

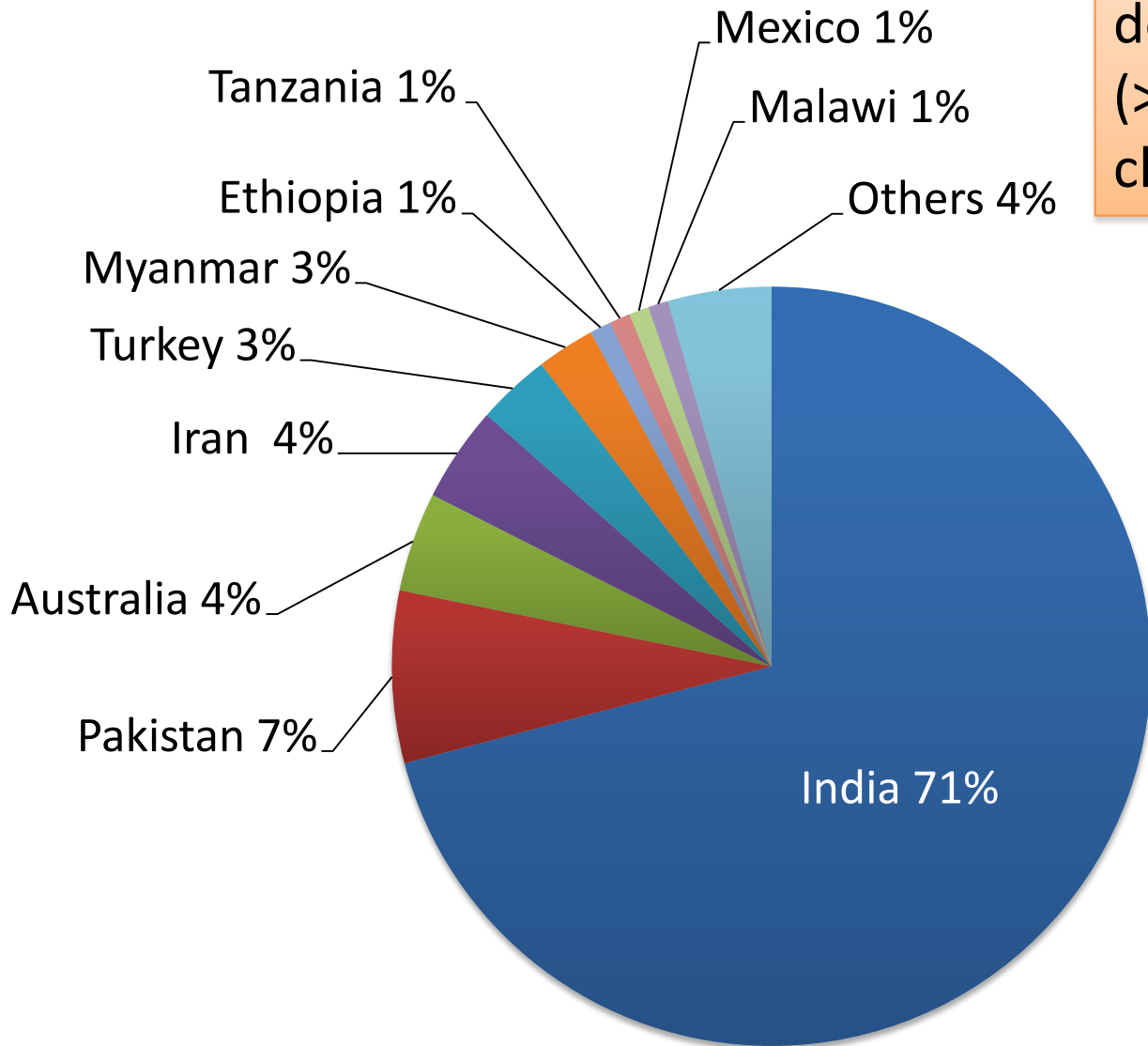


# Tailoring Chickpea Varieties for Amenability to Machine Harvesting

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Chickpea is largely harvested manually in developing countries (>90% of the global chickpea area)



