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Report on the

EARLY DEVELOPMENT of the 1990 MEHER (MAIN) AGRICULTURAL SEASON in ETHIOPIA

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by

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Executive summary

The onset of the main rainy season was at least several weeks late in most parts of the country. Adequate and well distributed rainfall throughout the rest of the season is therefore critical to producing an average yield in late-planted crops everywhere. On a national level, the best case scenario is probably for an average harvest much like in 1987 or 1989 with significant regional deficits in the North and East.

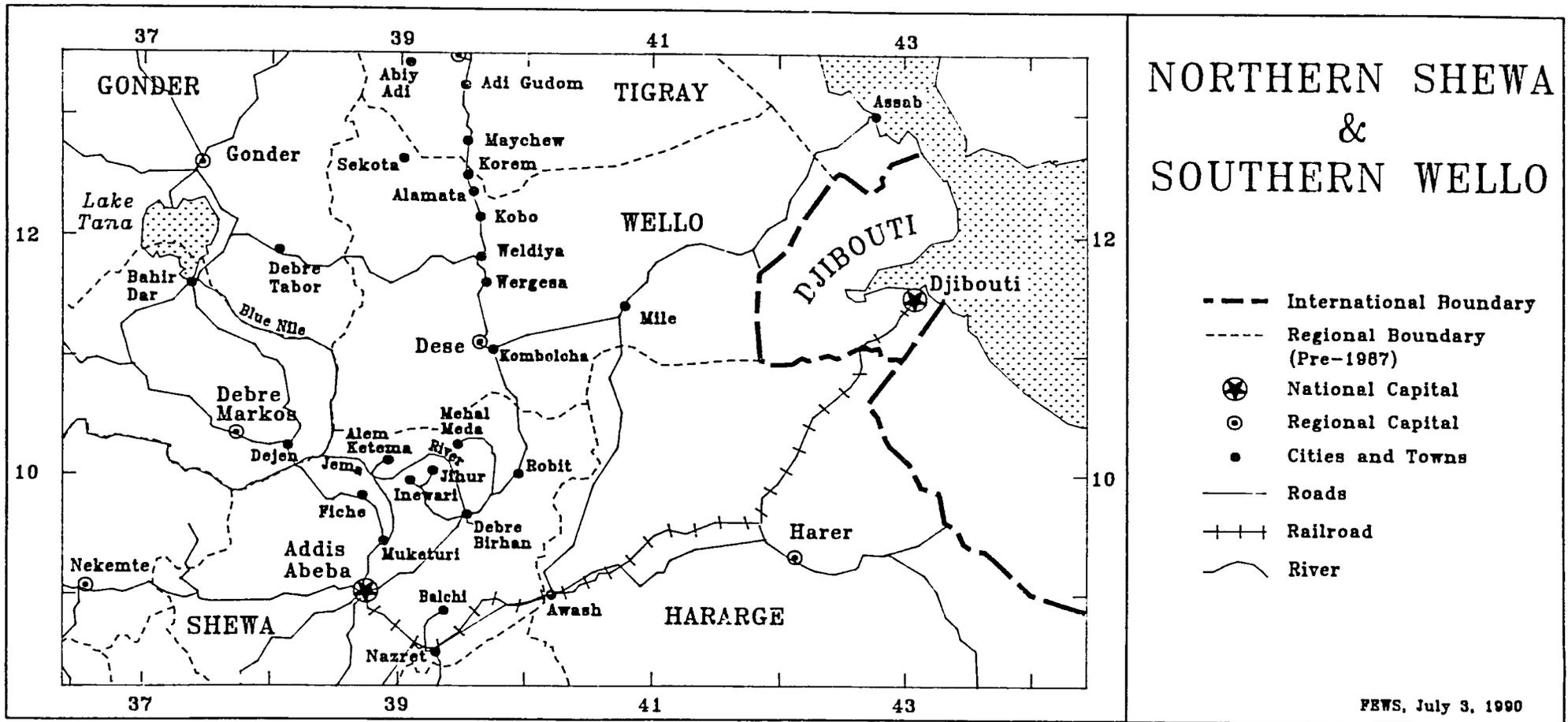
The late start, and continued sub-optimal rainfall in parts of Eritrea, Tigray and Harerghe is especially worrisome. The main rainy season is normally of briefer duration there, and it is difficult for farmers to make up for a late start. Long-cycle crops like maize and sorghum were either not planted due to the late start, or withered without sufficient rain. The rains now would have to extend beyond their usual cut-off in order to avert significant yield losses and crop failures in the few long-cycle crops that are still viable, and even in the shorter-cycle crops that were planted as a response to the late start. This is the second consecutive year of crop stress and/or failure in these areas, and the cumulative impact of another poor year will be more seriously felt. The volume of emergency food needs will likely be similar or even larger than those of 1989/90 and are immediately needed in some areas.

