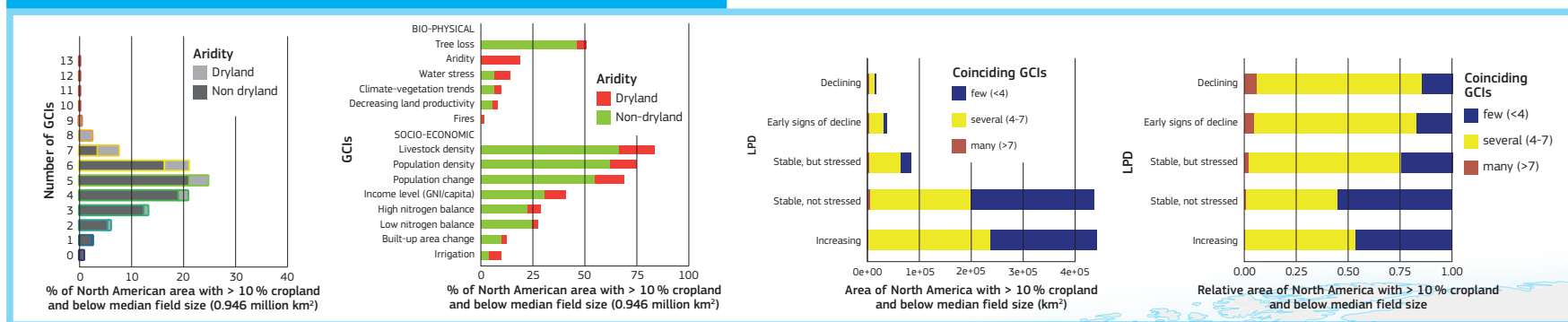


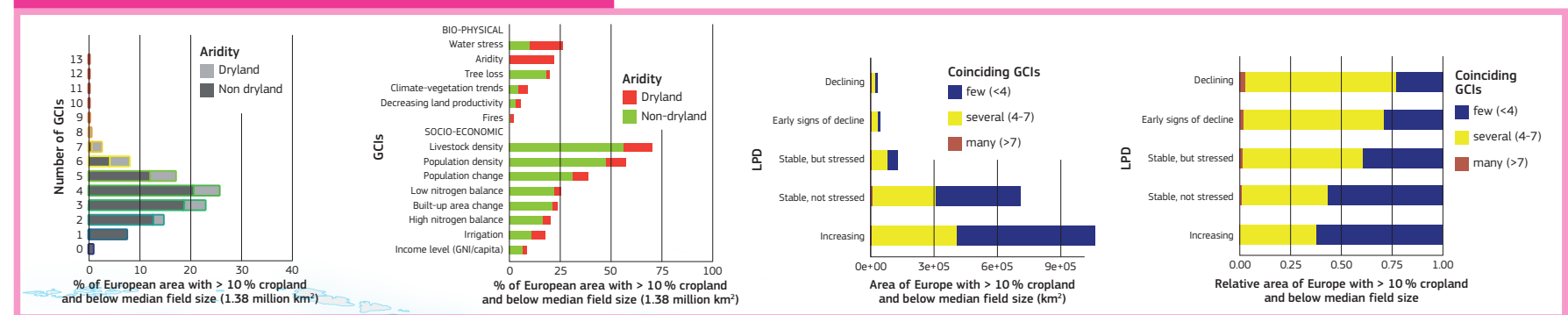
Convergence of Evidence: Smallholder Cropland

Smallholder cropland are areas where >10% of each grid cell (1 km²) is occupied by farms, the medium-size of which is <2ha