**Chickpea area in major chickpea growing countries**

# Manual harvesting of chickpea



## Efforts on mechanization of chickpea harvesting by farmers in India



Cutting manually and threshing by combine harvester



## The goal of our project



Develop taller varieties with upright growth habit which can be directly harvested by combine harvesters



Traditional variety

Machine harvestable line

# Plant height and growth habit desired for machine harvesting

First pod height >25 cm; semi-erect, non-lodging

Traditional varieties



Genetic variation for plant height and growth habit








## Research Project

# Developing chickpea cultivars suited to mechanical harvesting and tolerant to herbicides

*Supported by*

Ministry of Agriculture and Farmer Welfare, Government of India under  
National Food Security Mission (NFSM)

## Partners

		<b>RAK College of Agriculture, Sehore of RVSKVV</b>
 <b>ICAR-IIPR, Kanpur</b>		<b>UAS-Dharwad</b>
 <b>ICAR-IARI, New Delhi</b>		<b>RARS-Nandyal of ANGRAU</b>
 <b>PAU, Ludhiana</b>		



# Breeding for developing machine harvestable varieties



# Performance of machine harvestable breeding lines

Entry	1 <sup>st</sup> pod height (cm)	Yield (kg/ha)
ICCV 13108	32.2	3118
ICCV 13107	31.4	2956
ICCV 97127	31.4	2667
NBeG 780	38.9	2457
ICCV 13640	50.7	2443
ICEL - 5	41.3	2411
ICCV 13114	33.2	2372
ICEL - 2	34.6	2237
GL 13016	34.4	2073
ICCV 13631	36.4	1909
<b>Best check (JG 11)</b>	<b>20.1</b>	<b>2089</b>
LSD 5%	4.3	371
CV %	13.7	9.7



## Demonstrations on machine harvestable desi chickpea breeding line NBeG 47 on farmers' fields in Andhra Pradesh

Year	No. of demos	JG 11 (Yield kg/ha)	NBeG 47 (Yield kg/ha)
2013-14	21	1616	1731
2014-15	12	1575	1608

- NBeG 47 gave yield similar to or higher than JG 11 and was amenable to machine harvesting.
- NBeG 47 has been released for cultivation in Andhra Pradesh (2016)



# Experiments of plant density on machine harvestable varieties



Row & plant spacing	Seed yield (kg/ha)
30 x 10 cm	1977
30 x 7.5 cm	2200
22.5 x 10 cm	2364
22.5 x 7.5 cm	2369
S.Em $\pm$	56.8
CD at 5%	196

# Advantages of machine harvestable varieties

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- Labor saving → lower cost of production → higher profit
- Quick harvest → avoid damage to the mature crop from unfavorable weather (rain, wind, hailstorm) and other (theft, grazing) factors.
- Reduce drudgery (hardship, back pain, skin problems due to acid on plants) on farm women.
- Better interception of light in plant canopy → reduction in foliar diseases.
- Effective spray of pesticides in plant canopy → better management of pod borer

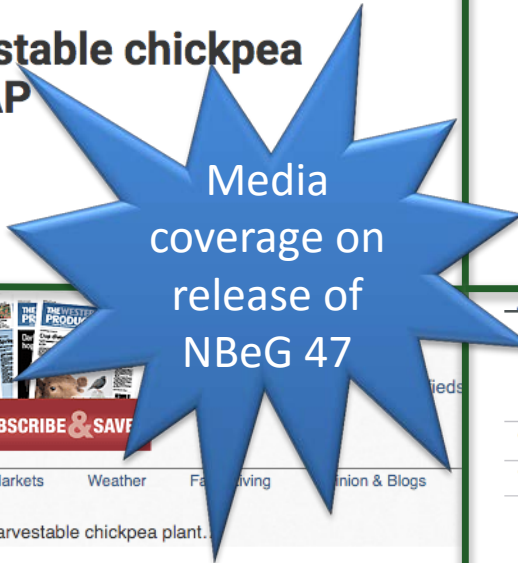
First machine harvestable chickpea variety boon for Andhra Pradesh farmers: [bit.ly/1QprW7p](http://bit.ly/1QprW7p)  
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## First machine harvestable chickpea variety released in AP

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## Scientists develop chickpea harvestable by machine

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## First machine harvestable chickpea variety NBeG 47 released

February 8, 2016

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