An earlier than usual end to the main rains, something the apparent early retreat of the Inter-Tropical Convergence Zone (ITCZ) in Sudan suggests, is also a worrisome possibility in Ethiopia. This would compound the situation in Eritrea, Tigray, and Harerghe, and also put the late-planted crops in Gonder, Wello, and parts of Shewa in jeopardy. The progress of the ITCZ and of rainfall totals in these areas will have to be monitored throughout late August and early September to judge whether this event is occurring. If it does, the national and regional scenarios described here would no longer apply. A much more serious problem at both levels would then become apparent.

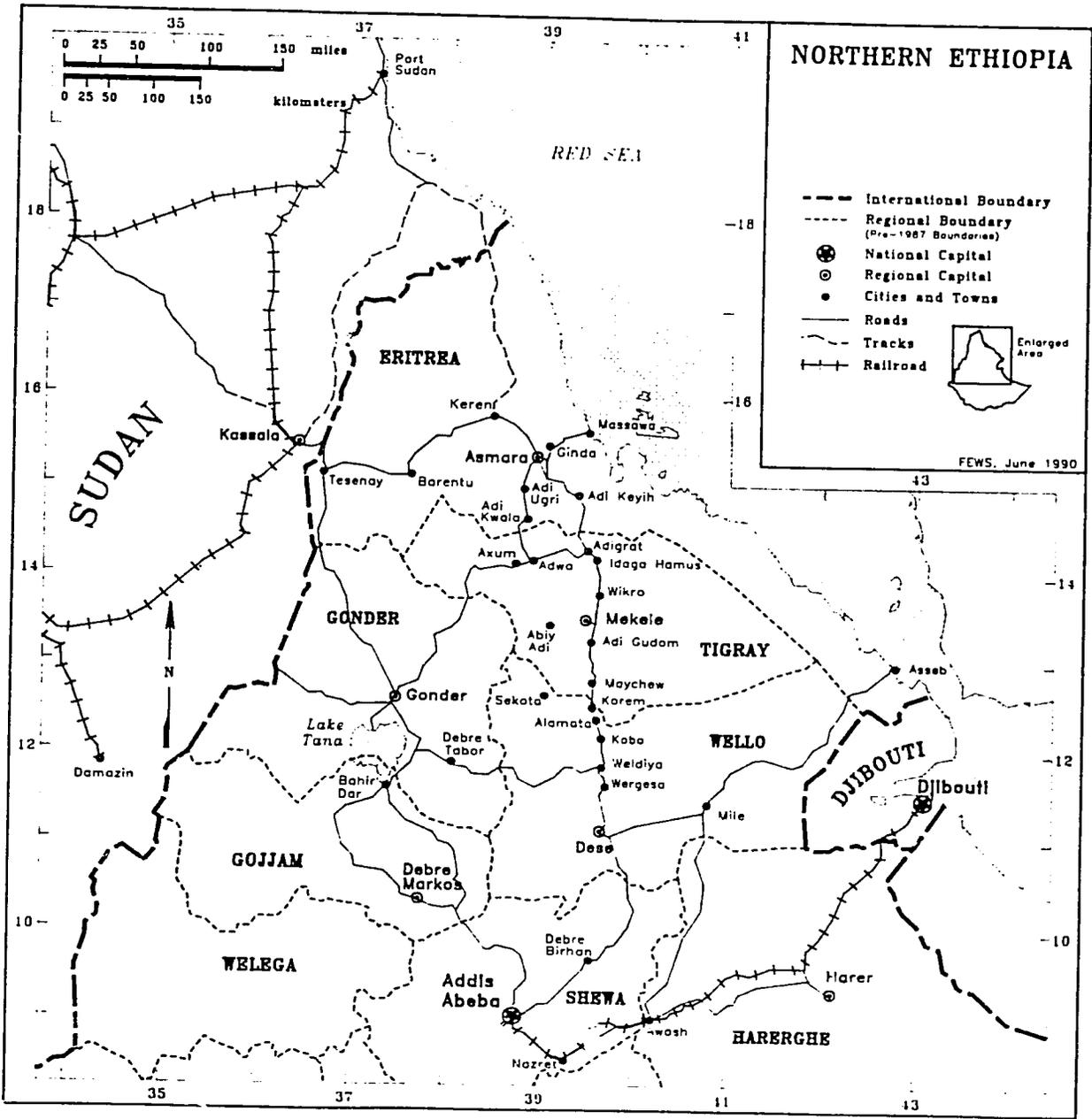
Abrupt and undirected changes in land tenure, input supply and delivery systems, and produce marketing regulations from a government proclamation just prior to the start of the 1990 agricultural season left many producers without the information or inputs necessary to make the best of a difficult season. These changes, combined with the spread of civil strife to even more areas of the country, would have guaranteed a difficult year for agriculture in Ethiopia even under the best agroclimatic circumstances. Although many believe the eventual impact of the policy reforms will be overwhelmingly positive, they do not expect the full benefit of such reforms to materialize overnight. It will take time, perhaps several years, for new production relationships, marketing structures and input distribution systems to fully develop.

