

# 绿色革命

Green revolution 2.0

# The Economist

## 听读系列



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## 绿色革命2.0

### 如何解决全球大米危机

这种世界上最重要的作物正在加剧糖尿病和气候  
变化

## Green revolution 2.0

### How to fix the global rice crisis

The world's most important crop is fuelling diabetes  
and climate change

Rain

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1. THE GREEN revolution was one of the greatest feats of human ingenuity. By promoting higher-yielding varieties of wheat and, especially, rice,



**green revolution** *noun* 绿色革命，一种国际农业技术推广。发达国家在第三世界国家开展的农业生产技术改革活动。

**feat** /fi:t/ *noun* (*approving*) an action or a piece of work that needs skill, strength or courage 技艺；武艺；功绩；英勇事迹

**ingenuity** /ˌɪndʒəˈnju:əti/ *noun* [U] the ability to invent things or solve problems in clever new ways 独创力；聪明才智；心灵手巧

**yield** /ji:ld/ *verb* [T] ~ sth to produce or provide sth, for example a profit, result or crop 出产（作物）；产生（收益、效益等）；提供

**wheat** /wi:t/ *noun* [U] a plant grown for its grain that is used to produce the flour for bread, cakes, **PASTA**, etc; the grain of this plant 小麦；小麦籽

plant-breeders in India, Mexico and the Philippines helped China emerge from a famine and India avoid one. From 1965 to 1995 Asia's rice yields doubled and its poverty almost halved, even as its population soared.



**plant-breeder** *noun* 植物育种家

**(the) Philippines** /ˈfɪlɪpiːnz/ *noun* [pl.] a country consisting of a group of islands in South East Asia 菲律宾 (东南亚的群岛国家)

**famine** /ˈfæmɪn/ *noun* [C, U] a lack of food during a long period of time in a region 饥荒

**halve** /hɑːv/ *verb* [I, T] to reduce by a half; to make sth reduce by a half (使) 减半

**soar** /sɔː/ *verb* [I] if the value, amount or level of sth **soars**, it rises very quickly 急升; 猛增



2. Asia's vast rice market is a **legacy** of that **triumph**. The **starchy** grain is the main source of **sustenance** for over half the world's population. Asians produce over 90% of rice and get more than a quarter of their **calories** from it.



**legacy** /'legəsi/ **noun** *pl. leg·acies* money or property that is given to you by sb when they die 遗产；遗赠财物

**triumph** /'traɪʌmf/ **noun** [C, U] a great success, achievement or victory 巨大成功；重大成就；伟大胜利

**starchy** /'stɑ:tʃɪ/ **adjective** (of food 食物) containing a lot of **STARCH** 富含淀粉的

**grain** /greɪn/ **noun** [U, C] the small hard seeds of food plants such as **WHEAT**, rice, etc; a single seed of such a plant 谷物；谷粒

**sustenance** /'sʌst(ə)nəns/ **noun** [U] (*formal*) the food and drink that people, animals and plants need to live and stay healthy 食物；营养；养料

**calorie** /'kæləri/ **noun** a unit for measuring how much energy food will produce 大卡，千卡，卡路里（测量食物含多少热量的单位）

And demand for the **crop** is **projected** to soar, **on the back of** population growth in Asia and Africa, another big rice consumer. By one estimate, the world will need to produce almost a third more rice by 2050. Yet that looks **increasingly** hard—and in some ways **undesirable**.



**crop** /kɹɒp/ **noun** [C] a plant that is grown in large quantities, especially as food 庄稼; 作物

**project** /ˈprɒdʒekt/ **verb** [T, usually passive] to estimate what the size, cost or amount of sth will be in the future based on what is happening now 预测; 预计; 推想

**on the back of sth** as a result of an achievement or a success 由于 (某项成就)

**increasingly** /ɪnˈkriːsɪŋli/ **adverb** more and more all the time 越来越多地; 不断增加地

**undesirable** /ʌndɪˈzaɪərəb(ə)l/ **adjective** not wanted or approved of; likely to cause trouble or problems 不想要的; 不得人心的; 易惹麻烦的



3. Rice production is **spluttering**. Yields have increased by less than 1% a year over the past decade, much less than in the previous one. The greatest **slowdowns** were in South-East Asia, where **Indonesia** and the Philippines—together, home to 400**m** people—are already big **importers**.



