not do this risks re-swallowing noxious material.

Because the stomach is always on the right, it should be no surprise that anurans always use their right hand for this 'gastric grooming'. In fact, the prolapsed stomach normally lies posterior, near the angle of the jaw, and beyond the reach of the left hand.

None of our observations detracts from the conclusions of Bisazza *et al.*, but they do suggest that in a search for the evolutionary origin of brain lateralization in higher vertebrates, one should take into consideration natural asymmetries in viscera and visceral functions.

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The risk of crop transgene spread

SIR — An environmental concern regarding the cultivation of genetically modified crop plants is whether transgenes can be transferred to wild or weedy relatives by hybridization and backcrossing, potentially resulting in plants with enhanced invasiveness or weediness[1,2]. The problem has been addressed for several crop–weed systems[1], but attention has focused on the initial crop–weed hybridization, and there is a lack of experimental data concerning the subsequent stages in the gene transfer process[3].

We have studied the introgression of genes from oilseed rape (*Brassica napus*) to the weedy relative *Brassica campestris* (*B. rapa*). The two species hybridize spontaneously, and hybrids have been found in natural populations[4,5]. Here we report that transgenic, herbicide-tolerant weed-like plants with *B. campestris* morphology, the same number of chromosomes as *B. campestris*, and high fertility, are produced as early as the first-backcross generation in field experiments where transgenic, herbicide-tolerant, interspecific hybrids are grown together with *B. campestris*.

We investigated hybridization and backcrossing between transgenic, BASTA (glufosinate)-tolerant oilseed rape (genome AACC; $2n=38$ chromosomes) and *B. campestris* (genome AA, $2n=20$ chromosomes) in field experiments. Transgenic interspecific hybrids were produced spontaneously on both parental species, confirming previous observations[4,5]. For backcrossing, we grew transgenic interspecific hybrids in small plots together with *B. campestris*, and harvested plants at maturity. Contrary to previous observations[6], interspecific hybrids were not sterile, but produced an average of more than 450 seeds per plant.

We germinated more than 4,000 seeds harvested from 32 interspecific hybrids, and grew 865 randomly chosen transgenic, BASTA-tolerant plants to flowering. Of these plants, we analysed 44 displaying a *B. campestris*-like morphology. We found *B. campestris*-like plants with 20 chromosomes and a pollen fertility of greater than 90%, both characteristics of wild *B. campestris*, among the selected plants (see table). We crossed four of the plants possessing *B. campestris* characteristics with genuine *B. campestris* individuals. The resulting seeds had a pronounced seed dormancy (as weedy *B. campestris*), and the crosses resulted in an average of 6.4 viable second-backcross (BC_2) offspring plants per pollination (table). Of the 416 BC_2 plants obtained, 42% were BASTA-tolerant. Transgenic, BASTA-tolerant *B. campestris*-like plants with 20 chromosomes and a high pollen fertility were also found at the experimental site the following spring, among plants that had germinated from seeds shed before harvest the previous year (table).

We have shown that *B. campestris*-like plants with 20 chromosomes, a high pollen fertility, and carrying a transgene from oilseed rape, can be produced as early as in the first-backcross generation, by interspecific backcrossing under field conditions. The occurrence of fertile, transgenic weed-like plants after just two generations of hybridization and backcrossing suggests a possible rapid spread of genes from oilseed rape to the weedy relative *B. campestris*, and this should be taken into account when considering the consequences of transferring new traits to oilseed rape.

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1. Raybould, A. F. & Gray, A. J. *J. appl. Ecol.* **30,** 199–219 (1993).
2. Keeler, K. H. & Turner, C. E. in *Risk Assessment in Genetic Engineering* (eds Levin, M. A. & Strauss, H. S.) 189–218 (McGraw-Hill, New York, 1991).
3. Linder, C. R. & Schmitt, J. *Molec. Ecol.* **3,** 23–30 (1994).
4. Jørgensen, R. B. & Andersen, B. *Am. J. Bot.* **81,** 1620–1626 (1994).
5. Jørgensen, R. B., Andersen, B., Landbo, L. & Mikkelsen, T. R. *Acta hort.* (in the press).
6. Stace, A. C. *New Flora of the British Isles* (Cambridge Univ. Press, 1991).

FIRST-BACKCROSS PLANTS DISPLAYING *B. CAMPESTRIS* CHARACTERISTICS

Plant	No. of chromosomes	Pollen fertility	BC_2 production (no. of pollinations)
Plants grown from harvested seeds:			
B131	20 (20–21)	–	–
AA22	20 (20–21)	94%	7.6 (16)
AA23	21	96%	12.7 (7)
FF13	20 (20–21)	97%	10.1 (18)
HH19	21 (20–21)	95%	1.0 (24)
Plants collected at experimental site:			
P4-52	20 (19–21)	95%	–
P4-57	20 (20–22)	95%	–
B. campestris (parental species)	20	>90%	

Pollen fertility was estimated by staining with cotton-blue, and chromosome counts were performed on root tips. The two plants collected at the experimental site were found among 11 plants selected on their *B. campestris* morphology from BASTA-tolerant plants growing at the experimental site. BC_2 production is the average number of viable offspring plants produced per pollination when pollinated with genuine *B. campestris*.

Soil classification

SIR — J. H. Shorter *et al.* (*Nature* **377,** 717–719; 1995) deserve congratulations for showing by field and laboratory experiments that methyl bromide in some surface soils is subject to rapid bacterial degradation, and that the residence time of this chemical is presumably much shorter than previously estimated. Hence, the continuous use of methyl bromide as a soil fumigant may be much less dangerous for ozone depletion than hitherto assumed.

As Shorter *et al.* point out, more experiments are required before their significant result can be extrapolated generally. I would like to raise a different point arising from their paper, that of the characterization of the soils tested, which are described as "temperate forest soil type", "temperate agricultural surface soil", "sandy boreal forest surface soil" and "tropical forest surface soil", without additional details about their pH, nature of clay minerals, physical properties or biological activity.

Soils are by nature extremely variable, even over small distances; it would be