



Bayer

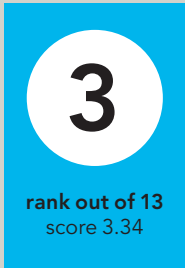
Corporate data

Headquarters: Leverkusen, Germany
Ownership type: Listed
Group revenue (2017): EUR 35,015,000,000
Seed revenue (2017): EUR 1,502,580,000

www.cropscience.bayer.com

Access to Seeds Index

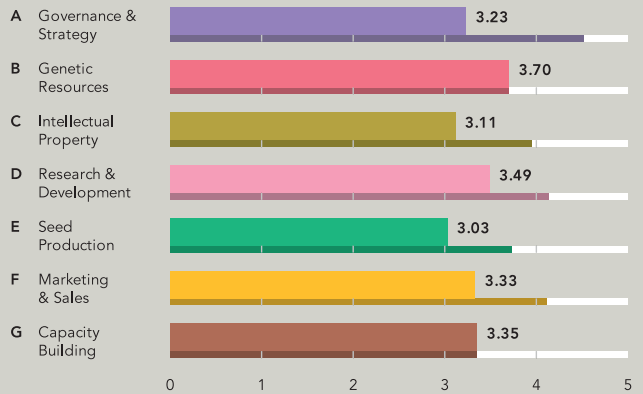
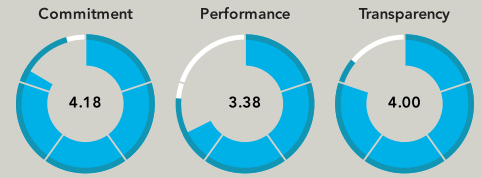
The Bayer Group (Bayer) is a life science company with three main divisions: pharmaceuticals, consumer health and crop science. The crop science division is the company's agricultural enterprise, with businesses in crop protection, seed and non-agricultural pest control. In August 2018, Bayer completed the \$66 billion takeover of the US-based company Monsanto. As a result of this acquisition, Bayer has divested part of its seed activities and portfolios to German chemical company BASF. In 2015-17, the company offered a broad portfolio of vegetable crop varieties alongside a select number of varieties for field crops and cotton (including GM). Smallholder farmers are the company's main client group in some markets, constituting 13% of its total clientele and around 95% in the index regions where the company operates.



2019 Index - Global Seed Companies

Bayer ranks third in the 2019 Index, effectively on par with its peer in second place, performing consistently well in all measurement areas. Compared to the company's performance in the 2016 Index, there are notable improvements in Research & Development, thanks to the development and release of improved hybrid varieties

adapted to smallholder farming, such as the Arize rice brand, and Capacity Building, where the company has leading individual and collaborative projects across all four index regions. Bayer is implementing particularly robust output market schemes, such as its Food Chain Partnership, which primarily strengthens market linkages for smallholder farmers. The company leads in Genetic Resources, helped by its contribution to benefit sharing, and performs strongly in Governance & Strategy, thanks to its smallholder farmer commitment. Bayer can improve its performance in Seed Production by diversifying and broadening its core seed activities, particularly in Africa.



Leading practices

Bayer made the first-ever monetary contribution to the Benefit-sharing Fund of the International Treaty for Plant Genetic Resources for Food and Agriculture (ITPGRFA). This contribution represents a portion of the company's revenue for vegetable varieties that were developed with material from public gene banks, putting Bayer at the forefront of industry efforts to advance genetic resources conservation and use policies.

The release of the company's Arize hybrid rice varieties is a result of a long-standing company research and breeding program. Through the program, Bayer is leading the industry in breeding and marketing new hybrid rice varieties adapted to challenges facing index countries, including regionally important pests and diseases, prolonged submergence, and high heat and salinity. An example is Arize AZ 8433T, bred for India and tolerant to brown plant hopper and bacterial leaf blight, both of which significantly affect yield and quality.

