



## Executive Summary

### Area, Yield, Production and Value of Produce under the Special Programme for Promotion of Millets in Tribal Areas of Odisha (or, Odisha Millets Mission), 2017-18, Phase-1

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February 2020

#### Introduction

1. The purpose of this exercise is to arrive at estimates of area, yield, production and value of produce on year one of Odisha Millets Mission intervention (2017-18) and to make a comparative assessment with the baseline (2016-17).
2. In year one of Odisha Millets Mission, 8,596 farmer households cultivated millets in 5,182 hectares producing 65,929 quintals with the value of produce at ₹10.73 crore (in real terms based on 2016-17 prices). This is contrasted with the baseline survey of 7,041 farmer households who cultivated millets in 2,949 hectares producing 17,065 quintals with value of produce at ₹2.79 crore.

#### Results

3. Average area under millets per farmer household increased by 43.9%, from 0.42 hectare in 2016-17 to 0.60 hectare in 2017-18.
4. Yield of millets increased by 119.8%, from 5.79 quintals per hectare in 2016-17 to 12.72 quintals per hectare in 2017-18.
5. Value of produce per hectare for millets increased by 119.2%, from ₹9,447 in 2016-17 to ₹20,710 in 2017-18 at constant 2016-17 prices.
6. Value of produce per farmer household for millets increased by 215.5%, from ₹3,957 in 2016-17 to ₹12,486 in 2017-18 at constant 2016-17 prices.
7. The increase is robust to two alternative specifications wherein increase in yield has been in the range of 96.2%-183.3%, increase in value of produce per hectare has been in the range of 95.9%-184.0%, and increase in value of produce per farmer household has been in the range of 181.9%-308.7%.
8. A comparative assessment for *mandia* (which in year one of Odisha Millets Mission constituted 95.7% of area under millets, 97.8% of millets produced, and 97.5% of value of produce for millets) indicates that average area per farmer household increased by 53.6%, yield increased by 122.9%, value of produce per hectare increased by 123.4%, and value of produce per farmer household increased by 243.3%.
9. In year one of Odisha Millets Mission, total area under *mandia* cultivation was 4,961 hectares and total production of *mandia* was 64,459 quintals. Season-wise details were as follows: share of area was 94.1% in *kharif* and 5.9% in *rabi*; share of produce



was 95.6% in *kharif* and 4.4% in *rabi*; and yields were 13.21 quintals per hectare in *kharif* and 9.56 quintals per hectare in *rabi*.

10. In year one of Odisha Millets Mission, method-wise details were as follows: share of area was 35.6% in system of millet intensification, 63.1% in line transplantation, and 1.3% in line sowing; share of produce was 41.4% in system of millet intensification, 56.5% in line transplantation, and 2.1% in line sowing; and yields were 15.13 quintals per hectare in system of millet intensification, 11.62 quintals per hectare in line transplantation and 21.20 quintals per hectare in line sowing.
11. In year one of Odisha Millets Mission, *suani* and *kodo* were cultivated only in Kalahandi district during *kharif*. Almost all households cultivated *suani* and *kodo* by line sowing, except for one household that cultivated *suani* by system of millet intensification. From the aggregate coverage for millets, *suani* and *kodo* constitute 4.1% and 0.2% of area, respectively; 2.1% and 0.1% of production, respectively; and 2.4% and 0.1% of value of produce, respectively. Their yields were 6.55 quintals per hectare and 8.80 quintals per hectare, respectively.

#### Estimation Steps

12. As a first step, the team examined scanned reports of crop cutting experiments for 2017-18 and selected them based on three criteria: legibility, availability of crucial information (season, crop, method of cultivation, and area), and authenticity.
13. A total of 354 crop cutting experiments (347 in *kharif* and seven in *rabi*) were selected. The crop-wise experiments were 338 for *mandia*, 15 for *suani* and one for *kodo*. Method-wise break-up of crop cutting experiments were 239 for system of millet intensification, 98 for line transplantation and 17 for line sowing.
14. To guard against possible selection bias in favour of plots with better yield during crop cutting experiment, the estimated production used the minimum yield from block-season-crop-method-specific crop cutting experiments.
15. Value of produce for 2017-18 at ₹10.73 crore in real terms was based on block-specific sale price of crops in 2016-17, as per baseline survey.
16. To facilitate robustness check, two alternative specifications for production estimation were used. One used minimum yield only when there were at least three season-crop-method-specific crop cutting experiments at the block level (if three experiments were not available at the block level then district, state, crop, or method level minimum from three experiments were used). The other used average yield from block-season-crop-method-specific crop cutting experiments.

#### Additional Results

17. For the 27 blocks covered under baseline, average area cultivated under *mandia* has decreased in seven (Gumma and Rayagada in Gajapati, Daringbadi and Phiringia in Kandhamal, and Borigumma, Lamtaput and Nandapur in Koraput) and that for all millets in eight (in addition to the seven blocks for *mandia* it also includes Dasamantapur in Koraput). This could be because area under conventional practice



like broadcasting have not been documented, as they cannot be considered as interventions under Odisha Millets Mission.

18. For all the 27 blocks covered under baseline, yield has increased in year one of Odisha Millets Mission and, as a corollary, the value of produce per hectare has also increased.
19. For the 27 blocks covered under baseline, value of produce per household has increased in all except for Dasamantapur in all millets, and Lamtaput in *mandia* and all millets. The reduction in this two blocks was largely on account of reduction in area. Incidentally, in the alternative specification with average yield, the value of produce per households has increased in all blocks including that for Dasamantapur and Lamtaput.

#### *Conclusion*

20. Given the robustness check through the alternative specifications, it can be said that in year one of Odisha Millets Mission, as compared to baseline, average area under cultivation of millets per farmer household has increased by more than two-fifths, yield and value of produce per hectare have increased by more than two times, and value of produce per participant farmer household has increased by more than three times.
21. Odisha Millets Mission rightfully deserves accolades. However, for logistic reasons, it has largely been *mandia*-centric. It has to go beyond *mandia*, to other nutri-cereals, towards its mandated *pusti shasya* (ପୁଷ୍ଟିଶସ୍ୟା) mission. The mission also needs to increase coverage during *rabi*.

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