



THE FAILURE OF COMMON SENSE

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Although insecticides may be credited with increasing production on the farm, there are good reasons for believing that these gains may be short-lived ones. The development of immunity in several score insect species is one such threat to recent gains in productivity, and it is not unlikely that the accumulation of residual chemicals in the soil may constitute another threat.

Such interrelationships are extremely complex, and as yet little studied because our research programs are almost all of the *ad hoc* type. They lead me to view the whole question of using insecticides and herbicides as sociological rather than scientific. In short, whereas the technology of use is relatively simple, the biology of its effects is so complex that only "uncommon sense" can save us from serious blundering.

It is in forest and range management that insecticides threaten some of the most serious disruptions. This is because, unlike the case of agriculture, they are being applied in living communities characterized by perennial vegetation. Through the slow process of organic evolution, these plant-animal communities have developed complex systems of checks and balances which act as self-regulating mechanisms and prevent excessive disruptions of the fabric of the community.

Recent studies indicate rather clearly that the more diversified a habitat, which is to say, the more plants and animals of different kinds it contains, the less subject to upset it will be.

This being so, man's attempts at simplifying habitats for his own benefit by one form of cropping or another, by "clean farming," by the planting of extensive stands of conifers and by other technologically "efficient" means, are bucking nature.

A recent analysis of the effects of insecticides suggests that the failure of insecticides is due not merely to the development of immunity or to the elimination of their insect predators, as is now well known. More basic than any of these, it is suggested that insecticides reduce the pressures of competition—including predation and parasitism—to such an extent that there results an increase of fecundity, fertility and survival great enough to overcompensate for the initial kill by the insecticide.

For that reason, not only is the control efficacy of insecticides so often disappointing, but these poisons, by upsetting nature's built-in mechanisms, often actually lead to an *increase* in pest numbers.

What common sense has never told us is that keeping many insect populations from increasing requires a 99 per cent mortality per generation. This is what man undertakes to do when he intervenes with insecticides, and this is why he so often fails, because "impressive" initial kills of up to 95 per cent leave the remaining 5 per cent unhampered to "explode" back to higher numbers than ever.

The insecticidal programs of the past 15 years have almost all been examples of technological manipulation. That is, they have been impatient or premature applications of inadequate scientific knowledge. Man's multiplying needs, and his technological arrogance, make him impatient of nature's leisurely pace. Therein, I suggest, lies our dilemma, and the failure of common sense. . . .