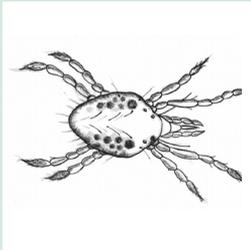


Identification of crop damage

caused by diseases, pests or mineral deficiencies



Agrodok 28

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caused by diseases, pests or mineral deficiencies

Joep van Lidth de Jeude

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Foreword

The purpose of this booklet is to help farmers in remote areas prevent and control diseases and plagues in their crops. These farmers may not have access to agricultural extension officers or other experts who could diagnose the cause of the crop damage and suggest immediate steps to control it, or advise the farmers on how to prevent it from recurring in the future.

Before applying any pesticide in such an emergency situation, the farmer will have to determine the nature of the damage that has been done, i.e. he will have to know what type of damage-causing agent caused the problem. Was it caused by an insect, a mite, a fungal, bacterial or viral disease, a nematode or a nutrient deficiency? This book therefore focuses on these various groups of pests and pathogens to help explain the possible causes of and solutions to crop damage.

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Joep van Lidth de Jeude, Wageningen, 2004

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1 Introduction

Sometimes even experienced farmers are faced with serious crop damage that they cannot explain. Without a clear understanding of what caused the damage, they will not know how to treat it. In many developed countries agricultural extension officers can come to the field to analyse the symptoms and advise the farmer on how to prevent and control the problem. If such assistance is not available, however, the farmer will have to depend on the experience and insights of his colleagues. Unfortunately, they may also lack the knowledge required to accurately diagnose the cause of the problem. This publication is intended to serve as a tool to help farmers determine what steps can be taken to save their crops in such emergency situations.

Approach per group of damage-causing agents (pests and diseases)

Crop damage can be caused by various biological groups: plant diseases (caused by fungi, bacteria or viruses), insects, nematodes, mites, or others. Pesticides used to control these pathogens are usually highly specific to each group. A fungicide, for example, will usually not have any effect on insects or any other group of pathogens. To decide what emergency measures should be taken, it is usually not necessary to know the exact identity of the damage-causing agent, as long as the group to which it belongs can be determined.

Unfortunately, determining which group or category the agent belongs to is not that simple: the symptoms do not always clearly point to one specific group. The characteristic symptoms of a nematode infestation, for example, are very similar to those of a viral disease or a nutrient deficiency. By providing ample descriptions of the similarities and differences between the symptoms of the various groups of pathogens, the author has attempted to make it possible for an individual farmer to identify the cause of crop damage. Appendices I and II also provide additional keys to identifying damage-causing agents.

For each group a short description of possible control measures is given. The author would like to stress the importance of an integrated approach to pest management (IPM). Only as a last resort is the use of pesticides advised. More detailed information can be found in Agro-dok 30 – Integrated Pest Management.

Expert assistance

This publication covers primarily the prevention, spread and control of the various causes of crop damage. If after reading this information a farmer is still not able to identify the cause and specific type of damage threatening his crop, we would advise him to consult an advisory institution or the Internet, if at all possible. For best results, the questionnaire in Appendix IV can be completed and sent to such an institution (usually an agricultural research station). With clear and complete data, experts can usually determine the cause of the problem, and give advice on specific measures to be taken.

Economic importance

For the purposes of this booklet, crop damage is defined as being severe enough to make control measures an economic necessity. Of course the difference in yield that can be achieved through these measures must greatly outweigh the costs involved. Damage that decreases the yield only slightly or not at all is thus not considered in this booklet. Neither chemical nor integrated control measures are needed in that case, and they may even be undesirable if their use would necessitate an avoidable investment.