Timing and purpose of the mission

This mission was timed for late July to correspond with a period approaching the midway point in the main rainy season. It was intended that the team members would collect information and draw some first conclusions on the likely outcome and possible problems of the growing season in various regions based on progress to that point. Contrary to some mistaken impressions, it was not intended that the mission would attempt an assessment of the standing crop. The team's analysis of weather conditions, crop progress, and possible crop outcomes is based upon the input of a large number of weather, agricultural, and other experts from GOE,



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international, and U.S. sources familiar with all parts of the country. The team acknowledges their valuable counsel, and appreciates the assistance they and the USAID Representation in Addis provided.

Regional analyses

Eritrea

The onset of the main season rains in Eritrea was late by several weeks. In Asmara, agriculturally significant rains were received only late in the first week of July. Rainfall since that time has been substantially less than average for the period, although slightly better than that of 1989. Vegetative conditions and crop development in the very vulnerable highland farming areas between Asmara and Adigrat are substantially below average for the second year in a row, and appear worse than they were in 1989, reflecting the cumulative impact of two straight years of low rainfall. Agricultural areas around Tesenay, on the border with Sudan and near Kassala, also reflect substantially below average growing conditions that are probably due to the abnormally high temperatures and low rainfall. Similar conditions have also afflicted eastern mechanized farming areas in Sudan during much of August.

Crop and pasture conditions through August 20 are better than average only in the western two-thirds of Seraye, eastern Gash and Setit, and southeastern Akordat awrajas, and in some of the lowland areas between Ghinda and Massawa. Most of the rest of Eritrea is marked by slightly below-average seasonal crop and pasture conditions, again probably reflecting the late start of the rains.

The lateness of rains means that there will be no long-cycle crops for a second consecutive year in Eritrea. This is not a major problem in itself as such crops are normally only productive in one out of every two or three years. Nevertheless, the margin of security that they sometimes provide will not be available again this year. The military conflict that has engulfed major portions of the best highland farming areas south and southeast of Asmara will affect the area planted and the yields of any short-cycle crops that have been sown. Most reports indicate that only limited amounts of food aid have reached these same areas.