**splutter** /'splʌtə/ **verb** [I] to make a series of short **EXPLOSIVE** sounds 发噗噗声；发劈啪声

**slow-down** **noun** a reduction in speed or activity 减速；减缓

**Indonesia** /'indəu'ni:zjə,-ʒə/ **noun** [sing.] a country consisting of a group of islands in South East Asia 印度尼西亚（东南亚的群岛国家）

**m** **abbr.** million(s) 百万

**importer** /ɪm'pɔ:tə/ **noun** a person, company, etc. that buys goods from another country in order to sell them in their own country 从事进口的人（或公司等）；进口商

This has many explanations.  
**Urbanisation** and **industrialisation**  
have made labour and **farmland**  
**scarcer**.



**urbanise** *adjective* (of an area, a country, etc. 地区、国家等) having a lot of towns, streets, factories, etc. rather than countryside 城市化的

**industrialise** /in'dʌstriəlaɪz/ *verb* [T, I] ~ (sth) if a country or an area **is industrialized** or if it **industrializes**, industries are developed there (使国家或地区) 工业化

**farmland** /'fɑːmlænd/ *noun* [U, pl.] land that is used for farming 农田；耕地

**scarce** /skeəs/ *adjective* **scar-cer**, **scar-cest** if sth is **scarce**, there is not enough of it and it is only available in small quantities 缺乏的；不足的；稀少的



Excessive use of pesticides, fertiliser and irrigation have poisoned and depleted soils and groundwater. But the biggest reason may be global warming.



**pesticide** /'pestɪsaɪd/ *noun* [C, U] a chemical used for killing **PESTS**, especially insects 杀虫剂; 除害药物

**fertiliser** /'fɜːtɪlaɪsə/ *noun* [C, U] a substance added to soil to make plants grow more successfully 肥料

**irrigate** /'ɪrɪgeɪt/ *verb* ~ sth to supply water to an area of land through pipes or channels so that crops will grow 灌溉

**deplete** /dɪ'plɪt/ *verb* [usually passive] ~ sth (*formal*) to reduce sth by a large amount so that there is not enough left 大量减少; 耗尽; 使枯竭

**groundwater** /'graʊnd,wɔːtə/ *noun* [U] water that is found under the ground in soil, rocks, etc. 地下水

**global warming** *noun* [U] the increase in temperature of the earth's atmosphere, that is caused by the increase of particular gases, especially **CARBON DIOXIDE** 全球 (气候) 变暖; 地球大气层变暖

4. Rice is particularly **susceptible** to extreme conditions and is often grown in places where they are increasingly evident. **Patchy monsoon** rains and drought last year in India, the world's biggest rice exporter, led to a reduced **harvest** and an export ban.



**susceptible** /sə'septɪb(ə)/ **adjective** [not usually before noun] ~ (to sb/sth) very likely to be influenced, harmed or affected by sb/sth 易受影响（或伤害等）；敏感；过敏

**patchy** /'pætʃɪ/ **adjective** existing or happening in some places and not others 零散的；散落的；分布不均的

**monsoon** /mɒn'suːn/ **noun** a wind in S Asia that blows from the south-west in summer, bringing rain, and the north-east in winter 季风，季节风（盛行于南亚地区，夏季刮西南风，带来雨水，冬季刮东北风）

**harvest** /'hɑːvɪst/ **noun** [C] the crops, or the amount of crops, cut and gathered 收成；收获量



Devastating floods in Pakistan, the fourth-biggest exporter, wiped out 15% of its rice harvest. Rising sea-levels are causing salt to seep into the Mekong Delta, Vietnam's "rice bowl".



**devastating** /'devəsteɪtɪŋ/ **adjective** causing a lot of damage and destruction 破坏性极大的; 毁灭性的

**flood** /flʌd/ **noun** [C, U] a large amount of water covering an area that is usually dry 洪水; 水灾

**Pakistan** /ˌpɑːkɪs'tɑːn/ **noun** 巴基斯坦 (南亚国家)

**wipe sb/sth ↔ out** [often passive] to destroy or remove sb/sth completely 彻底消灭; 全部摧毁

**sea-level** **noun** [U] the average height of the sea/ocean, used as the basis for measuring the height of all places on land 海平面

**seep** /siːp/ **verb** [I] + **adv./prep.** (especially of liquids 尤指液体) to flow slowly and in small quantities through sth or into sth 渗; 渗透

**Mekong Delta** **noun** 湄公河三角洲

**Vietnam** /ˌvjet'næm/ **noun** 越南 (东南亚国家)

**rice bowl** **noun** 饭碗; 水稻种植区

5. It gets worse. Rice is not **merely** a **casualty** of climate change, but also a **contributor** to it. By **starving** soils of **oxygen**, **paddy** **cultivation** encourages **methane-emitting** **bacteria**.



