

Market power and concentration

The seed market after the mergers, the Monsanto case and the counter-positions

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Disclaimer	Provides orientation, does not replace legal or competition advice. Market shares come from analyses by civil society organisations, not from official statistics.

Abstract

According to the analyses of ETC Group and GRAIN, half of the global market for commercial seed was accounted for by four companies in 2024. This situation was consolidated by a wave of mergers in 2017 and 2018, which the European Commission approved only subject to conditions. The paper describes concentration and mergers and takes Monsanto as a case study of a business model that links seed, herbicide and patent. Court cases are reported as the courts decided them; allegations remain allegations. The critical findings are set against the OECD study of 2018, the meta-analysis by Klümper and Qaim of 2014 and data from the US Department of Agriculture. The paper ends with what follows from this. The figures underlie Figure 10 ‘Market concentration in seed’.

1. Concentration in figures

1.1 Two survey years

The shares come from two reports by the civil society organisations ETC Group and GRAIN; the data layer marks them with the declared interest “NGO”. There are no official global statistics.

	2023	2024
Global market for commercial seed	around USD 50 billion	around USD 56 billion
Share of the four largest companies	56 %	50 %
Share of the ten largest companies	67 %	63 %
Bayer	23 %	20 %
Corteva	19 %	17 %
Syngenta	10 %	9 %
BASF	4 %	4 %
Vilmorin & Cie or Groupe Limagrain	4 %	4 %

Sources: GRAIN and ETC Group (2025) for 2023; ETC Group and GRAIN (2026) for 2024.

1.2 How to read the figures

The decline in shares cannot simply be interpreted as deconcentration. The reported total market has grown, and the reports do not necessarily delimit market and turnover in the same way; what is compared are two estimates, not a time series. The order of magnitude is robust: a considerable part of the trade in commercial seed lies with four corporations that also supply plant protection products. Global shares also conceal the fact that concentration varies greatly by crop and country (section 5.1).

2. The wave of mergers 2017–2018

2.1 Three mergers

According to the US Department of Agriculture, six leading corporations in 2015 became four.

Date	Event
7 June 2017	ChemChina takes over Syngenta; after the second settlement ChemChina holds 94.7 % of the shares.
August 2017	Dow and DuPont merge to form DowDuPont.
21 March 2018	The European Commission approves the acquisition of Monsanto by Bayer subject to conditions.
June 2018	Bayer completes the acquisition; purchase price around USD 63 billion. The company name Monsanto is dropped, the product brands remain.
1 August 2018	BASF takes over the businesses divested by Bayer (vegetable seed in mid-August 2018) for EUR 7.6 billion; around 4,500 employees transfer.
1 June 2019	DowDuPont's agricultural business is spun off as Corteva.

2.2 The European Commission's conditions

Bayer had to divest, among other things, its field seed and vegetable seed businesses, the herbicide glufosinate and parts of its glyphosate business; the buyer was BASF. The conditions prevented overlaps from adding up directly. They did not change the fact that the number of large suppliers fell: the businesses moved to a company that was already among the largest in the sector.

2.3 Spin-off 2026

On 14 September 2026 the Corteva board decided to spin off the seed business under the name Vylor; the distribution of the shares is scheduled for 1 October 2026 and had not been completed as of the date of this paper. A separation of seed and plant protection is not in itself a deconcentration of the seed market.

3. Monsanto as a case study

3.1 The business model

Monsanto combined three elements: a genetically inserted tolerance to its own herbicide glyphosate (brand Roundup), the herbicide itself and patents on the inserted trait. Whoever bought Roundup Ready seed bought a system. The patent covered the trait in every variety that contained it (on the legal situation in Europe, P10, section 3.2). Control thereby shifted from plant variety rights to patent and contract.

3.2 Technology agreements and the ban on farm-saved seed

In the USA, buyers of patented seed undertook in technology agreements to use it for one season only, not to pass it on and not to retain any harvested material for sowing, that is, a contractual ban on farm-saved seed. The European farmers' privilege, by contrast, permits farm-saved seed for certain species against remuneration (P10, section 2.3).

3.3 Schmeiser in Canada

In *Monsanto Canada v. Schmeiser*, the Supreme Court of Canada ruled in 2004 by five votes to four. The patent on the gene and the modified cell is valid. Whoever cultivates the plants uses the patent, even if he does not spray glyphosate. Schmeiser, however, had neither to account for profits nor to pay damages, because he had not derived any additional profit from the invention. According to the findings, his fields in 1998 consisted of 95 to 98 % Roundup Ready canola. The data layer records this case as partially verified.

3.4 Bowman in the USA

In *Bowman v. Monsanto*, the Supreme Court of the United States ruled unanimously in 2013: patent exhaustion does not permit patented seed to be reproduced by planting. Bowman had used commodity soybeans from a grain elevator as seed and replanted them over eight years. The Court expressly limited its holding to this case.