In most farming areas in Eritrea, rains will be needed into late September for a decent harvest of short-cycle Meher crops. Rains normally taper off in the first ten days of September. As of August 28, the signs were not encouraging for an extended end-of-season rainfall. Reported rainfall during the August 20-28 period was very low, and there are indications in Sudan that the Inter-Tropical Convergence Zone (ITCZ), which determines the movement north and duration of the rainy season, peaked two weeks early in its northward movement and has been retreating southward since. If this pattern is replicated in northern Ethiopia, the season will be truncated short of what is needed and even short-cycle crops will be greatly affected.

The poor rains to date have reduced yields already, and unless rains are greater than approximately 20mm during each ten-day period from the end of August through mid-September, much of Eritrea's short-cycle agriculture may not have any yield in grains. Even if

the season continues through September, the farming areas between Asmara and the border with Tigray will continue to require substantial emergency assistance throughout most of the next year. The amount needed will likely be similar or slightly higher than that required in 1989/90.

Emergency food needs in western, central and northern Eritrea will be substantially less severe than in the southeast, due to distributions that have already reached the area from EPLF distributions, their own production, and commerce with western Tigray (Adwa, Shire) areas which appear to be progressing relatively unhindered.

Tigray

Although no rain station data are available in this region, scattered field reports and satellite imagery suggest the rains began in most parts of the region during the last dekad of June and accelerated fairly quickly in July. The onset of the main season rains in Tigray were thus approximately ten to fifteen days later than normal. Vegetative conditions since that time have been about average for the period, and cumulatively a little below normal through August 20, probably reflecting the late start of the rains.

Travellers who returned from the region in late July report a pocket of very dry conditions and limited agricultural activity immediately west of Mekele and in Tembien. Satellite imagery confirms below normal vegetation in this area in June and July but suggests a marked improvement in the situation by early August. Vegetative conditions were also significantly below normal in Shire through the second dekad of July but had returned to normal levels by the end of the month. Reports from the travellers in this region indicate that it was raining quite consistently by the middle of July and planting, although somewhat late, was in full swing.

Crop and pasture conditions by the end of July were reported to be good around Adwa and along the road from Adwa to Adigrat. Field reports indicate sufficient rains by the third dekad of June in Adigrat to permit the planting of sorghum and maize in this area. Field reports and satellite imagery also suggest at least average rainfall activity for the period in Mekele and along the road from Mekele to Maychew.

As in Eritrea, the late start to the main rains in most areas of Tigray means significantly reduced cultivation of long-cycle cereal crops (primarily sorghum) this year. Given the short nature of the growing season in these areas, it is not unusual for farmers to substitute short-cycle cereals such as teff and barley when the expected length of the season is not likely to permit the cultivation of long-cycle grains. The success of such a substitution depends primarily upon the availability of substitute seed and sufficient rainfall through the normal growth cycle of the crops. The supply of short-cycle seed was a problem in many areas of Ethiopia this year and Tigray was no exception. Although most farmers try to have a certain amount of seed reserved for this purpose, acquisition of adequate stocks was problematic and not timely enough to make much of a difference.

For short-cycle crops the rainfall picture appears hopeful. The rains appeared regular as of August 20 and cumulative totals might have been approaching normal for the season. Rains, however, must continue at least through the second dekad of September to produce an average yield. If rains end during the first dekad of September, yields would be reduced. A total failure of the short-cycle harvest at this point appears unlikely unless there is an early end to the season with general dryness from late August onward.

Even with best-case agroclimatic conditions through the end of the season one should not expect too much in Tigray. In many areas, farmers have not fully replaced seed reserves, draught animals and tools lost as a result of a succession of poor seasons since 1984. Although some believe disruptions from civil strife could be less this year since urban as well as rural areas are in the hands of one authority, it is probably safe to say that Tigray, under the very best of conditions for the rest of the season, could expect no better than an average year. Continued assistance will be needed in northern areas. It is too early to determine the prospects for regional surpluses and internal purchases in Adwa and Shire for the coming year, although these areas are doing well after a late start.