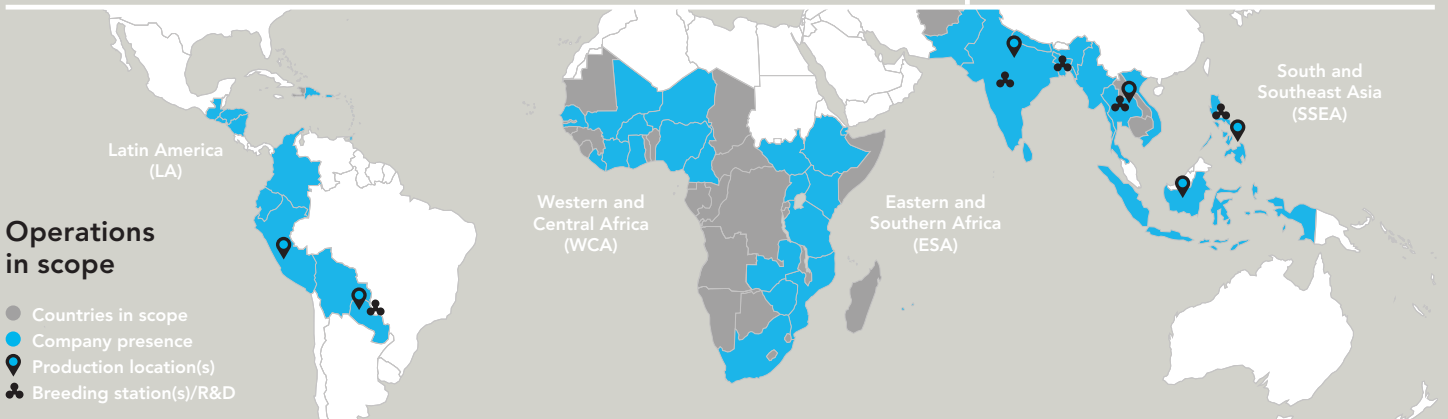
Bayer's Food Chain Partnership is a global program that aims to implement best agricultural practices through partnerships along the food value chain, reporting on 61 projects in ten countries across all four index regions (India, Guatemala, Senegal, Nicaragua, South Africa, Colombia, Thailand, Kenya, Vietnam, and Philippines). Through these projects the company offers seeds, crop protection products, certification support and field demonstrations to ensure smallholder producers meet consumer requirements regarding food quality, safety and traceability.

Areas for improvement

Through its crop science division, Bayer contributes to SDG 2 (Zero Hunger). The company can improve its position in the index by extending its commitment to the other SDGs and linking its business activities to specific SDGs, as well as setting measurable targets.

The company reports that at least 5% of the local knowledge and feedback gathered in index countries and fed into its research and development programs comes from women farmers. The company attributes this low percentage to socio-cultural norms. It is encouraged to develop a strategy to target these farmers, as it has done in some of its capacity building activities, potentially in the form of a corporate-wide commitment.

The company provides industry-leading examples of capacity building programs but can improve its position in the index by introducing a corporate-wide tracking system to detail the number of smallholder farmers reached through its various projects.



Index crops in portfolio

| | Sales | | | | Seed type | | | Source | | |
|--------------------|-------|-----|-----|------|-----------|-----|----|----------------------|---------------------------|-----------------------------|
| | LA | WCA | ESA | SSEA | Hybrid | OPV | GM | Own breeding program | Public research institute | Licensed from other company |
| Field crops | | | | | | | | | | |
| Millets | | | | ● | ● | | | ● | | |
| Rice, paddy | | ● | ● | ● | ● | | | ● | | |
| Soybean | ● | | | | | | ● | ● | | |
| Wheat | | | | | | | | ● | | |
| Vegetables | | | | | | | | | | |
| Cabbage | ● | | | ● | ● | | | ● | | |
| Carrot | ● | | | ● | ● | | | ● | | |
| Cauliflower | | | | ● | ● | | | ● | | |
| Cucumber | ● | | ● | ● | ● | | | ● | | |
| Eggplant | | | | ● | ● | | | ● | | |
| Gourd | | | | ● | ● | | | ● | | |
| Green bean | | | | | | | | ● | | |
| Green pea | | | | | | | | ● | | |
| Lettuce | ● | | | | ● | | | ● | | |
| Melon | ● | ● | | ● | ● | | | ● | | |
| Okra | | | | ● | ● | | | ● | | |
| Onion | ● | ● | ● | ● | ● | | | ● | | |
| Pepper (hot) | | | ● | ● | ● | | | ● | | |
| Pepper (sweet) | ● | | | ● | ● | | | ● | | |
| Pumpkin | | | | | | | | ● | | |
| Squash | | | | ● | ● | | | ● | | |
| Tomato | ● | | ● | ● | ● | | | ● | | |
| Watermelon | ● | ● | | ● | ● | | | ● | | |

