Chapter 5. Focus and perspectives

This focus section complements CropWatch analyses presented in chapters 1 through 4 by presenting a global outlook for 2014 production and other topics of relevance to global agriculture. Section 5.1 summarizes the provisional CropWatch estimates for 2014 production, while section 5.2 presents the standard CropWatch section on extreme atmospheric factors—disaster events—that have interfered with crop production in recent months. Sections 5.3 and 5.4 focus on El Niño and rice, respectively.

5.1 Production outlook for 2014

The latest CropWatch production estimate for the 2014 season puts the production of maize and rice (as paddy) at 993,783 and 755,513 thousand tons, respectively, both at about the same level as 2013; wheat is up 2% (compared to last year) with 719,718 thousand tons, while soybean reaches 294,822 thousand ton, a significant increase (+6%) over the previous harvest (table 5.1).

When only major producers are considered, the situation is slightly less favorable for maize (-1% compared to last year), similar for rice (0%) and wheat (+2%), but significantly better for soybean (+9%), indicating that minor soybean producers keep losing ground compared with the big three: United States, Brazil, and Argentina. The figures also confirm that maize and rice continue consolidating their global dominant role in cereal production (mostly at the expense of spring wheat).

For the major exporters, production has basically stagnated, except for soybean for which their offer may increase.

Table 5.1. Global 2014 production of maize, rice, wheat, and soybean (thousand tons) and departure from 2013 production

	Maize	Rice	Wheat	Soybean
Total production (thousand tons)	993,783	755,513	719,718	294,822
World (%)	0	0	+2	+6
Top 80% producers (%)	-1	0	+2	+9
Rest of the world (%)	+9	+6	-23	-26
Major exporters (%)	-1	0	0	+7

Note: Departures expressed as percentage compared to 2013 production.

On a more detailed scale (see table 5.2), decreases in maize production are estimated to occur in North America, both in the United States (-1%) and Canada (-16%). (In the United States, this production decrease is happening despite an estimated yield increase of +2.34% due to an area decrease of -3.6%.) Other maize production decreases are happening in Poland (-12%) and India (-13%), with India ranking 6th this year in terms of maize production. According to CropWatch estimates, China underwent an estimated 1% production drop in maize.

As expected for a crop that is mostly irrigated, the variability in rice (paddy) production remains rather limited, with extremes between -4% (Egypt) and the +16% (United States). Wheat, on the other hand, is much more prone to weather induced yield fluctuations and shows large differences over 2013 estimates. South America, for example, witnessed the return of favorable conditions of water supply and temperatures after several poor seasons and wheat production increased 15% in Brazil and as much as 22% in Argentina. Favorable conditions prevailed in Europe as well, with significant wheat production increases in Germany, Poland, and the United Kingdom (+11%, +12% and +23%, respectively). The largest estimated drop in wheat production occurs in Canada (-11%). Although estimated production losses are less severe, most countries from the western Mediterranean to central Asia have suffered poor winter wheat weather (especially a shortage of rainfall, as reported in the previous issues of the CropWatch bulletin), resulting in reduced production in Iran, Turkey, Kazakhstan, and Uzbekistan (-8% to -1%).

China experienced an average wheat season with an expected production increase of just 1%, while the long-term downward trend of soybean production continues (-2%). Also for soybean, India (-3%), Indonesia (-1%), Russia (-8%), and especially South Africa (-14%) performed poorly due to poor water supply. As mentioned above, positive soybean results occur among the major producers (Argentina, +4%; United States, +7%; and Brazil +9%). However, two minor producers of soybean also do rather well this year: Thailand (7th producer, +16%) and Ukraine (11th producer, +39%).