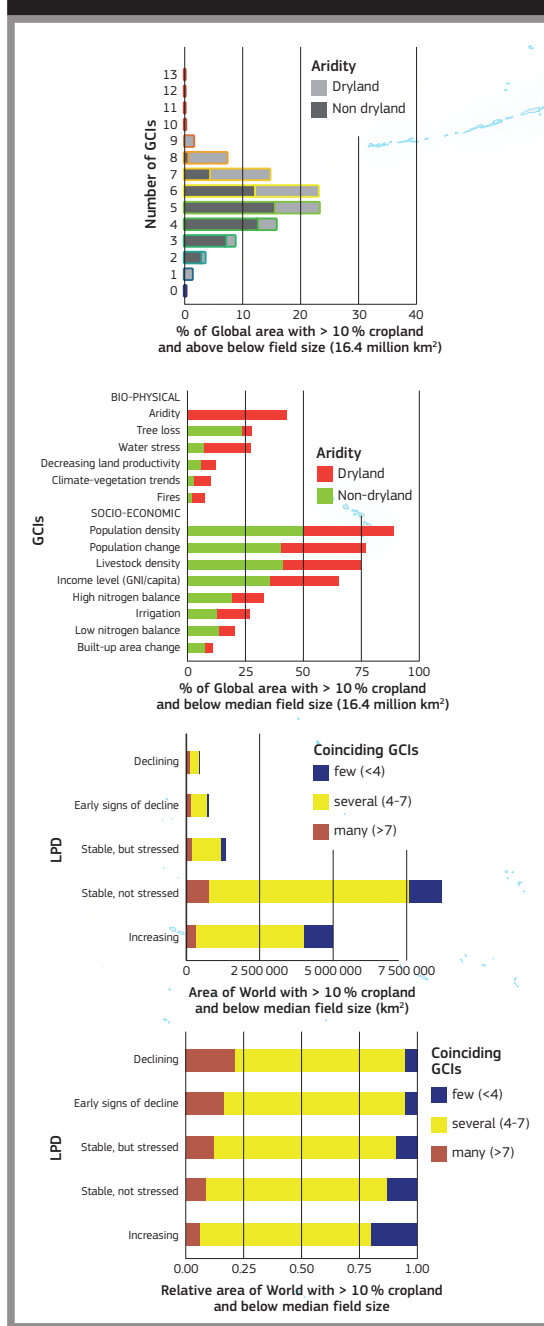
Distributions of predominant issues in NORTH AMERICA



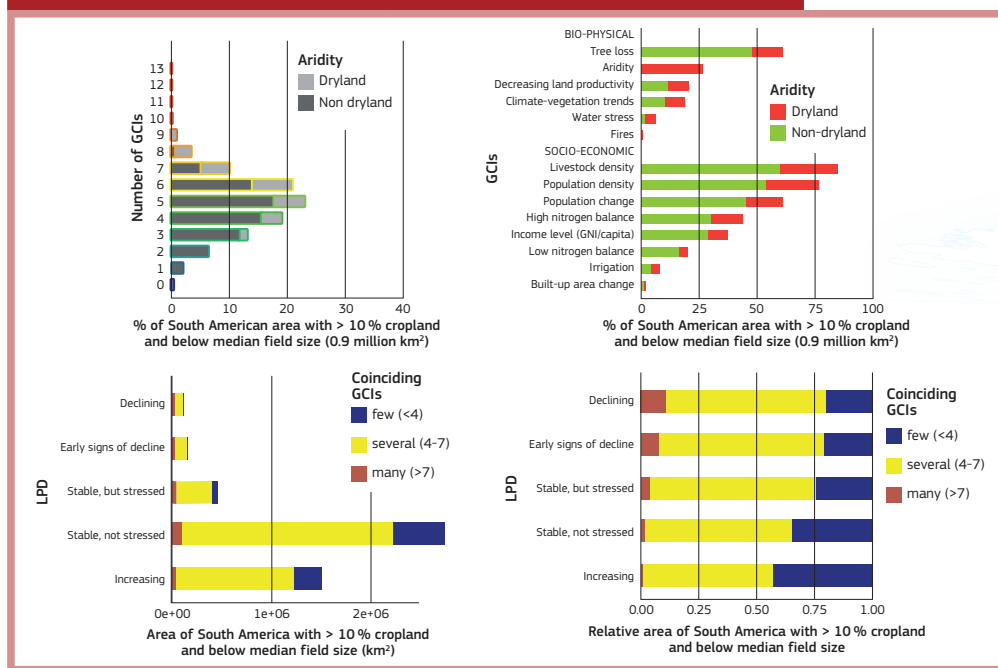
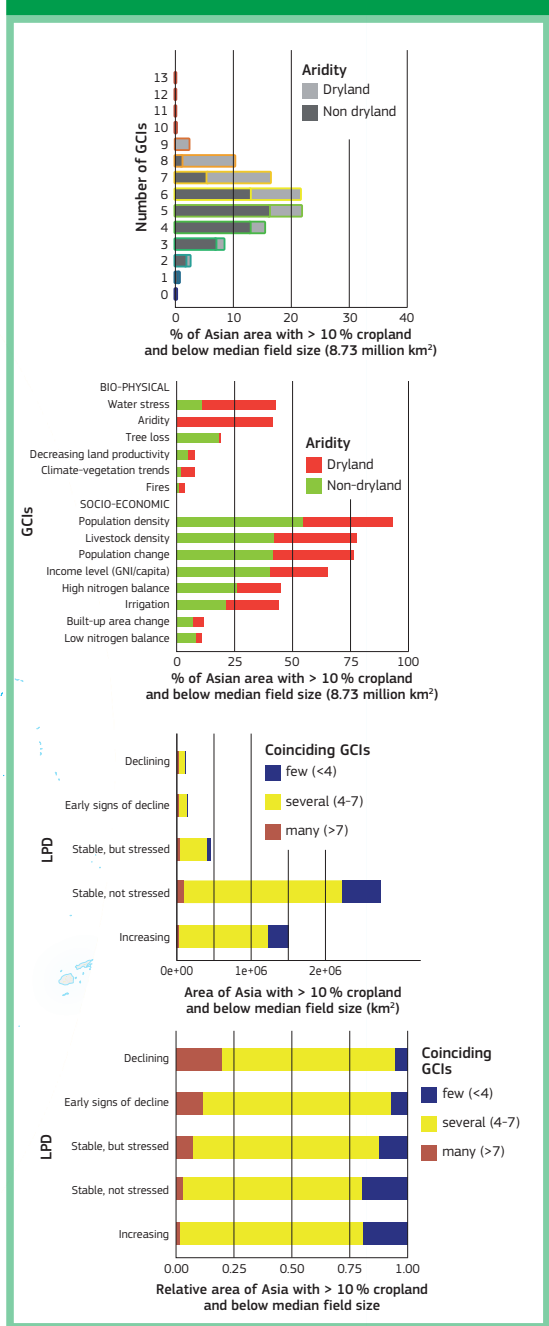
Distributions of predominant issues in EUROPE