3.5 The glyphosate proceedings

The glyphosate lawsuits concern a herbicide, not seed. They belong here because herbicide-tolerant varieties and the herbicide were marketed together. Status according to the data layer, where it is recorded as partially verified:

- In 2020 Bayer announced settlements totalling USD 10.1 to 10.9 billion, without admitting liability; the part for future claims was not approved by the court.
- On 25 June 2026 the Supreme Court of the United States ruled in *Monsanto v. Durnell* (No. 24-1068) by seven votes to two that the federal pesticide law (FIFRA) pre-empts a state failure-to-warn claim where it would require a cancer warning not provided for in the label approved by the EPA. Justice Kavanaugh wrote the majority opinion; Justice Jackson and Justice Gorsuch dissented.
- In February 2026 Bayer proposed a class settlement of USD 7.25 billion. The circuit court in St. Louis (22nd Judicial Circuit, Missouri) granted preliminary approval on 4 March 2026; the final approval hearing took place on 14 September 2026, and a decision was pending as of the date of this paper.

This paper does not assess the health question.

3.6 Monsanto Papers and a retracted review article

Internal documents disclosed in the proceedings, the so-called Monsanto Papers, showed proposed ghostwriting. The review article by Williams, Kroes and Munro from 2000 on the safety of glyphosate was retracted in November 2025. The retraction notice cites the undisclosed contribution of Monsanto employees to the text and the reliance of the conclusions on unpublished Monsanto studies. The retraction concerns the authorship and data basis of the article; it is not in itself a new finding about the active substance. It shows why declared interests in the specialist literature must be checked.

3.7 Terminator technology and the moratorium

Under the catchword “Terminator”, genetic use restriction technologies (GURTs) became known that were intended to prevent farm-saved seed biologically. In decision V/5 of 2000, the Convention on Biological Diversity recommended that varieties with such restrictions not be approved for field testing and commercialisation until scientific data are available; decision VIII/23 confirmed this in 2006. It is a recommendation, not a binding prohibition.

3.8 Bt cotton in India

In 2011 Gruère and Sengupta found no evidence that Bt cotton had increased farmer suicides in India; the main causes lay in indebtedness, irrigation, credit and prices. The longer-term effect remains contested: Kranthi and Stone (2020) attribute yield gains mainly to other factors and see rising insecticide costs due to resistance; Qaim (2020) disagrees. The paper does not decide this dispute.

4. Effects on diversity

The following effects are discussed relationships, not quantities measured in this paper.

- **Variety portfolio.** Large suppliers concentrate breeding on crops and regions with large sales; varieties for small markets and regional adaptation are of less interest to them. If a programme is discontinued, varieties disappear from the trade (P18).
- **Direction of research.** Where seed and plant protection are in one hand, it is an obvious step to breed traits that fit one's own plant protection programme. Herbicide tolerance is the clearest example of this.
- **Prices.** Whether higher concentration causes higher seed prices is empirically contested (section 5.1).
- **Dependence.** Hybrid varieties and contractual bans on farm-saved seed make annual purchasing the rule. This reduces the role of the farm as a place of selection and adaptation (P15).
- **Patents.** Patents on traits extend across variety boundaries; exploiting a new variety with the trait requires a licence (P10; on new genomic techniques, P16).

5. Counter-positions

5.1 OECD 2018: concentration and innovation

In 2018 the OECD found, in 87 seed markets examined, no evidence that higher concentration leads to higher prices, and in the EU seed markets of 2013 to 2017 no decline in innovation. It stresses that concentration differs greatly by crop and country. The OECD is an intergovernmental organisation without a declared interest in the sense of the data layer. A qualification applies: the innovation period ends in 2017, before the wave of mergers was completed; the entry is recorded in the data layer as partially verified.

5.2 Klümper and Qaim 2014: meta-analysis

In 2014 Klümper and Qaim evaluated 147 studies in a meta-analysis. According to it, genetically modified varieties reduced pesticide use by 37 %, increased yield by 22 % and increased farmers' profits by 68 %. The effects were greater in developing countries. The reduction in pesticide use concerns above all insect-resistant varieties and hardly herbicide-tolerant ones; precisely the business model of herbicide tolerance and herbicide

(section 3) is therefore little covered by it. The analysis measures effects for the farms that cultivate the crops, not effects on market structure or varietal diversity. Qaim is at the same time one of the participants in the dispute over Bt cotton in India (section 3.8).

5.3 USDA ERS: data from the USA

The Economic Research Service of the US Department of Agriculture (USDA ERS) confirms the concentration for the USA: Corteva and Bayer supplied more than half of US seed sales of maize, soybeans and cotton in 2018 to 2020. The figures of a public authority thus support the observation of high concentration independently of the NGO reports, without making any statement about harm.

5.4 Assessment

The counter-positions do not refute the concentration; they dispute that higher prices or less innovation necessarily follow from it, and they document farm-level benefits of genetic engineering. The question of this strand is a different one: whether a market with few suppliers maintains the breadth of varieties, adaptations and breeding goals that is necessary for biodiversity. Price and yield data do not give a complete answer to this. The evaluation is made in position paper S01 “Biodiversity before capital”; this paper provides the state of the evidence.