Table 5.2. Estimated rates of change of production compared with 2013 for maize, rice, wheat, and soybean (thousand tons) and derived 2014 production in selected countries

	Maize		Rice (paddy)		Wheat		Soybean	
	2014	**Δ%**	**2014**	**Δ%**	**2014**	**Δ%**	**2014**	**Δ%**
Argentina (A)	25078	1			12786	22	52445	4
Australia (A)					27698	-4		
Bangladesh	2219	-1	50871	-1	1292	3		
Brazil	78669	-2	11847	1	6603	15	89036	9
Cambodia			9467	1				
Canada (A)	11909	-16			33287	-11	5420	4
China (B)	191952	-1	201167	0	119735	1	13079	-1
Egypt	5951	-8	6506	-4	9506	0		
Ethiopia	6739	1	182	-1	4390	9		
France	15050	0	81	-1	39754	3		
Germany	4652	6			27677	11		
India	20172	-13	156960	-1	95663	2	11627	-3
Indonesia	18362	-1	69281	-3			775	-1
Iran	2508	-1	2546	0	13349	-5		
Kazakhstan	574	1	345	0	13840	-1		
Mexico	23953	6	181	0	3657	9		
Myanmar	1716	1	28464	2	191	2		
Nigeria	10627	2	4678	0				
Pakistan	4711	-2	9488	-3	24390	1		
Philippines	7511	2	19362	5				
Poland	3543	-12			10614	12		
Romania	11149	-2			7437	2		
Russia	11755	1	970	4	53266	2	1509	-8
South Africa	12528	1			1865	6	673	-14
Thailand	5079	0	39142	1			220	16
Turkey	5859	-1	906	1	20736	-6		
United Kingdom					14617	23		
Ukraine	29976	-3			23095	1	3854	39
United States (A)	348948	-1	10095	16	56728	-2	96034	7
Uzbekistan					6273	-8		
Vietnam	5094	-2	43994	0				
Sub total	866284	-1	666533	0	628459	2	274673	9
Others	127499	9	88980	6	91269	-3	20149	-26
World	993783	0	755513	0	719718	2	294822	6

Note: Rates of change of production were computed as the product of the rates of change of yield and area: Refer to Annex C for additional details about the method; this method was applied for most countries, except those marked (A) and (B). (A) indicates that the areas are pure remote-sensing estimates (neither FAOSTAT nor national data were used for calibration); (B) indicates that no FAOSTAT or national data were used for area and yield estimates. Wheat productions for Argentina, Australia, and Brazil refer to the crop planted in 2014 and to be harvested in late 2014 to early 2015. Cells are left empty for crops not grown in a country or when the crops are a minor production; in that case, the country was included in the "others" category, as for instance maize and rice in Australia, wheat in Nigeria, and soybean in France, Mexico, Kazakhstan, and Nigeria.

5.2 Disaster events

With the exception of cyclone Hudhud, the current reporting period witnessed fewer and less severe extreme events than the previous ones. While in several areas human lives were lost as a result of disaster events, no detailed agricultural impacts have been mentioned in the leading disaster databases and compilations.

Cyclones

The most notable disasters this reporting period included several cyclones, as summarized in table 5.3.

Table 5.3. Major cyclones and related damage (in million U.S. dollars) in July-October 2014

Name	Local name	Date	Countries affected	Total damage (damage to agriculture) (million U.S. dollars)
Rammasun	Glenda	Jul 9-20	Philippines (Luzon, Visayas), China (Hainan), Vietnam	871(762)
Kalmaegi	Luis	Sep 11-18	Caroline Islands, Philippines, China (Hainan), Vietnam, Lao PDR, Thailand, Myanmar, India	75
Fung-Wong	Mario	Sep 17-25	Philippines, Japan, China (Hainan), Republic of Korea	75(62)
Hudhud		Oct 7-14	India (Andhra Pradesh, Odisha,Chhattisgarh,Madhya Pradesh, Uttar Pradesh), Nepal	11000
Gonzalo		Oct 12-25	Puerto Rico, Bermuda, Canada, and Europe (Figure 5.1)	200
Nilofar		Oct 25-31	India, Pakistan	n.a.

Source: Based on Wikipedia.

Hudhud was the most destructive cyclone that has ever affected India. Most damage occurred in Andhra Pradesh and Odisha. Crops that suffered most include kharif sugarcane, rice, and pulses (that were still growing at the time). The estimated total damage stands at US$11 billion; this compares with just under US$3 billion for cyclone Haiyan in the Philippines, which was the major agricultural disaster of 2013 and reported on in the February 2014 CropWatch Bulletin.

