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Pest management by transgene

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Biological methods for insect pest control offer advantages over toxic pesticides. The 'sterile insect technique' involves the large-scale release of sterile insects that effectively compete, resulting in infertile matings and population reduction. In an Advanced Online Publication in Nature Biotechnology Carsten Horn and Ernst Wimmer at the Universität Bayreuth in Germany, describe a genetic approach to producing sterile insects that uses a transgene to generate sterile insects, rather than conventional ionizing radiation (*Nature Biotechnology,* 16 December 2002, DOI:10.1038/nbt769). This elegant system ensures that lethality is specific to embryonic stages and can be regulated by tetracycline, and that male insects are fit and competitive. The binary expression systems consists of an allele of the pro-apoptotic hid (*head involution defective*) gene under the control of a tetracycline-response element and the tTA gene driven by a blastoderm-specific promoter. Horn and Wimmer tested the approach in *Drosophila* strains to demonstrate that homozygozity for both transgenes caused embryonic lethality that could be suppressed maternally. This system could be adapted to create an effective sterile insect strategy in the field.

References

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