**merely** /'miəli/ **adverb** used meaning 'only' or 'simply' to emphasize a fact or sth that you are saying 仅仅；只不过

**casualty** /'kæʒjuəlti/ **noun** [C] a person that suffers or a thing that is destroyed when sth else takes place 受害者；毁坏物；损坏物

**contributor** /kən'tribju:tə/ **noun** ~ (to sth) a person or thing that provides money to help pay for sth, or support sth 捐款者；捐赠者；作出贡献者

**starve sb/sth of sth** (NAmE also **starve sb/sth for 'sth'**) [usually passive] to not give sth that is needed 使某人（或事物）得不到所需要的

**paddy** /'pædi/ **noun** (also **'paddy field'**) a field in which rice is grown 稻田；水田

**cultivation** /kʌlti'veɪʃn/ **noun** [U] the preparation and use of land for growing plants or crops 耕种；种植；栽培

**methane-emitting bacteria** 甲烷排放细菌 狂奔的外刊



It is a bigger source of **greenhouse** gas than any **foodstuff** except beef. Its emissions **footprint** is similar to that of **aviation**. If you count the **conversion** of forestland for rice paddy—the fate of much of **Madagascar's** **rainforest**—that footprint is even bigger.



**greenhouse** /'ɡriːnhaʊs/ **noun** a building with glass sides and a glass roof for growing plants in 温室；暖房

**foodstuff** /'fuːdstʌf/ **noun** [usually pl.] (*technical 术语*) any substance that is used as food 食物；食品

**footprint** /'fʊtprɪnt/ **noun** a measurement of the size, effect, etc. of something (某物的) 大小 (作用等等)

**aviation** /eɪvɪ'eɪʃ(ə)n/ **noun** [U] the designing, building and flying of aircraft 航空制造业；航空；飞行

**conversion** /kən'veɜːʃ(ə)n/ **noun** [U, C] ~ (from sth) (into/to sth) the act or process of changing sth from one form, use or system to another 转变；转换；转化

**Madagascar** /ˌmædə'gæskə/ **noun** 马达加斯加 (印度洋岛国)

**rainforest** /'ren'fɔːrɪst/ **noun** [C, U] a thick forest in tropical parts of the world that have a lot of rain (热带) 雨林

6. This amounts to an insidious feedback loop and, in all, a far more complicated set of problems than the food insecurity that spurred the green revolution.



**amount to** to be equal to or the same as sth 等于;  
相当于

**insidious** /ɪn'sɪdɪəs/ *adjective*

(*formal, disapproving*) spreading gradually or without being noticed, but causing serious harm 潜伏的; 隐袭的; 隐伏的

**feedback loop** *noun* 反馈回路

**in all** as a total 总共; 共计

**complicated** /ˈkɒmplɪkeɪtɪd/ *adjective* made of many different things or parts that are connected; difficult to understand 复杂的; 难懂的

**spur** /spɜː/ *verb* ~ sth to make sth happen faster or sooner 促进, 加速, 刺激 (某事发生)



Indeed, eating too much rice turns out to be bad for people as well as the climate. White rice is more **fattening** than bread or **maize**, and is not especially **nutritious**. In South Asia rice-heavy diets have been linked to high rates of **diabetes** and **persistent malnutrition**.