At the time of writing, official estimates are not available yet for the damage to India's agricultural sector; these numbers are expected at the end of November 2014. Insurance claims are likely to reach 1,500 crore rupees (about US$300 million) for the agricultural sector. Preliminary damage assessments list the following estimates: field crops, US$189 million; horticulture, US$267 million; farm animals and poultry, US$6.4 million; fisheries, US$13.4 million; and sericulture (silk farming) US$0.3 million. The estimates exclude damage to agricultural infrastructure.

Indian sources list Hudhud as the main factor behind the country's drop in national rice production this season and as a significant contributing factor for the drop in maize output. In Odisha, for example, it is estimated that 250,000 hectares were directly affected while 50,000 hectares lost most than 50% of yield. Table 5.4 lists the CropWatch rainfall indicator, RAIN, for four states in India affected by the cyclone.

Early impact assessments carried out at the end of October also found that loss of poultry and domestic food stocks were perceived as one of the major losses incurred by villagers. Little doubt exists that Hudhud has severely impacted food security in north-east and east India and that the long-term effects (for example on coconuts) will last several years.

Although less severe, other cyclones also had local impacts on agriculture, as shown in figure 5.1.

Table 5.4. Increase in rainfall for the July-October period and state shares in national maize and rice production, for states in India affected by cyclone Hudhud

State	Increase in rainfall (CropWatch RAIN indicator) in July-October 2014 compared to the same period in 2013 (%)	Share in national rice production (%)	Share in national maize production (%)
Andhra Pradesh	+11	11	17
Odisha (Orissa)	+28	7	-
Chhattisgarh	+32	7	-
Madhya Pradesh	+5	2	6
Uttar Pradesh	-2	15	6

Figure 5.1. A Hungarian farmer with his tractor stranded in mud during land preparation for the 2014-15 winter crop

The rainfall was brought about by the tail of Caribbean hurricane Gonzalo, which reached deep into southern-central Europe at the end of October, causing widespread water logging and floods, for instance in Slovenia from 23rd October.

Source of photograph:
http://www.agroinform.com/szantofold/elakadasok-20227

Other disasters

In addition to floods from the cyclones mentioned above, more floods, resulting in landslides, and droughts are reported from several areas worldwide. They often coincide with the extremes of the CropWatch agroclimatic indicators that were mentioned in previous chapters.

The most significant impacts associated with excess water occurred in Niger in mid-August and in seventeen provinces of Thailand at the end of August and early September. Other African floods are reported from Cameroon in August and from Somalia and Ethiopia in October. Starting in early September, both India and Pakistan were in the news when several thousands of villages were hit by floods and landslides in Kashmir, resulting in hundreds of deaths; India declared a national calamity. In China a landslide in Yunnan on October 28 caused nine deaths. The next day, a landslide in Sri Lanka killed ten.

Drought occurred in South America—for example in Bolivia in October. Honduras declared a drought on July 9, referring to a shortage of rain that occurred earlier in the season. Similarly, Namibia experienced dry conditions between May and July. This drought is said to have been the worst in 30 years, and possibly constitutes the first sign of the ongoing shortage of rainfall over the Western Cape Province and south-eastern African countries, which was reported on in other sections of the bulletin.

5.3 El Niño

El Niño monitoring is one of the recurring topics in this bulletin. The Southern Oscillation Index (SOI) of the Australian Bureau of Meteorology (BOM) normally fluctuates between -8.0 and +8.0. During recent months, it exceeded +8.0 in November 2013 and January 2014, while it dropped below -8.0 in March, August, and October in 2014. Figure 5.2 illustrates that El Niño remained neutral from October 2013 to October 2014, even if a warming of the tropical Pacific Ocean was observed.

Figure 5.2. Monthly BOM SOI time series from October 2013 to October 2014

Note: The dashed blue lines are the El Niño thresholds used by BOM; sustained negative values of SOI below -8 may indicate an El Niño event, while sustained positive values above +8 are typical of a La Niña event. Values within the range (-8 to +8) indicate neutral conditions. The data and methodology description can be found at: http://www.bom.gov.au/climate/glossary/soi.shtml.