Local crops in portfolio

| | Sales | | | |
|---------|-------|-----|-----|------|
| | LA | WCA | ESA | SSEA |
| Mustard | | | | ● |

Notable findings

■ Bayer's Smallholder Farming: Small Land, Large Impact commitment details the three main areas in which the company aims to support smallholder farmers, notably education, tailored farming solutions and partnerships. The company reports that in 2017 it had around 2 million smallholder clients.

■ The company's Child Care Program has 98 staff dedicated to monitoring its compliance with child labor standards in Bangladesh, India, the Philippines and Thailand. The program also oversees the Bayer-Ramanaidu Vignana Jyothi School of Agriculture in India, which provides 60 underprivileged youth with vocational agricultural training each year.

■ Along with the International Finance Corporation, Netafim and Swiss Re Corporate Solutions, Bayer is part of the Better Life Farming Alliance in India and the Philippines. The partnership aims to help smallholder farmers to grow their farms into commercially viable and sustainable businesses, through access to financing, quality seed, crop insurance and education.

■ Bayer partnered with the German Agency for International Cooperation, national and regional authorities and private players in the Better Rice Initiative Asia (BRIA). BRIA is a public-private partnership that aims to improve the livelihoods of rural rice farmers through the promotion of sustainable rice production and facilitated market access in Southeast Asia, including Thailand, Vietnam and the Philippines.

■ Bayer, Plant Breeders Without Borders and Bogor University have partnered to improve varieties of Bambara groundnut in Indonesia. The project seeks to empower smallholders to improve performance through locally run breeding programs and to increase local agrobiodiversity.

■ In 2016, Bayer released three genetically modified (GM) varieties of soybean under its Credenz brand in Paraguay. The varieties are resistant to regionally important pests, including soybean looper and bollworm, and tolerant to glyphosate herbicide. Credenz soybeans were included in the divestment of portfolios to BASF as part of the company's acquisition of Monsanto.

■ Alongside other global companies, Bayer is a participant in the Fair Planet initiative in Ethiopia. As part of this initiative, the company trains smallholder farmers and engages participants in testing tomato, hot pepper and onion varieties through the Bridging the Gap project, releasing the widely adapted Mata Hari F1 hybrid onion in 2016. The project has established training centers in three varied climatic regions and trained over 15,000 smallholder farmers.

■ In India, Vietnam and the Philippines, Bayer has Rice Centers of Excellence that work to integrate practices involving seeds, fertilizers, crop protection and water management. The company customizes these approaches for different agro-ecological zones within each country.

■ In Mali and Senegal, the company supports the myAgro project, a pre-paid card model that connects smallholder farmers with suppliers through SMS. Farmers can purchase myAgro scratch cards for as little as one dollar and pay for seeds and fertilizer that are delivered in advance of the planting season. The company reports that up to 70% of participants are women farmers.

■ Together with the College of Aquaculture and Fisheries, Can Tho University and the Center of Agricultural and Fishery Extension Centers of Bac Lieu, Ca Mau and Kien Giang provinces, Bayer has initiated a shrimp-rice project in Vietnam. Salt-water intrusion in the Mekong Delta has created a new ecological niche, with company research showing the positive environmental and economic impact of rotating shrimp production with rice production. Some 180,000 hectares are currently being farmed under this new method.

■ The company's Integrated Rural Development Village Program emphasizes women's empowerment by providing training on child health and financial/legal literacy as well as helping to improve entrepreneurial skills through vocational training. Some 2,634 women have benefited so far from the program in India.

■ Bayer, alongside global peer Syngenta, contributes to the public-private Farm to Market Alliance partnership, which seeks to transform food value chains in emerging markets through long term linkages between smallholder farmers and other key players in Kenya, Rwanda, Tanzania and Zambia.