

# What is Integrated Crop Management (ICM)?

ICM is a method of farming that balances the requirements of running a profitable business with responsibility and sensitivity to the environment. It includes practices that avoid waste, enhance energy efficiency and minimise pollution. For many farmers or growers, adoption of ICM involves some changes to existing practice. However, for the producer it must ensure a continuing living, and for the consumer a continued supply of affordable, quality produce.



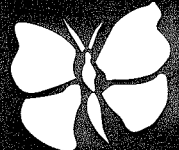
ICM combines the best of modern technology with some basic principles of good farming practice. ICM is a whole farm, long term strategy. It can not be applied to one crop, or one field, or one season. Although primarily concerned with crop production, livestock management is equally important on mixed farms because livestock are consumers of crops and providers of organic nutrients.

By careful assessment, monitoring and planning, natural resources can be used fully and supplemented where necessary with inputs such as fertilisers and crop protection products. Maintenance and enhancement of landscape features and wildlife habitats are also important.

As ICM involves the whole farm and is site-specific, there are no hard and fast rules about how to achieve this. Individual farms differ in many ways: location, climate, soil type, cropping pattern, to name a few. However, amongst all this diversity, there are some general guidelines that can help all farmers and growers take practical steps to improve their management practices.

For everyone the process involves planning, taking action and monitoring the outcome.

*ICM combines the best of modern technology with basic principles of good farming practice. The whole farm is involved.*



Integrated Crop Management

*There are increasing demands on farmers to be more sensitive to environmental issues.*

*Basic values and skills built up over generations of farming tradition should not be overlooked.*

## Why do we need ICM?

The spectacular improvements in agricultural efficiency and productivity in the western world over the past 50 years, have resulted in a plentiful and reliable supply of food, produced without putting too much pressure on land not ideally suited to farming.

Increased productivity from the land however requires intensification of inputs, including energy. The popular perception is of excessive consumption of finite resources and destruction of wildlife and the landscape. The problem is that with well over half the food in Britain purchased in supermarkets, there is little public appreciation of the realities of food production on the farm, nor of the benefits conferred by modern technologies.

In meeting the short-term need for food production, there is a risk that some basic values and skills, built up over generations of farming tradition, are overlooked. The march of agricultural progress has changed the landscape such as hedgerow removal. Meanwhile intensive fertiliser and agrochemical usage have contributed to a reduction in biodiversity in the cropped area. These factors, coupled with a food supply that is assured and taken for granted, have led to increasing demands on farmers to be more sensitive to wildlife and environmental issues.

ICM is an agricultural system that allows farming to be practised in a way that safeguards the environment. At the same time, it recognises that the quantity, quality and price of produce, the profitability of the farm and the adoption of new technologies are all essential if the overall economic stability of agriculture is to be preserved.

## What does ICM involve?

ICM embraces virtually everything that happens on the farm or holding, including livestock management, where relevant. ICM will often necessitate changes to existing practices but most of all it requires careful attention to detail, planning, monitoring and a commitment to the overall objectives.

### ...crop rotation

A diverse crop rotation has numerous benefits. It can enhance and maintain soil fertility, for example by inclusion of grass leys. Ensuring green cover in the autumn helps to prevent nitrate leaching. A diverse rotation can also reduce the impact of weeds, pests and diseases by interrupting pest and disease life cycles. This can be helped further by choosing suitable resistant varieties.

### ...soil and cultivation

A fundamental natural resource on the farm is the soil. Maintenance of soil stability, structure and fertility is central to any ICM plan. Farm soil mapping and analysis form part of the planning stage.

Erosion caused by wind or water is a particular danger on some soil types and it is important to identify the risks and minimise them. Measures might include establishing permanent grass or planting specific erosion breaks.

Choice of tractor size, tyre pressure, cultivation technique and timing will have a major impact on structure. Non-inversion cultivations require less energy than ploughing and do less damage to the soil fauna. However these benefits need to be balanced against any resulting changes in the weed spectrum. In general it is best to alternate ploughing and non-inversion techniques in the rotation.