**fattening** /'fætɪnɪŋ/ **adjective** (of food 食物) likely to make you fat 要使人发胖的

**maize** /meɪz/ **noun** [U] (BrE) (NAmE **corn**) 玉蜀黍; 玉米

**nutritious** /njuː'trɪʃəs/ **adjective** (approving) (of food 食物) very good for you; containing many of the substances which help the body to grow 有营养的; 营养丰富的

**diabetes** /ˌdaɪəˈbiːtiːz/ **noun** [U] a medical condition which makes the patient produce a lot of **URINE** and feel very thirsty. There are several types of diabetes. 糖尿病; 多尿症

**persistent** /pə'sɪst(ə)nt/ **adjective** continuing for a long period of time without interruption, or repeated frequently, especially in a way that is annoying and cannot be stopped 连绵的; 持续的; 反复出现的

**malnutrition** /mælnjuː'trɪʃ(ə)n/ **noun** [U] a poor condition of health caused by a lack of food or a lack of the right type of food 营养不良

7. Policymakers need to increase rice yields, then, but more **selectively** than in the 1960s. In the places most suitable for rice cultivation, such as hot and **sticky** South-East Asia, faster adoption of new technologies, such as flood-**resistant** and more nutritious seeds, could provide a big **productivity** boost.



**selective** /sɪˈlektɪv/ **adjective** ~ (about/in sth) tending to be careful about what or who you choose 认真挑选的; 严格筛选的

**sticky** /ˈstɪki/ **adjective** (informal) (of the weather 天气) hot and damp 闷热的

**resistant** /rɪˈzɪstənt/ **adjective** -resistant (in adjectives 构成形容词) not damaged by the thing mentioned 抗 ... 的; 耐 ... 的

**productivity** /ˌprɒdʌkˈtɪvɪti/ **noun** [U] the rate at which a worker, a company or a country produces goods, and the amount produced, compared with how much time, work and money is needed to produce them 生产率; 生产效率

**boost** /buːst/ **noun** [usually sing.] something that helps or encourages sb/sth 帮助; 激励



In tandem with improved practices, such as direct seeding of paddy, they could also shorten the growing cycle and reduce the amount of water required, mitigating environmental harm.

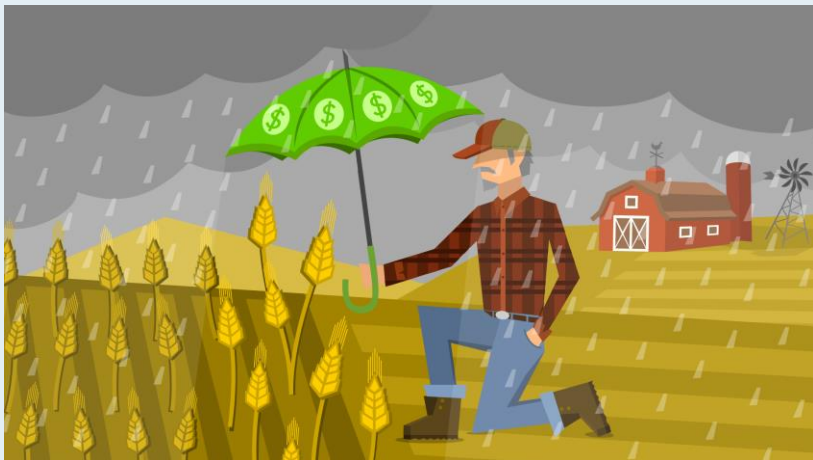


**in tandem (with sb/sth)** a thing that works or happens **in tandem** with sth else works together with it or happens at the same time as it 并行；并驾齐驱；同时实行

**direct seeding** [农学] 直播，免耕直播

**mitigate** /'mitɪgeɪt/ **verb** ~ sth (*formal*) to make sth less harmful, serious, etc. 减轻；缓和

Farmers have been slow to adopt such improvements, partly because of **overgenerous subsidies** that **shield** them from the rice crisis. A better approach would make state support **contingent** on **best practice**. By encouraging crop insurance—a good idea in itself— governments could also help **reassure** farmers as they **switch** from old ways to new.