1990 Belg Season Outcome in Wello and Northern Shewa

For the Belg (secondary) cropping season two pictures emerge, one in the East and one in the West. Very early and sometimes quite heavy rains occurred along the eastern spine of the highlands from Debre Birhan northwards up to southern Tigray. Rains started as early as mid-January in the Bati and Dese areas (Bati received 57mm from January 11-20, and 211mm between February 1-10) and in late January quite north of there. Rains continued to be quite good until mid-April in these same areas, especially around the main road going north, and going down the slopes into the lowlands of Shewa, Wello, and Tigray. In late April there was a significant drop-off in rainfall that continued through May. Lessened rain during this period probably presented a stress problem for agriculture in the region, but good moisture reserves probably carried most crop needs. Average to above average growing conditions persisted in the Dese area until the end of May.

In western areas, where access was extremely limited due to the insecurity of the area, vegetation index imagery suggests that the rains probably started generally on time and were average to slightly below average in amount during late February, March, and part of April. By mid-April, as in the East, the rains dropped off drastically or even stopped for lengthy periods. By late April, growing conditions had reached slightly below average in Wag, Lasta, Wadla Delanta, Were Ilu, Borena and NW Shewa. By the end of May almost all these areas were displaying substantially below-average growing conditions.

To the extent that farmers east of a line running through Maychew, Tenta, Were Ilu and Mehal Meda were able to take advantage of the good and early rainfall to plant crops they probably got at least an average harvest despite the drop-off of rain in April. This was undoubtedly difficult given security problems that were developing in the area at this time, and disruptions caused by the abrupt changes in land tenure and agricultural policies. Even in these eastern areas, conditions in and around Dese, and relatively close on both sides of the main

road were better, longer, than less accessible areas surrounding them and probably led to a more optimistic view of harvest prospects than may be warranted.

In the western areas there were average to below-average conditions and possibly even local failures due to an abrupt cessation of rains. Civil strife and a general disruption also played a big role in these areas in hindering agricultural pursuits. The full extent of these effects is still uncertain. Nevertheless, one can probably conclude that the food security situation in these areas is not yet one of crisis due to weather events, especially as the main season appears, at this point, to be better than average after a slow start.

Wello, Gonder, Gojjam and Northern Shewa Meher (main) season

Main season rains were late by several weeks in most of Gojjam, Gonder, Wello and Shewa. In Debre Markos the rains got off to a slow start in early June but were up to normal levels by late June. In Gonder and Bahir Dar the rains did not begin until the second and third dekads of June, respectively. From their later than normal commencement, the rains appear to have been sufficient and well-distributed. By July 20, cumulative seasonal rainfall levels for Debre Markos and Bahir Dar had reached 92 percent and 83 percent of normal, respectively. Although complete data are not available for Gonder during this period, Gonder was at 75 percent of normal for the year as of July 10, and reported average to above-average dekadal values for the last dekad of July and the first of August. Dese showed average to good vegetative conditions starting the second dekad of June and continuing throughout the rest of the season to-date.

Satellite imagery suggests a particularly late start to the season in densely populated areas north of Dese and directly east of Lake Tana. Much of northern and northwestern Shewa, from Yifat through Menz, Gishe, Merhabete and Selale registered vegetative conditions well below average through the first ten days of July. These areas did not regain normal vegetative appearance until July 20. The Blue Nile (Abay) gorge from Mota to the mouth of the Guder River (in NW Shewa) reflected below average vegetative growth through much of July.

Vegetative conditions appeared good to above average in lowland areas of western Wello and eastern Gonder that are often problematic. Simien, Libo and Gayint awrajas of Gonder, and the awrajas of Wag, Lasta, Wadla Delanta and northern Borena in Wello consistently registered above average conditions through much of July and up to August 20.

The fact that the late start to the main rains in Shewa, Wello, Gonder, and Gojjam was followed by apparent good rainfall in most areas bodes acceptable for the main agricultural season. Short-cycle, lower yielding crops are more likely to have been planted in Gonder and Wello due to the late start of rains than in Gojjam and northern Shewa, with consequent impact on yields and eventual harvest. Unless there is an abrupt end to the season soon, the short and long-cycle crops in these areas have a reasonable probability of being average or above. As in other areas, civil strife, changes in land tenure policies, and disruptions in the availability and/or distribution of agricultural inputs are certain to have had some negative effect on agricultural activity this year.