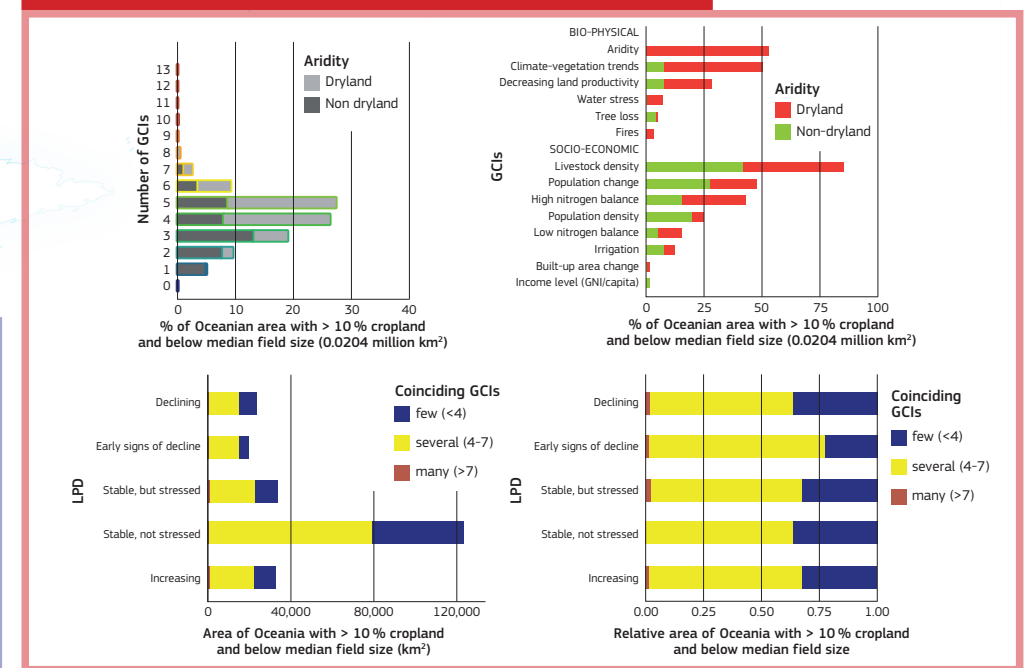
Distributions of predominant issues in WORLD



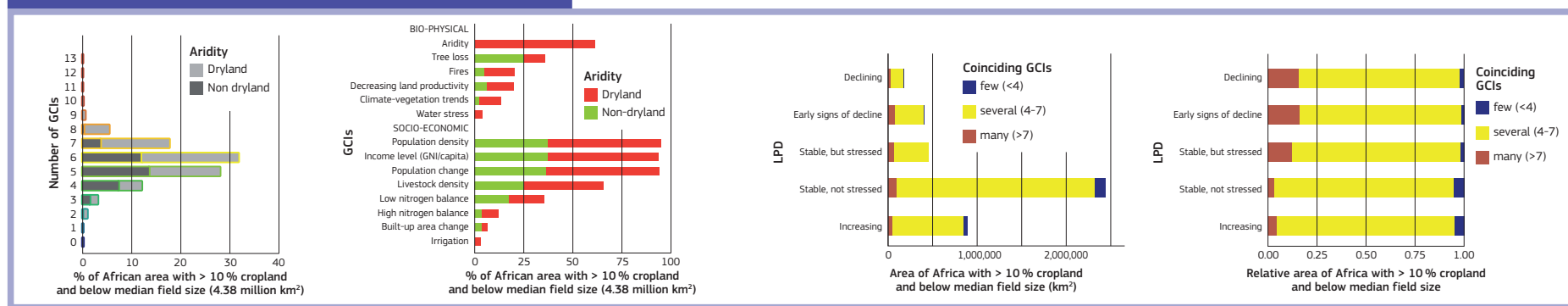
Distributions of predominant issues in ASIA



Distributions of predominant issues in OCEANIA



Distributions of predominant issues in AFRICA



See previous page for explanatory text.



