MAKE YOUR OWN WORM COMPOST .

Worm bins are safe and convenient. The solution for people with not enough materials to make effective compost heaps, as worm bins perform best when matter is added a little at a time, and for those with little space or no garden. Worm compost is a distinct product characterised by a high humus content which is superior to any other growing medium.

SETTING UP: Any uncontaminated, clean plastic container will suffice. For the average household a container of at least five gallons capacity is required. For example, a plastic fermenting bin or dustbin. A lid is needed, but should be well perforated with small holes [3mm diameter] to provide good ventilation, but prevent the worms from straying out. Drainage is essential, either a tap at the side, or holes in the bottom with the bin stood on top of a sturdy bowl or equivalent. Alternatively, it is possible to use a wooden box. If the box has a large surface area, this enables the worms to feed most efficiently.

WORM SPECIES: **Eisenia foetida**, also known as red, tiger, brandling, compost or manure worms. Found in leaf litter and manure heaps. They are also available commercially (including a related and equally effective species, Eisenia **andrei**) or from anglers shops. You need at least a hundred worms to start with, but about half a pound weight is recommended as a minimum colony to digest the organic waste from an average household .

BEDDING: Good bedding is required for settling in the worms to their new home and as a site to return to should conditions in the bin become temporarily uncomfortable (overloaded with raw material). Suitable materials make both air and moisture available to the worms and should retain its structure for as long as possible. Well rotted garden compost, manure or leafmould are the most natural bedding materials, which will also help to introduce more worms and their eggs and young to the process. Straw, hay or well shredded and moistened plain corrugated cardboard or thick brown paper bags are adequate. Smaller and thinner materials such as sawdust or newspaper will tend to compress into a solid mass, impenetrable to the worms.

OPERATING TEMPERATURE: The worms will remain active between 35°F and 84°F [2-30°C] but they work most effectively between 55°F and 77°F [12-25°C]. Worms may try to leave the container if it is too hot or cold for them. Consider these limitations when siting the bin. Good examples are a cellar-head, garage, shed or cool kitchen. Carpet, bubble wrap or equivalent cover for th top and sides can be employed for winter protection.

TO START THE BIN: Layer in 4 - 6 inches [10-15 cm] of bedding, mixed in with two handfuls of clean soil, which provides grit for the worms' gullets to grind up organic material. Bedding should be well moistened but not saturated. Add the worms and allow them to settle in for a week. You can then gradually add the materials you have collected for composting.

WHAT CAN GO IN THE BIN: Fruit and vegetable peelings. Large lumps and tough stumps are best diced into 1 inch [2 cm] pieces before inclusion. Food scraps such as bread, cooked rice, pasta and porridge. Tea leaves and coffee grounds. Garden weeds. Egg shells.

AVOID: Meat and fish. Dairy produce such as cheese, only in small quantities.

MAINTENANCE: Dust lightly every 4 - 8 inches [10-20 cm] with either dolomitic lime or calcified seaweed to keep the contents 'sweet' (pH balanced) and provide necessary calcium for the worms' reproduction. Take care not to overload the system, or the bin contents will start to putrefy. This will result in the worms retreating to their bedding or, if conditions are very bad, trying to escape out of the top. Add materials a little at a time, up to 3 inches deep as a rule, then leave the worms to work their way through most of this material before adding more.

READY? : After about six months of normal operation, much of the bin will consist of worm castings, or *vermicompost.*, which can now be extracted. Remove the top several inches of raw or not fully digested material and keep aside. This should contain a substantial quantity of the bin's most active worms. Turn out the rest of the bin's contents. Try to recover as many worms as possible from this compost to enable a fast return to normal operation of the bin, including any of the small, oval, yellow eggs. This extracted compost may need a little drying

out before it can be used easily, especially if you intend to sift/riddle the material. Restart the bin by adding fresh bedding and soil, followed by the worms, then finally adding the raw and undigested matter with a little dusting of lime.

USES OF WORM COMPOST: Use judiciously in seed and potting composts. It is a concentrated product and so even a little can greatly improve the quality of potting mixes and the health of seedlings, in particular. Sprinkle a little into seed drills before sowing, especially during dry conditions, or for slowly germinating seeds. Rake into seed beds to improve texture and provide a balanced set of nutrients. Worm bins are particularly popular in the USA and Switzerland, where the compost is used for houseplants and for all sorts of container growing. The restricted and stressful conditions imposed on a containerised plant are well ameliorated by the use of worm compost. The 'leachate' caught in the bottom or from a tap at the side can be used at a dilution of approximately 1:10 parts water as a general-purpose liquid feed.

MAKE-UP OF WORM COMPOST: Worm compost contains large amounts of humus. Humus is a complex material formed during the breaking down of organic matter. It provides the binding sites for plant nutrients such as calcium, iron, sulphur, potassium and phosphorus. These nutrients are stored in humic acid in a form readily available to plants, as and when the plant requires. Also, humus improves soil structure, enhancing aeration and moisture retention, and can help buffer excessive acidity or alkalinity in a soil or growing medium. Additionally, humus exerts beneficial control over plant pathogens, nematodes, harmful fungi and bacteria.

PROBLEMS? If the bin does not seem to be working, or worms are trying to escape or even dying, it could be... 1. Too hot/too cold. Re-site the bin accordingly.
2. Overloaded. This causes putrefaction, bad smells and the presence of flies (though usually only harmless fruit flies). Aerate the top of the contents with a handfork, sprinkle in some lime and add fresh bedding.
3. Unbalanced materials. If the bin smells but is not overloaded, it may be that it contains too much salty or acidic matter. Corrective strategy is same as for an overloaded system. Add a wider range of materials in future.

BUGS: Most creepy crawlies seen in the bin are integral to the composting process and so are friends, not foes. You may spot tiny white 'pot' worms; these perform the same as brandlings, but far less efficiently, and are an indicator that conditions are waterlogged and probably somewhat acidic.

FUNGI: Fungi and moulds are also an integral part of the normal composting process. If large moulds are developing on the surface just turn them in slightly with a hand fork. If you have an allergy to fungi and mould spores, you may not be able to cope with a worm bin situated in the house, but will most probably be alright with one situated outside.