Dese, Sirinka, Kobo, Nefas Mewcha, and Gonder will be rain stations to watch closely in the coming weeks. An early retreat of the rains south and westward would most likely be seen there first. Significantly lower than average September rainfall would suggest a potential reduction in harvest for these and many other northern areas.

Harerghe Belg and Meher seasons

Belg rains began somewhat late near the end of March, but were generally favorable through the month of April. Long-cycle crops planted during this period experienced moisture stress during the first two dekads of May. Rains picked up during the last dekad of May but unusually sustained dry conditions were experienced through most of June, July and into August, affecting all crops. Rainfall during the first twenty days of August, although agriculturally significant, was less than 50 percent of normal in many areas. Satellite imagery indicates that vegetative conditions as of August 20 are well below the long-term average in most areas of the southern slopes.

In the mid-altitude and highland areas where Belg crops are a significant food source, crops were planted somewhat late but appear to have attained a normal level of production, except for the maize crop which suffered significant yield losses and local crop failures. In the lowlands, the seriously deficient levels of rainfall in June and July resulted in the complete failure of the maize crop. Although sorghum can retard its development and survive prolonged dryness, substantial yield reductions, if not total failure, can be expected if rainfall does not pick up significantly in August and last into October. Also, infestations of stock borer, common in Harerghe, have been observed in many areas.

One would expect a reduced harvest of short-cycle Meher crops in parts of the midlands and highlands due to the lateness of the season, seed shortages and the below average rainfall in some areas of Gursom, Habro and Jijiga. Wheat, barley, teff and pulses were planted with three or more weeks delay this year and their success depends heavily on the continuation of the rains through October. Yield reduction due to pests, storms and moisture stress, both early and late in the growing cycle, cannot be ruled out. Lowland Meher cultivation was very late and hampered by serious rainfall anomalies and inadequacies in seed supplies. Haricot beans (inappropriate for lowland cultivation) were the only seeds available through government channels as of the end of July, and last-minute MOA attempts to procure other seed were not successful. The area cultivated under chick peas is likely to increase given the lateness of the season and Harerghe, more than other regions, can fall back on potato and sweet potato.

Given the certain failure of maize and likely shortfalls in regular Meher crops, a significant reduction or failure of the sorghum crop would have very serious implications for food security in the region. Eastern Harerghe appears to be the most seriously affected, especially the lowland areas of Gursom, Garamuleta and Harer Zuria where maize is a complete failure and sorghum has failed or is sure to suffer seriously reduced yields. Because many of these areas experienced a similar failure last year (in some, two of the past three years), and because some people depend solely on maize, the effect of poor production this

year on food security is likely to be pronounced. Secondary coping methods have already been observed. People started moving to cities in search of day labor at least one month earlier than usual and the consumption of starvation foods has been going on in the worst hit areas since June. Special nutritional surveillance in these awrajas was to begin the third week of August and preliminary results should be available approximately one month later. Some of these areas require immediate food assistance. Many others are certain to need assistance at some point in the coming year.

The Ogaden

During March and April (the main rainy season in the Ogaden) rains were infrequent and poorly distributed throughout this pastoral region. The recharging of the water table and surface water was therefore incomplete. Wells and watering points have since been put to use unusually early in some areas. The Danot area, in the center of the Ogaden, is already suffering water problems and a resulting emaciation of livestock. Concern has been expressed by pastoralists and regional officials that the Ogaden's existing water and pasture resources can not sustain pastoral activities until the onset of the next rainy period (late September/early October). Officials fear there will soon be no alternative but for pastoralists to move towards the Wabe Shebelle basin. There too, water resources and pastures are already under stress due to sustained dryness in most areas of the Wabe Shebelle watershed. Reports from irrigated agricultural sites along the river itself indicate that there has been a very poor flow of water and almost no agriculture as a result. In the general watershed area the effects of overgrazing are also to be feared.