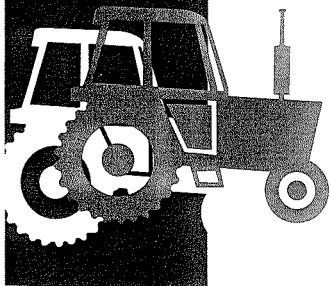
### ...crop nutrition

A planned fertiliser strategy, designed to match inputs of the major nutrients to the demands of the growing crop, is both economically and environmentally sound. Regular soil analysis will determine the level of nutrients available. Where organic manures are used it is important to accurately determine their nutrient value. All fertilisers must be applied with care, avoiding field boundaries, wildlife habitats and water courses. Timeliness is as important for fertiliser applications as it is for crop protection products.

*ICM requires attention to detail, planning, monitoring and commitment.*

*Maintenance of soil stability, structure and fertility are crucial.*

*Fertiliser inputs should match the needs of the growing crop.*



*Cultural measures, rotations and varieties are the first line of defence.*

*A wildlife programme for the whole farm – cropped as well as non-farmed.*

### ...crop protection

An essential aspect of ICM is the effective control of damaging pests. Prevention through cultural measures, rotation and variety choice should be the first line of defence.

However, invasion or infection by weeds, insects or diseases is inevitable in any farming system and they must be controlled. Much can be done to minimise the impact of pests by prediction and evaluation. This may include weed mapping, disease or pest forecasts, trapping, or use of diagnostic kits.

Where control becomes necessary, all options should be considered. Biological control methods should always be explored although these are usually best suited for glasshouse crops and fruit production. Currently chemical control is often the most appropriate choice.

Most modern crop protection products have been developed with the requirements of ICM in mind: they are target specific so they do not affect beneficial organisms, and they break down quickly to harmless substances when the job is done. Care in the choice of product, the dose, timing and method of application will minimise environmental impact.

### ...wildlife and landscape

All farms support a diversity of wildlife. It is important that this is encouraged and enhanced. ICM involves planning a programme for the whole farm, including the cropped areas as well as the non-farmed land. Obvious examples include the preservation and management of hedgerows, wooded areas, ponds and streams. Less apparent is the need to manage field margins to prevent weed ingress while providing havens for beneficial insects. In the cropped areas, autumn stubbles and fallows are sources of seeds and insects for birds and mammals in winter, while spring sown crops can provide nesting sites.

ICM also includes caring for the natural features of the landscape and its amenity value. Keeping old buildings in good repair and regular maintenance of footpaths and bridleways with proper signposting all help to achieve this.

### ...energy

It is important that energy consumption, especially fossil fuels, is efficient. To achieve this requires detailed analysis of energy use on the farm - in lighting and

heating as well as by vehicles and machinery. Alternative sources of energy, such as solar or wind power, or biofuels need to be explored. Improving the insulation of buildings, changing vehicles and rationalising vehicle movements may all offer opportunities for energy saving.

### ...pollution and waste

Pollution of water, soil or air is a risk on any farm. Farmyard manure or silage effluent, parlour and dairy washings, or sprayer washings are examples of potential pollutants. Fertiliser or pesticide spillage can contaminate soil, while unpleasant smells from livestock houses, manure heaps or slurry pits can be a real nuisance to neighbours and the public. There are Codes of Practice dealing with these hazards and full compliance is necessary in an ICM system.

Waste disposal should be planned. Wherever possible farm wastes such as straw, sugar beet tops, green waste from packhouses and farmyard manure should be recycled.

Others, like polythene crop covers, should be reused and the remainder (including pesticide containers and other packaging) should be disposed of in a responsible manner.

### ...organisation, auditing and assessing

A planned approach to ICM is essential in order to focus on the long-term objectives and identify the problem areas. As well as writing specific action plans, this also includes keeping informed and up-to-date about technical developments, training farm staff and involving them in decision making.

Measurement of achievement is vital. Setting targets involves everyone and helps management control. It allows correct targeting of resources and enables progress to be monitored. Most important, it is a visible demonstration to the public of a farming system that is conducted in a profitable but responsible and environmentally sensitive way.

## Conclusion

For farmers ICM can bring economic benefits as well as marketing advantages for produce grown in a way considered more acceptable by the consumer. ICM represents the best way forward for farming. Society can see that farmers are caring for the countryside and the environment at the same time as being assured of a continuing supply of affordable, high quality food.

*Farm wastes should be considered as a resource and reused or recycled.*

*Measuring performance is vital.*

*ICM represents the best way forward for farming.*