6. What follows

6.1 Competition law

In 2018 merger control responded with conditions, not with prohibition. For future proceedings it is an obvious step to consider, alongside price and innovation, the breadth of the variety range, the link between seed and plant protection and the bundling of patents as points of review.

6.2 Non-profit breeding

Alongside the corporations there are non-profit breeding initiatives for open-pollinated varieties, for example Kultursaat for vegetables or Getreidezüchtung Peter Kunz for cereals and grain legumes in organic farming; the Saatgutfonds (seed fund) of the Zukunftsstiftung Landwirtschaft finances such work from donations. The Network Directory lists these institutions with their review status. Their scale is small; their significance lies in varieties that may be resown and further bred; their market access is governed by admission law (P03).

6.3 Open licences

Open seed licences, such as those granted by OpenSourceSeeds, are intended to prevent a variety and its descendants from later being restricted by exclusive rights. They work through contract, that is, with the same means as the technology agreements, but in the opposite direction.

6.4 Public breeding research

Public breeding and gene banks are a counterweight that does not depend on sales: they can work on minor crops and provide material without exclusive rights. Documented passport data also serve as evidence of prior art (P10, P11). The Action Compass and the Seed Law Check offer conservation networks entry points for this.

Figures

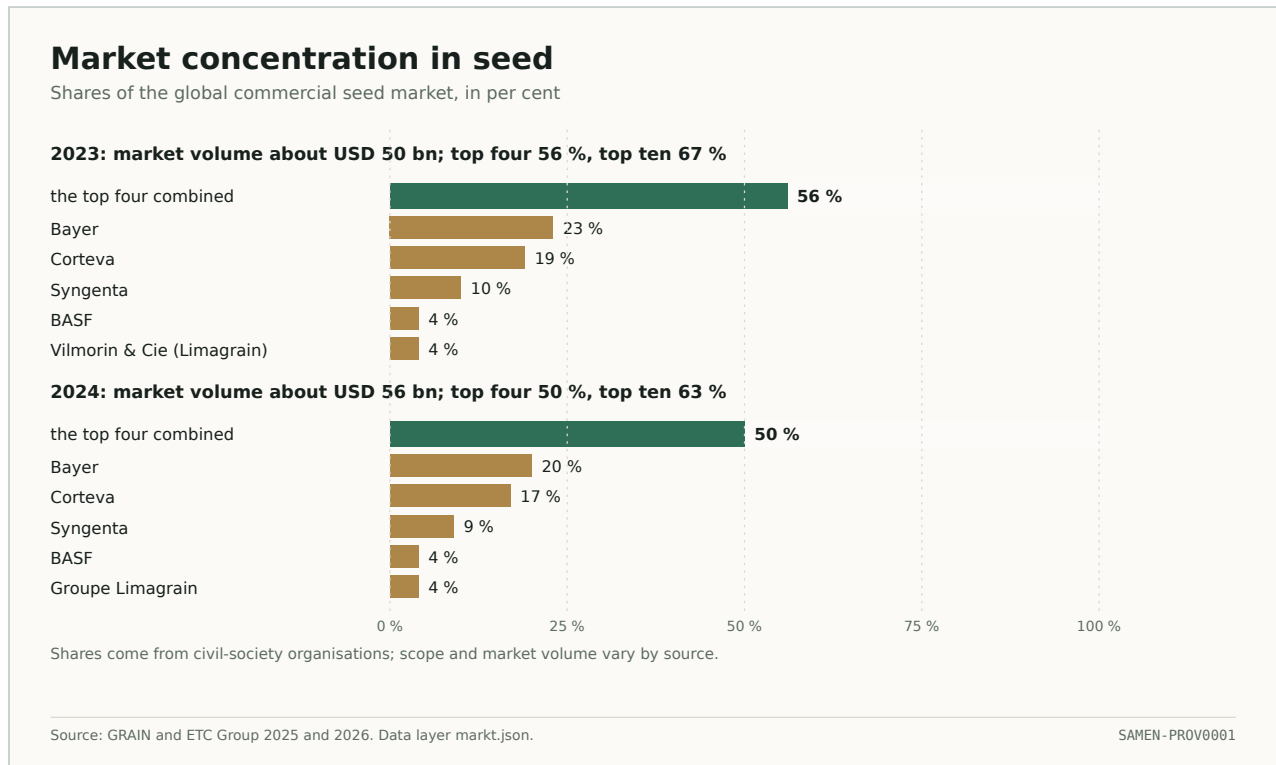


Figure 1. Concentration of the commercial seed market. Source: data layer of the strand, see figure footer.

Limits of this paper

The market shares come from two organisations with a declared interest, their delimitations differ, and official global statistics are lacking. The entries on Schmeiser, the glyphosate proceedings before 2026 and the OECD study are partially verified; the Durnell ruling and the status of the class settlement were checked against the opinion and press reports on 28.09.2026. The class settlement and the Corteva spin-off had not been completed as of the date of this paper. The paper does not assess the health effects of glyphosate or the safety of genetically modified plants. It does not replace legal or competition advice.

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