Information from other sources also indicates neutral conditions for El Niño until October 2014. The International Research Institute for Climate and Society, Columbia University, reported that during September through early October the observed El Niño Southern Oscillation (ENSO) conditions had retreated from those of a *borderline El Niño* back to a *warmish ENSO-neutral* state. The diagnostic discussion on November 6, 2014, released by the NOAA's Climate Prediction Center, indicates that overall, several features across the tropical Pacific are characteristic of borderline El Niño conditions, but collectively, the combined atmosphere and oceanic state remains ENSO-neutral. The typical climate anomalies associated with El Niño events are also presented in CropWatch global maps of rainfall and temperature departures (figures 3.1 and 3.2), such as the dryness in the middle and eastern parts of Australia, and the temperature increase in western and eastern parts of South America and the northern parts of Latin America. In the next few months, CropWatch will keep a close eye on the developments of El Niño and report about the regions that shown sensitivity to this event.

5.4 Rice in diets and politics

Rice is an Asian crop par excellence: it is the staple food of about half the world population and 90% of it is consumed in Asia. Contrary to some other major commodities, the major producers are also the main consumers as only 7% of the production is traded.

There exist, however, large differences in the per capita consumption of rice among the largest rice consuming countries in Asia. For instance, Indonesians—population 0.25 billion—consume 160 kg/capita per annum, while the Chinese (population 1.4 billion) consume only 100 kg/capita and people in India only 70 kg/capita with a population of 1.3 billion. As countries develop and urbanize, diets change and the importance of rice tends to decrease, a process sometimes captured in the phrase, "countries diversify out of rice." Africa is the continent where rice consumption grows fastest; it currently stands at only 25 kg/capita per annum. Highest levels of rice consumption in Africa of 100 kg/capita occur in Madagascar, possibly a direct consequence of the Malayo-Indonesian component in the Malagasy population. The main rice producing countries on the continent are, however, located in West Africa, especially along the Niger river and including in particular the Inner Delta in Mali. Many African countries are more than 80% self-sufficient in rice. They are located in a "belt" from Guinea—the source of the Niger river—to Niger across Mali, then Chad, Tanzania, and Madagascar, along with adjacent areas.

A major issue in West Africa has been the "unfair" competition of imported rice with the locally produced crop, which basically boils down to a transportation issue. It is, indeed, easier to import rice to the Gulf of Guinea ports, especially Abidjan in Côte d'Ivoire, and then ship it by rail to the Sahelian countries, rather than to collect it from local producers and transport it to the cities. In addition, local rice is of very variable quality, to the extent that city residents usually prefer rice imported from Thailand or elsewhere. It remains, however, that imports deprive local small rice producers of their market. Governments have occasionally implemented import restrictions or outright bans as a result of local and international pressures, in particular from traditional food donors.

Another key area for rice production and consumption in Africa is Egypt. The country has a complex love-hate relationship with rice. The member countries of the Nile Basin Initiative are entitled to a fixed share of the Nile waters and Egypt has at times consumed more than its share. Countries in the basin, among which Ethiopia is one of the most vocal, put pressure on Egypt to reduce its consumption. One of the ways to achieve this is to limit cultivation of the most water demanding crops such as sugarcane and rice. Egypt has thus issued legislation to restrict the cultivation of rice. As a result, discontent has been rising among both producers (who lost their income) and those involved in rice processing and transportation, as well as among consumers (who have to pay a higher price for imported rice). It also deprives the country of valuable export earnings. As a result, the actual situation of rice in Egypt keeps fluctuating.

More than any other major crop, rice is the frequent source or component of national and international tension. In Asia, for example, many countries consider rice self-sufficiency a key objective for the country. When in 2011 South Korea's self-sufficiency rate for rice dropped to 83%, this was perceived as a serious threat to national security. Meanwhile, the Philippines has set itself the goal of achieving rice self-sufficiency by 2013, which is a difficult objective in the face of limited land and limited water availability when other crops, such as sugarcane, are efficiently competing with rice every time international sugar prices are high.

As became very clear during the high food price crisis in 2008, many countries—including major producers—have imposed restrictions and bans on rice imports or exports, for example Vietnam, India, Cambodia, and Egypt. Some of the measures can be interpreted as a government-supported form of speculation, but in most cases they stem from a genuine desire to ensure national rice security.