**overgenerous** /ˌəʊvəˈdʒenərəs/ **adjective** ~ (with sth) giving too much of sth (施与某物时) 过于慷慨, 过分大方

**subsidy** /ˈsʌbsɪdɪ/ **noun** *pl. sub-sidies* [C, U] money that is paid by a government or an organization to reduce the costs of services or of producing goods so that their prices can be kept low 补贴; 补助金; 津贴

**shield** /ʃiːld/ **verb** to protect sb/sth from danger, harm or sth unpleasant 保护某人或某物 (免遭危险、伤害或不快)

**best practice** **noun** [U, C] a way of doing sth that is seen as a very good example of how it should be done and can be copied by other companies or organizations (公司或机构的) 典范实务, 最佳做法

**reassure** /riːəˈʃʊə/ **verb** to say or do sth that makes sb less frightened or worried 使 ... 安心; 打消 ... 的疑虑

**switch** /swɪtʃ/ **verb** [I, T] to change or make sth change from one thing to another (使) 改变, 转变, 突变



8. Governments need to **nudge** producers and consumers away from rice. India and **Indonesia** are promoting **millet**, which is more nutritious and uses a lot less water. **Scrapping** subsidies that favour rice over other crops would make such efforts more effective. India, for example, procures rice from farmers, often at above-market rates, then **distributes** it as **food aid**.



**nudge** /nʌdʒ/ **verb** [T] ~ sb/sth + adv./prep. to push sb/sth gently or gradually in a particular direction (朝某方向) 轻推, 渐渐推动

**Indonesia** /'indəu'ni:zjə,-ʒə/ **noun** 印度尼西亚 (东南亚的群岛国家)

**millet** /'mɪlɪt/ **noun** [U] a type of plant that grows in hot countries and produces very small seeds. The seeds are used as food, mainly to make flour, and also to feed to birds and animals. 黍类; 谷子; 粟

**scrap** /skræp/ **verb** [T, often passive] ~ sth to cancel or get rid of sth that is no longer practical or useful 废弃; 取消; 抛弃; 报废

**distribute** /dɪ'strɪbjʊ:t/ **verb** to give things to a large number of people; to share sth between a number of people 分发; 分配

**food aid** **noun** 粮食援助

It should make its **interventions** more crop-**agnostic**, by replacing subsidies and free rice with income support for farmers and cash **transfers** for the poor.



**intervene** /ɪntə'vi:n/ **verb** [I] to become involved in a situation in order to improve or help it 出面; 介入

**agnostic** /æg'nɒstɪk/ **noun** a person who believes that it is not possible to know whether God exists or not 不可知论者 (认为上帝存在与否是不可知的)

**crop-agnostic** **adjective** 与作物无关的

**transfer** /træns'fɜː/ **noun** [U, C] the act of moving sb/sth from one place, group or job to another; an occasion when this happens 搬迁; 转移; 调动; 变换



That would encourage farmers to choose the best crop for their local conditions—much of India's agricultural north-west would switch from rice to wheat **overnight**. Poor Indians would be free to choose a more **balanced** diet. Thereby, it would correct a market **skewed** towards environmental damage and poor health.

**overnight** /əʊvə'nait/ **adverb** suddenly or quickly 突然；一夜之间；旋即

**balanced** /'bælənst/ **adjective** [usually before **noun**] (*approving*) keeping or showing a balance so that different things or different parts of sth exist in equal or correct amounts 保持（或显示）平衡的

**skew** /skju:/ **verb** [T] ~ sth to change or influence sth with the result that it is not accurate, fair, normal, etc. 歪曲；曲解；使不公平；影响 ... 的准确性



9. Bringing about such change in Asia and beyond will be far harder than promoting new **wonder** seeds was. Farmers are almost everywhere a powerful **constituency**. Yet policymakers should get used to **blending** complicated economic and technological **fixes** in this way.



**wonder** /'wʌndə/ **noun** [C] something that fills you with surprise and admiration 奇迹；奇观；奇事；奇妙之处

**constituency** /kən'stɪtjuənsɪ/ **noun** [C + sing./pl. v.] the people who live in and vote in a particular district 选区选民

**blend** /blend/ **verb** [I, T] to combine with sth in an attractive or effective way; to combine sth in this way (使) 调和，协调，融合

**fix** /fɪks/ **noun** [C] (*informal*) a solution to a problem, especially an easy or temporary one (尤指简单、暂时的) 解决方法



Increasingly, it is what fighting climate change will **entail**. **Sorting out** the **mounting** crisis in the world's most important foodstuff would be a good place to begin.



**entail** /ɪn'teɪl/ **verb** to involve sth that cannot be avoided 牵涉; 需要; 使必要

**sort out** to organize sth successfully 把 ... 安排好

**mounting** /'maʊntɪŋ/ **adjective** [only before **noun**] increasing, often in a manner that causes or expresses anxiety 上升的; 增长的