Convergence of Evidence: Smallholder Cropland

See next spread for data.

Examples of global regions where smallholder cropland are affected by global change issues (GCI; see Table, page 145) include:

- Africa: Nile River basin, Sahel, eastern Africa (regions on the Somali southeast coast, Kenya and northern Tanzania), and Zimbabwe.
- Asia: Indus River basin of India, Yellow River basin in northeast China, Java (Indonesia).
- Central Asia: Some parts of Uzbekistan, Kyrgyzstan and Tajikistan,
- North America: Central Mexico.

Global change issues (GCI) associated with transformations (including land degradation) in smallholder cropland include tree loss and water stress (both occur in about 27 % of the total area). About 40 % of smallholder cropland occur in drylands, and most have 6 or more coincident GCI where non-dryland areas have 5 or less.

- Analysis shows that in smallholder cropping systems:
- About 9 % (or 1.47 million km²) of the smallholder cropland area experiences potential pressure from 8 to 13 GCI. Signs of land productivity decline are observed in 26 % of this area (0.39 million km²).
 - Approximately 77 % (12.5 million km²) of the smallholder cropland area experiences potential pressure from 4 to 7 GCI. Signs of land productivity decline are observed in 15 % of this area (2 million km²).

- Approximately 13 % (2.2 million km²) of the smallholder cropland area experiences potential pressure from 1-3 GCI. Signs of land productivity decline are observed in 8 % of this area (0.18 million km²).
- Less than 1 % have no GCI.
- Key GCI are high population density and population change (86 % and 76 % of the land area, respectively), which coincide with low income levels (67 % of the area).
- Smallholders in poorer rural areas (about 67 % of the area, mostly in Africa and Asia) support many people (88 % of the area has higher than average population densities) and must deal with water stress (27 %), tree loss (27 %) and fire (9 %).

Smallholders in poorer rural areas in Africa and Asia support many people and must cope with numerous global change issues, such as water stress, tree loss and fire.

At a continental scale, some patterns with regard to smallholder cropping systems and global change issues (GCI) emerge:

- **Africa.** Africa has the second largest area of smallholder cropland (after Asia), of which about 60 % is located in drylands. In more than 60 % of the area more than 6 GCI are found. Higher than average population densities and population changes, and lower than average income is affecting more than 90 % of the total smallholder area in Africa. Unlike Asia, in 37 % of the area smallholders have low input agriculture, potentially compromising long-term land quality. Land productivity is declining in about 20 % of the area. Combinations of 7 or more coincident GCI occur in stressed or declining land productivity classes.
- **Asia.** A vast area of 8.73 MKm² is managed by smallholders. They must deal with 6 and more convergent GCI. Water stress (about 40 % of the area), as well as population densities, high livestock numbers and below average income (60 % of the area) pose significant challenges. Irrigation is practiced in more than 40 % of the area and corresponds with high input agriculture that potentially threatens water quality. The Indus basin in Pakistan, most of India, the Yellow river area and coastal areas in eastern China and the Irrawaddy river basin in Myanmar are regions of concern.

- **South America.** Limited areas in north and northeast Brazil, the Ecuadorean coastal area, smaller zones in central Chile and central Mexico show more than 6 coincident GCI. Tree loss, high livestock densities and high input agriculture are the continent's main global change issues.
- **Europe.** Key GCI include higher than average livestock numbers, population densities, and water stress. Smallholder cropping areas have fewer than 4 coincident GCI. Surprisingly, 26 % of smallholder cropping areas have increases in built up areas.
- **North America.** Smallholder areas are very limited and there are few coincident GCI.
- **Oceania.** There is very limited smallholder cropland in Australia, New Zealand and the rest of Oceania. There are no important issues, aside from high livestock numbers and high agricultural inputs.

Vast areas of smallholder cropland in Africa and Asia must cope with a large number of divergent global change issues. In Asia, overuse of agricultural inputs (e.g. fertilisers) is an environmental issue while in Africa, the opposite (lack of inputs) prevails. There are serious long-term consequences in both instances.

- Theme layer derived from: FAO GLC-Share v1.0³⁹ and Fritz S., IIASA-IFPRI (GEOWIKI) Field size⁴⁰, 2015 (see page 64).
- This map has grid cells of 1km².
- Statistics - in total area (km²) or percentage of total area - are given for both global and/or continental scales.
- Refer to global change issues (GCI) in the table on page 145.
- Refer to 'how to read the maps' on page 146.