Production variability

Even a superficial look at time series of rice statistics shows that the crop is much less variable than most other major cereals, in particular maize. Stability of supply is indeed one of the comparative advantages of rice, even if yields are outperformed by maize and the crop also consumes less water.

The reason for the low variability in rice production is that rice can be grown in a very large spectrum of environments under conditions of water control that go from pure rainfed to 100% irrigation in many desert areas along major rivers[1]. Rice thus often grows under conditions with abundant sunshine and in dry climates that are not conducive to the development of pest and diseases; it often grows in tropical or other warm climate areas with cropping intensities up to 300% (for example close to 190% on average in Bangladesh), under various scenarios of water control (such as two monsoon crops and one irrigated dry season crop in Bangladesh). As a result, yields are both high and stable[2].

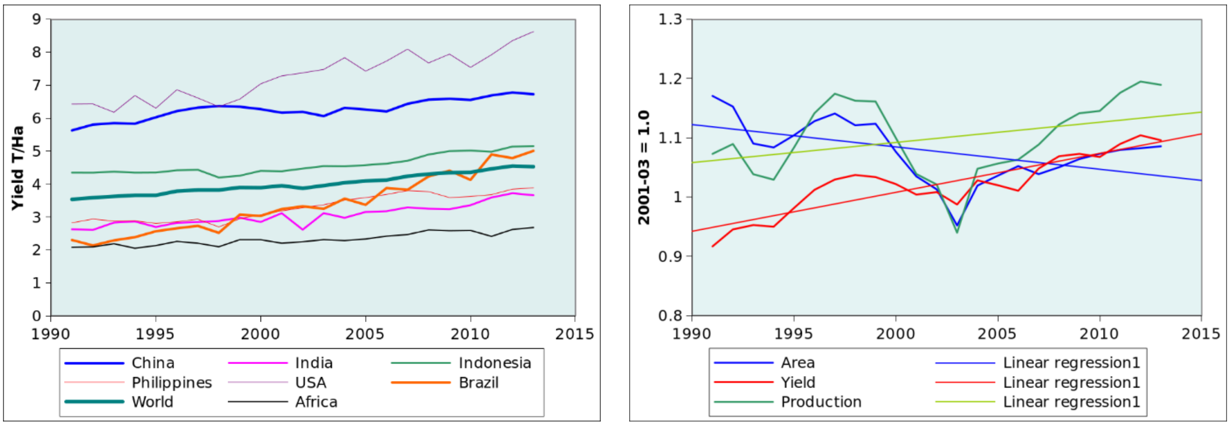
1. Rice is a very versatile crop, grown under diverse conditions of water supply, including upland rainfed, lowland rainfed, irrigated (lowland and upland), mangrove swamp, flood recession, floating, and "aerobic."
2. Another stabilizing factor is the fact that rice cultivation depends on dedicated irrigation infrastructure, which provides additional income (labor). For most other crops in developing countries, the production costs include little more than labor. In addition, the

Unfortunately, after the initial boom of the green revolution, rice and wheat yields started stagnating in many countries during the early or mid-1990s, which no doubt is one of the factors for maize becoming so popular. Reasons for the stagnation include soil degradation, a slower pace of varietal innovation, and shortage of land and water; moreover, when yields—already close to their climatic maximum—could sometimes be increased, this would be at an unacceptably high economic and environmental cost.

Figure 5.3 illustrates that by world standards China achieves high rice yields (figure 5.3a), but its interannual yield increases are low (figure 5.3b). Agricultural statistics show that the annual global rice yield increase, which had been about 10 kg per hectare per annum, dropped to 8 kg per hectare per annum around 1990, at the time when maize increased from 10 to 17 kg per hectare per annum.

Because of its stagnating yield, rice appeals less and less to many farmers, which increases the gap between rice demand and production. As mentioned above, as the major Asian economies continue to grow, diets will change and, as was observed in urban Africa, it is like that the traditional staples including rice will undergo a demand reduction that may bring some relief and help bridge the gap.