Changes in trade patterns are expected to have a significant effect on food supply this year in the Ogaden. The pastoralists of this region depend heavily upon food purchased or bartered in markets. Insecurity in Somalia has interrupted unregistered trade in these areas and has meant the disruption of what is normally a significant and lucrative market for livestock. This has also decreased the import of Somali dry food items purchased or acquired in exchange for livestock. Add to this the decreased movement of food grains and other goods from Western regions of Ethiopia to Harerghe because of the uncertainty in normal trade opportunities with Somalia and the effect is magnified. The normal reliance on cash (from the sale of cattle and chat) for food purchase will be weakened. There are already reports of pastoralists who have plenty of money but nothing to buy.

Overriding issues

An early end to the rainy season? The progression of the main rains in Ethiopia is largely from southwest to northeast, and their seasonal retreat reverses this movement. Because of this, length of the growing season is longest in the highlands of the southwest and shortest in parts of Tigray and Eritrea. In the latter areas, the season is so short as to provide very little flexibility to cropping decisions. Farmers only expect a long-cycle crop once in so many years and short-cycle crops often do not enjoy the benefit of a full season of rainfall. When the onset of the main rains is late, as is the case this year in Ethiopia, the length of the rainy season becomes critical, especially in Eritrea, Tigray and the highly-populated areas of central

Wello. Unlike points further west and south, where the rains extend beyond what is necessary for adequate plant development, crops in these areas will require every day of rainfall that is likely to occur.

The late start of the rains throughout the country has made the remainder of the 1990 main rainy season especially critical. Long-cycle crops (maize and sorghum) were not planted or did not survive in many areas of Eritrea, Tigray, Harerghe, Wello and Gonder. Although this in itself is not reason for alarm, it places a much higher level of importance on the success of short-cycle crops (wheat, teff, barley and pulses). The success of these crops now depends on the continuation of the rainy season through at least the second dekad (ten day period) of September in Eritrea and Tigray (and even later in Harerghe). A retreat of the rains before this date will have an effect on the yield, or even the life, of the crop and a serious impact on the food security of the regions.

It is impossible to predict with high accuracy the ending date of the rainy season. However, several factors this year point to the possibility of an earlier than usual end to the season. The most important of these is the apparent early retreat southward of the ITCZ in Sudan. Although it is not yet clear whether this is occurring in Ethiopia, such an event would have a severe impact on all crops in the North and East. The retreat of the ITCZ would be related to the issue raised early this season in the meteorological community in Ethiopia about the effect of the ENSO (El Nino/Southern Oscillation) on weather patterns in-country. There was a feeling then that the year would be a poor one partly because of the ENSO. Climatologists are studying the question to determine the amount of correlation between this event and the poor performance of the Meher (main) rains. Rain station reports and tracking of the location of the ITCZ during the last dekad of August and into early September will help to establish if an early end to the rains will be an additional problem to deal with.

The impact of civil strife: The escalation of the civil war and its extension to previously unaffected areas of Gojjam, Gonder, Wello, Shewa, Harerghe and Welega will seriously, and unmeasureably, affect food production. There is enormous disruption of agricultural efforts due to widespread military conscription, guerrilla attacks, displacement and the interruption of normal agricultural support systems. It is remarkable that farmers in some of these areas have been able to produce as they have. Barring unforeseen events, this situation is not only likely to continue for quite some time, but it may worsen. The expansion of civil strife to areas which traditionally produce much of the surplus enjoyed by other parts of the country could have effects that go far beyond the borders of the region under question.

Impact of agricultural sector restructuring: Equally important as a non-climatic factor influencing agricultural production in Ethiopia this year is the GOE's decision in March to do away with long-standing dictates concerning communal land tenure and the central control of agricultural production and marketing. Specifically, the proclamation abolished grain quotas and grain control stations, liberalized (privatized) the internal trade and marketing of grain, and led to the rapid dissolution of most Producer Cooperatives (PCs). It is uncertain what the eventual effects of these reforms will be on agricultural production, but most people seem to expect that they will be overwhelmingly positive. What is certain is that in the immediate future, while new credit, farming and marketing relationships are being hammered out, things are not likely to improve quickly.