRESS AND PROSPECTS

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Impressions

I believe that most participants at this Easter School will return to home base with three abiding impressions of what we have heard and seen. First, we have been left in no doubt that techniques of remote sensing are continuing to develop very rapidly, particularly in the interpretation of microwave signals and in the storage and processing of data. Second, platform speakers, along with all the enthusiasts who displayed posters, have convinced us that there are many ways in which remote sensing could, in principle, be deployed to increase the world's food supplies. Third, speakers from the floor have repeatedly pointed out that the contribution which remote sensing has so far made to agriculture lags far behind the perceived potential. In attempting to sum up conclusions from this meeting, I shall be specially concerned with the constraints which prevent that potential from being realised.

Evolution of remote sensing

Most applications of remote sensing are still in the process of evolving through stages of development familiar in the experimental sciences. After the first flash of inspiration come measurements and hypotheses, usually in that sequence but sometimes in the reverse. Hypotheses suggest how measurements should be interpreted in terms of underlying mechanisms and the number of measurements needed to support a given hypothesis often displays a broad optimum. Below the optimum, experimental support for the hypothesis is unconvincing. Above the optimum, attempts to demonstrate the validity of a hypothesis can be obscured by a fog of facts. Remote sensing often demonstrates this problem. Enormous amounts of data are generated by instrumentation on orbiting satellites but usually only a small fraction is subsequently used. Data banks, however comprehensive, cannot generate hypotheses spontaneously. This process is always limited by the human "eye-brain" system that Allan talked about, and in many remote sensing laboratories the ratio of minds to megabytes seems very small!

¹Submitted as Conference paper No. 521 by the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT)