Figure 5.3. Recent trends of rice yield among some typical producers (a) and trends of area, yield and production in China (b)



(a) (b)

Recent changes in rice markets

The main rice producers and the main exporters (table 5.5) only partly overlap: 81% of world production comes from seven countries (China, India, Indonesia, Bangladesh, Vietnam, Thailand, and Myanmar), while seven more are needed to reach 90% (Philippines, Brazil, Cambodia, Japan, the United States, the Republic of Korean, and Pakistan).

Of those seven, only Brazil and the United States are not located in Asia. Contrary to the major Asian producers, both enjoy significantly faster yield increases than their Asian counterparts (see also figure 5.2(a)). Although it is difficult to foresee how long both countries will be able to sustain the same yield growth rate—and at which human, environmental, and economic cost—they are bound to keep climbing or, at least, maintain their position among the rice exporters. Between 1999-2001 and 2009-2011, Pakistan has been climbing from a 5th position to a 3rd, while China dropped from the 3rd to the 9th. Brazil and Argentina were not even listed in FAO statistics as rice exporters 15 years ago. Obviously, this is a very dynamic situation that will continue changing, with Brazil continuing the climb at a fast pace. When comparing the per capita production rates with per capita consumption (which, as mentioned above, among the main producers varies between 70 and 160 kg/person per annum), table 5.3 also points to

complexity of many rice farming systems (for example the rice-fish farming systems in Sichuan, Hunan, and Guizhou provinces in China) also contributes to stabilizing food production from rice farming.

some countries with extreme high production rates per capita. The high numbers, three or four times larger than national consumption requirements, such as in Vietnam and Uruguay, are a clean indicator of those countries' sustained and successful efforts to become a major exporter.

Table 5.5. Main rice importing and exporting countries

Main rice exporting countries					Main rice importing countries				
Rank 2009-2011	Country	Volume 2009-2011 Mtons	PCP 2009-2013 kg/person	Rank 1999-2001	Rank 2009-2011	Country	Volume 2009-2011 Mtons	PCP 2009-2013 kg/person	Rank 1999-2001
1	Thailand	9.39	37	1	1	Nigeria	1.74	27	2
2	Vietnam	6.66	464	2	2	Philippines	1.62	179	6
3	Pakistan	3.45	52	5	3	Saudi Arabia	1.23	0	4
4	United States	3.28	30	4	4	Indonesia	1.23	276	1
5	India	3.13	123	6	5	Iraq	1.02	6	3
6	Brazil	0.77	62	?	6	Iran	1.02	34	5
7	Italy	0.75	25	9	7	Malaysia	1.02	89	10
8	Uruguay	0.72	405	7	8	UAE	1.02	0	15
9	China	0.63	146	3	9	Côte d'Ivoire	0.98	62	16
10	Argentina	0.60	36	?	10	China	0.91	146	10

Note: PCP=annual per capita production; UAE=United Arab Emirates.
Source: FAO statistics.

In terms of rice importing countries, Nigeria and the Philippines are at the top, underscoring the difficulties of the latter country to achieve rice self-sufficiency. Malaysia also now ranks higher in rice import compared to ten years ago (from 10 to 7), while Indonesia is doing better, as the country dropped from being the first importer to number 4. Finally, note that imports by Côte d'Ivoire do not supply the country itself only, but also the Sahelian hinterland.

Conclusion

Rice differs from other major cereals in many respects; it plays a dominating role not only in the economy of major Asian producers, but also in the life of the people. Little is traded and industrial uses are few, compared with maize. While some countries—the Philippines and Korea—almost desperately try to maintain or reach rice self-sufficiency, other countries, such as Malaysia and China, are more pragmatic and focus on income from industry and services to cover imports, rather than on local production.

The widening difference between national rice production and demand that international organizations have paid a lot of attention to in the mid-1990s does not seem to have led to any major crisis, although it certainly contributed as one factor among others to the high price crisis of 2008. There are also signs that the rapidly developing economies in Asia are relaxing their objective of rice self-sufficiency. If that is the case, it can be achieved, among others, thanks to some relative newcomers on the rice markets, such as Brazil, Argentina, and Pakistan.

Altogether, rice production is more a geopolitical issue than the production of other cereals. Combined with soybean, rice is bound to play a role of increasing importance—directly but perhaps mostly indirectly—in world food security and stability.